17 December 2012 │ 37 pages
Global

Global Structured Credit Outlook

"A Man for All Seasons"

- **Need for yield, and regulation and macro outlook, will determine sweet spots** — Central bank action driving investors' need for return versus cloudy macro-fundamentals will drive 2013 volume of investment and hedging activity.
- **CLO issuance will climb, spreads will tighten** — We anticipate a 20% increase in issuance to $60-65bn and expect that CLO spreads will give up some of their current cheapness, with the most tightening in triple-A and triple/double-B bonds.
- **New bank and credit fund entrants to benefit different classes** — Return on regulatory capital will entice banks to senior CLO and TruPS CDOs, while yield needs will bring insurers and new funds to junior bonds and CLO management.
- **Secondary activity will dominate Euro CLOs** — A rally in spreads improves, but does not guarantee new issuance, and makes mezz more attractive to seniors.
- **Payer spreads and X-100% tranche ideal as tail hedges** — We recommend payer spreads since they minimize the time-decay of simple payers, while X-100% is preferable to simple super-senior as it has all the qualities of a super-senior and responds better to moderate credit stresses.
- **Positive View on US Credit through options and tranches** — We advocate a bullish risk reversal trade using CDX IG options, and also favor taking equity risk on the new IG indexes with cleaner portfolios.
- **Relative value in US versus Europe and low versus high beta** — Central bank action has caused outperformance in Europe and high beta credits – we advocate long IG versus Main and Main versus Crossover in options to take advantage of the arbitrage in receiver option pricing.

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Figure 1. Our favorite trades

Product	Trade	Rationale
US CLOs	Buy Triple-As	Cheap to peer assets and minimal credit risk; more bank entrants
US CLOs	Buy BBB/BBs	Lagged rally in AA/As, more interest from cross-over buyers
Euro CLOs	Buy A/BBBs	Lagged AAA/AA rally but mind transaction differences
TruPS CDOs	Buy first pays	Return on capital attractive for US banks
Credit Options	Buy IG bullish risk reversals	Positive view on credit, underperformance of CDX IG
Credit Options	Buy Main recv, Sell XO recv	Low beta credits outperform high beta credits
Credit Options	Buy IG recv, Sell Main recv	US credits outperform European credits
Credit Options	Buy IG payer spreads	Cheap tail risk hedge in options
Tranches	Long 5Y 1G17 0-3%	Levered long on clean portfolio
Tranches	Short 10Y iTraxx9 9-100%	Convex tail risk hedge in tranches

Source: Citi Research

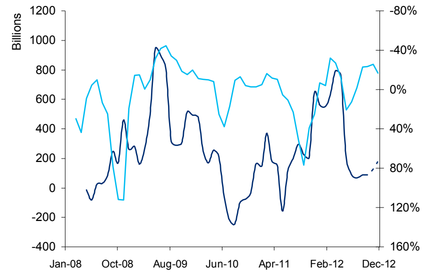
Contents

Macro Outlook

Low rates and defaults to persist over 2013

At this time last year, if anyone had told us that corporate cash spreads would end the year close to post-crisis tights, and that European credit would outperform US credit, we would certainly have bestowed the "Comedian of the Year" award on that person. Yet, that is what transpired over the year – thanks to central banks across the globe. For the 2012 round, the central banks certainly seem to have won the ongoing tussle between bearish fundamentals and (unconventional) monetary policy action, bringing relief to financial markets, especially in credit (see Figure 2).

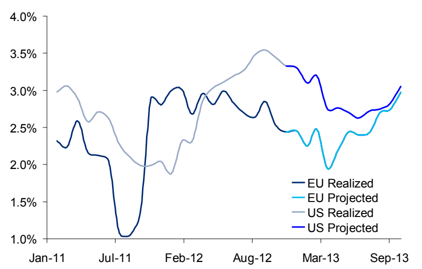
Figure 2. 3M Central Bank Liquidity Injection ($, LHS), 3M Change in World BIG Index OAS (%, RHS)



Source: Haver, Yieldbook, Citi Research

Looking forward, we expect the opposing forces of macro fundamentals and central bank policy action to continue their monumental struggle through 2013. However, having observed the disproportionate effect that central bank actions can have on market confidence, we are loath to go against the well known adage – "Never fight the Fed!" In particular, even though credit spreads are close to the tights of their year end range, we believe that further tightening will occur going into Q1 of 2013. Better macro economic data out of the US and lack of negative headlines in Europe should help this view.

Figure 3. HY Default Rates, US and EU



Source: Moody's, Citi Research

The continued injection of liquidity by central bank has also had its desired effect on default rates (see Figure 3) – as credit spreads tightened and more liquidity became available, speculative grade issuers have been able to refinance existing debt at attractive rates, thereby pushing the maturity wall further down the line and reducing the number of defaults. In the US, the speculative grade default rate is currently running at 3.44% YTD, with a mean baseline forecast of 2.85% for 2013 by Moody's. In Europe, aided by a slower moving bankruptcy regime, YTD default rates have come in even lower at 2.53%, with a mean baseline projection of 2.45% for 2013 by Moody's. To sum up, we expect 2013 to be another year of low spreads, yields and defaults, which is generally constructive for credit.

However, our overall positive view on credit is somewhat tempered by the tail risks that we see for next year. Foremost in our minds is the US fiscal cliff – a combination of higher taxes and lower government spending that has the potential to reduce US GDP growth to -1.2% in 2013. US businesses are quite cognizant of the impending consequences and, faced with the uncertainty of the outcome, have started curtailing hiring and expenditure plans, the effects of which are filtering through into the US macro data (e.g. the Nov 2012 ISM Manufacturing numbers showed a sudden surprise contraction to 49.5). Given the short time frame before the year ends, we are somewhat cynical about a comprehensive grand bargain around the fiscal cliff, but a solution that is limited in scope seems feasible. In particular, the base case scenario from our economists is a modest compromise leading to a 1.9% GDP growth for 2013 (see Portfolio Economics - Inside the S&P 500: Corporate Earnings and the Fiscal Cliff: Scenarios for 2013).

In Europe, there are many negative catalysts that could result in a tail risk event – chief among those are a Greek exit from the Eurozone ('Grexit') or a significant rating downgrade of a core sovereign. To us, Grexit remains the main tail risk event in Europe – while our European economists have said that the probability of Grexit is 60% in the next 12 – 18 months (see Euro Economics Weekly - Grexit — Delayed But Not Cancelled*), we are optimistic and believe that there will be much more accommodation from the core European sovereigns to avoid such an outcome.

In a way, the tail risk events that we see next year are very binary in nature and making prognostications in such circumstances can be dangerous. Having said that, we feel comfortable being on the positive side of each of those tail risk outcomes – our belief is that we should not undermine the political will to introduce reforms

when faced with truly ugly and dire consequences, even though there may be a significant period of posturing and rhetoric that keeps adding to the uncertainty.

So what does this mean for credit as these events unfold? At the end of the day, if indeed there is some partial solution to the fiscal cliff, and Europe manages another year of muddle through, we do expect spreads to tighten from here. However, the uncertainty around the nature and timing of any resolution will likely cause spreads to be very volatile over the next year. Monetary policy actions by central banks can help to dampen some of this volatility but not completely eliminate it. We also expect to see a "bifurcation" between the European and US economies if the fiscal cliff situation in the US is handled properly. While both regions have structural problems, the macro backdrop in the US continues to improve, aided by tail winds from the housing market. In contrast, the Euro zone is still in the early stages of a deleveraging cycle and its currently dysfunctional political systems, high unemployment, and inefficient labor force are not making the task any easier.

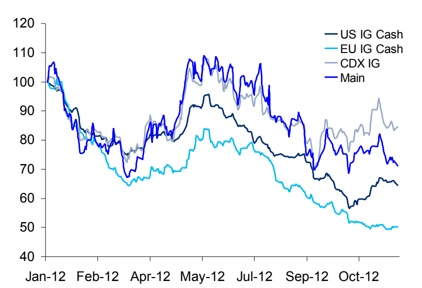
Stimulating Demand for Structured Credit

In the low rate, low default environment that we are forecasting for 2013, investors faced with the prospect of ever decreasing yields will have to consider alternatives – in other words, they have to either lever up or consider more illiquid investments such as real estate, private equity funds and so on. In such environments, structured credit is an attractive option for investors because of its ability to provide structural leverage. We are therefore optimistic in our belief that 2013 could be the year of a revival of sorts for structured credit.

To some extent, investors are aware of this and we have been seeing renewed interest in the investor community to use structured credit as a way to express levered macro views. This is particularly evident in the rally in CLO market volumes and prices, and in the (standardized) index tranche and option markets.

On the cash side, the CLO asset class looks particularly favorably positioned for a low yield, low default environment. CLO issuance in 2012 has easily surpassed all predictions and looks set to break post crisis records in 2013, even though spreads in CLO tranches have lagged their counterparts in other cash asset categories. This underperformance, combined with better subordination and tighter documentation under the new CLO 2.0 standards makes this asset class extremely attractive for a wide spectrum of investors from banks and insurance companies (mainly in the top rated part of the capital structure) to hedge funds (more in equity or junior mezzanine tranches). Going forward in 2013, as supply ramps up, we expect significant cash inflows into CLOs, particularly in the highest rated senior tranches and the equity tranches, which are the most attractively priced part of the capital structure.

Figure 4. Credit Spreads (Jan 3, 2012 = 100)



Source: Yieldbook, Markit, Citi Research

In synthetics, we are beginning to see investor activity in equity and junior mezzanine index tranches, as well as in the options markets where low or negative cost spread trades for expressing macro views are becoming more main stream. We expect this trend to continue and possibly accelerate into 2013 as more yield starved investors begin to appreciate the attractive risk reward characteristics of structurally levered constructs.

As we look back on the previous year, the underperformance of synthetic credit versus cash continues to stand out (see Figure 4). We believe that there is a distinct possibility of synthetic spreads reversing this underperformance should synthetic bespoke CSOs make a comeback in 2013. The conditions for such a comeback are

in place – low yields in cash assets and significant inflows into credit funds that have produced a wall of cash which needs to be invested. In particular, we believe that the demand for short duration synthetic CSOs could stimulate activity in this area, given the lack of short duration cash products (e.g. CLOs or CMBS) in the structured space.

All is not bullish on the demand side, however. New regulatory capital rules can act as significant headwinds for investors, especially banks and insurance companies. We provide a brief summary in Figure 5 below. In Europe, risk retention rules that mandate CLO sponsors to retain some portion of the equity tranche have made it difficult for banks and insurance companies to invest in CLO tranches even though, under Basel, CLO senior tranches are very attractive. Bank demand has the potential to be affected somewhat also by bank liquidity and funding-based risk measurements, and, in the US, by any incremental FDIC-related insurance premium. Also, in the US, capital charges to be based on the amount of subordination below tranches unlike in Europe, where capital charges remain ratings based. This methodology can dampen demand for cash (and synthetic) mezzanine tranches from US bank investors even if the bonds have investment grade ratings.

Figure 5. Regulatory and accounting headwinds on structured credit demand

Regulation	Investor	Product	Impact	Timing
European CRD II and CRD III	European Banks	Cash CDOs and tranches	Risk retention for investing in CDOs; increased capital charges and look-through requirements for resecuritizations; banking book treatment for all securitizations excludes European banks from most US CLOs	Already in force
Solvency II	European Insurance companies and perhaps pension funds	Cash CDOs and tranches	Risk retention for investing in CDOs; increased capital charges and look-through requirements for resecuritizations; significantly higher capital charges than CRD 2 and 3 which are rating- and- maturity dependent. Uncertainty is keeping many insurers away from structured credit	Not until 2015 and possibly later
Market Risk Capital Rule using Simplified Supervisory Formula Approach (SSFA) for Basel 2.5	US Banks	All Cash CDOs and tranches	Senior CLO and TruPS CDO very attractive; junior bonds, levered high quality risk (such as IG CSOs), and deals considered resecuritizations (such as CLO 1.0) penalized.	Starting 2013
FDIC Assessment Large Bank Pricing	US Banks	CLOs	Loans and loan securitizations (including CLO AAA tranches) will be considered 'higher risk' assets for US banks to calculate FDIC insurance assessments	Starting 2013
US GAAP and IFRS	All buyers	Cash CDOs	Under IFRS 9, it is likely that senior tranches can continue to be held at amortized cost (and not at fair value), but many more tranches will have to be held at fair value potentially introducing greater P&L volatility	Likely 2014, maybe later
European CRD IV (Basel III)	European Banks	All CDOs and Tranches	The position of CLOs in the banks' calculation of short-term liquidity (LCR) and net stable funding ratio (NSFR), even if prior drafts have talked about the highest-quality ABS bonds being considered as liquid assets (SME CLOs are considered repo-eligible, for example). Greater capital for counterparty risk will reduce pool of eligible protection that banks will buy.	Still being debated
FATCA	All buyers	CLO 1.0	Withholding tax on non grandfathered loans (loans issued or modified after Jan 1 2013) in non-compliant CLOs (CLO 1.0s)	Jan 2014 for interest, Jan 2017 for principal/sale proceeds
Volcker Rule	All buyers	All CDOs	Could reduce liquidity of products because of lower position-taking by dealers	Timing unclear

Source: LSTA, Citi Research

Overall, however, we think that the demand for yield is likely to trump the headwinds from the new regulatory regimes. In particular, we see the cash CLO and credit options markets poised for growth in 2013, as they become the instruments of choice for investors desperate for yields.

But What About Supply?

The new regulatory regimes that come into effect in 2013 can potentially have significant effect on the supply side of the structured credit equation. Even if there is huge investor demand for structured credit products for reasons outlined earlier, we envisage potential headwinds on the supply side of the equation from new regulations in Europe and the US (Figure 6). Probably the biggest threat is risk retention rules, which is already in force in Europe and is keeping European investors away from most US deals. Even though US risk retention rules, introduced by the Dodd Frank Act, should not apply to arbitrage CLOs as loans are bought in open market by third-part managers (and not originated to be distributed in a securitization like most ABS issues), there is a fear that the legislation will not have a strong-enough carve-out for CLOs. The other types of regulatory pressure are higher disclosure and regular reporting requirements such as the CFTC Commodity Pools proposals, and proposals that are aimed at reducing proprietary trading activities, namely “Volcker rules” which could make CLO formation more difficult.

Figure 6. Regulatory pressures on structured credit supply

Regulation	Investor	Product	Impact	Timing
Dodd-Frank Risk Retention	US Managers	US CLOs	Regulators have indicated that the CLO manager should retain 5% of the face value of the CLO notes	Rule expected 2013, implementation from 2015
SEC Conflicts of Interests	US Banks and US Managers	All CDOs and Tranches	Likely to be resolved, but could stop banks from providing warehousing and other services such as hedging. Could also prevent large managers from participating, as they may have short positions in other areas of the firm	Maybe 2013
Volcker Rule	US Banks	All CDOs and Tranches	A ban on sponsoring PE funds or hedge funds could leave banks in a difficult position to provide warehousing or buying loans for a CLO and making markets in CLOs it structures	Timing unclear
CFTC Commodity Pools	US	All CDOs that include swaps, and Tranches	Registration requirements for transactions that are considered commodity pools (such as a repackaging of high quality assets with a swap on a broad based credit index)	Starting 2012
Market Risk Capital Rule using Simplified Supervisory Formula Approach (SSFA) for Basel 2.5	All banks	Tranches	Providing bespoke CSOs will become inefficient because of higher capital for market risk due to stressed value-at-risk and a comprehensive risk measure (CRM) for correlation trading. Internal CRM models will require supervisor approval and will take substantial implementation effort	Starting 2013
CRD IV	All banks	Tranches	Greater capital for counterparty risk, measured by credit valuation adjustments (CVA). Will reduce availability of leverage to lower rated counterparties, and on many securities (such as resecuritizations) to all counterparties	Likely in 2013, perhaps later
CFTC Rules on Swap Recordkeeping, Reporting, Confirmation and Trading Relationship Documentation	US swap dealers	Tranches	Rules prescribing the records to be maintained by swap dealers and the required reporting plus rules related to the confirmation, processing, netting, documentation, and valuation of all swaps	Starting 2013
CFTC Swap Transaction Compliance Requirement	US swap dealers	Tranches	Detailed procedures on documentation of the credit support arrangements between counterparties, such as margin requirements and eligible assets for margining, and collateral protection for uncleared swaps	Likely 2013
Regulation AB	All banks	CLOs	Detailed procedures, increased after Dodd Frank Act, on disclosures about collateral performance in cash securitizations	Likely 2013

Source: Citi Research

For cash CLOs, there are collateral side issues too, which we will elaborate in the next chapter. CLO managers are competing for supply with leveraged loan ETFs and other loan funds for a loan market that is not growing in terms of net new issuance.

Higher market risk capital and counterparty capital charges are putting an even greater regulatory headwind on the synthetic side of the business, though there are also several niche opportunities. Moreover, the regulatory environment, which is partly a result of the recent financial meltdown, has led to the withdrawal of ratings-driven super-senior protection sellers such as monolines from the market. Nonetheless, synthetic short-dated bespoke CSOs could see a partial revival in

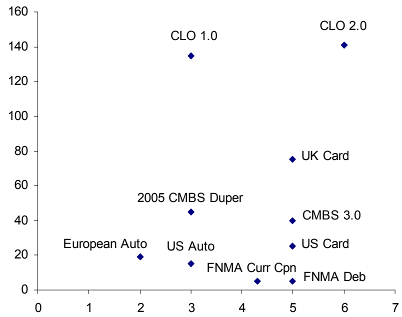
cases where dealers have approved regulatory models and can show that the new risk capital calculations are low enough to earn an attractive return for risk. On the demand side, shorter-dated deals may appeal to structured buyers who cannot find comparable spreads for similar maturities in the cash markets.

In an environment where vanilla products are trading in their bottom quartile over a two-year period, investors will be looking towards illiquid products as well as some form of leverage to reach their yield targets. Structural, non-recourse leverage such as junior synthetic or CLO tranches is one such investment. The other way of achieving leverage is mark-to-market such as longer dated repo transactions or total return swaps.

Given the experience of many mark-to-market levered buyers during the financial crisis, many will be loath to return. On the supply side, though, banks have more cash at their disposal. The favorable regulatory capital treatment given to qualifying structured repos could lead to more investor activity in certain types of CLOs and other cash structured assets. In particular, IG rated CLO tranches that do not contain re-securitizations qualify for structured repo treatment by banks. Thus, the higher rated tranches of CLO 2.0 securitizations would be eligible for this type of treatment, whereas CLO 1.0 tranches would not because they often contain securitized tranches in their collateral. Likewise, banks will be more willing to provide total return swaps on senior secured bank loans – with a sufficient haircut and margins in place, funding the senior debt will be efficient on a return for regulatory capital basis.

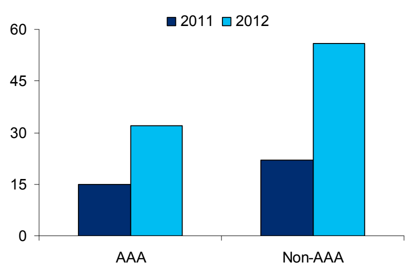
In summary, we think that the structured credit business has the potential to flourish in certain niche areas, given the suitability of such products in the current macro environment and certain regulatory changes that do incentivize dealer banks to be a source of the product.

Figure 7. The Triple-A universe: spreads (y-axis, bps) versus average lives (yrs)



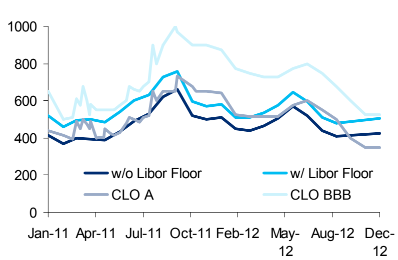
Source: Citi Research

Figure 8. Increase in the number of CLO primary investors from 2011 to 10/2012



Source: Citi Research, internal placed deals only

Figure 9. Relative value between CLO mezz and loans: spreads, bps



Source: Citi Research

CLO Outlook

Issuance to rise

There is only so much time that a product can stay cheap compared to its peers. We think CLO spreads, especially the senior parts of the capital stack, are at a point where the entry of new investors is likely to correct the cheapness. In Figure 7 we classify many triple-A asset types by their spread and weighted average lives. The figure shows why CLOs should appeal to more senior investors. In addition to the spread pick-up, banks should find CLO 2.0 senior bonds appealing because of their newer structure with enhanced subordination, and collateral pools which are not considered resecuritizations because of the absence of CLO buckets. This makes the return on regulatory capital attractive for banks, many of whom are entering the CLO market for the first time. (See Bank Involvement Will Continue, Global Structured Credit Strategy, and US Bank Capital Rule on Structured Credit). As such, we have seen an increase in the number of bank investors mainly from the US regional bank sector, but we expect to see even more such smaller entrants from the US and Asia.

The other parts of the capital stack have also seen increased investor interest (Figure 8). The increase in demand, with many more non-credit crossover investors, would certainly lead us to expect a substantial increase in CLO supply but because of net new loan supply limitations (see Speculative Grade Credit Weekly – 2013 High Yield and Loan Outlook), we are forecasting only a 20% increase. We think 2012 will end with a total issuance of close to $50bn of CLOs of broadly-syndicated loans. Our 2013 forecast is $60-65bn.

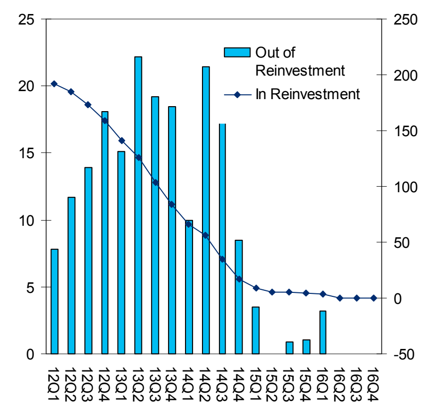
Triple-As and triple/double-Bs to tighten

We expect some tightening though not as much in the mezz part of the capital stack as in the senior bonds. A significant part of the tightening in mezz bonds has been driven by real-money investors such as insurance companies and funds. Many of these investors have sticky yield targets and, after the last round of spread compression, will be unwilling to drive in spreads further. Moreover, the difference between CLO mezz (single-As and triple-Bs) and the underlying loans has declined substantially (Figure 9) and may be less of a draw for high-yield funds to invest in structured assets.

We anticipate that in the first 6 months of the year, new issue spreads will tighten. We believe triple-As will be in a 100-120bp range (currently 140bp area), and we see more tightening in the triple-B and double-B area than in the single- and double-As. Our spread target for new issue during the same time period, in decreasing order of seniority, are 190-210bp for double-As (currently 240bp area), 300-320bp for single-As (currently 340bp area), 450-470bp for triple-Bs (currently 520bp area) and 650-670bp for double-Bs (currently 725bp area). Separately, we believe that shorter-dated triple-As may outperform new issue even more as more investors look for structured assets as cash substitutes. Amortizing triple-A spreads could trade significantly through 100bp in our opinion.

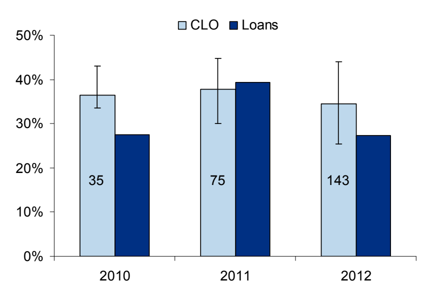
Finally, we have ignored the possibility of the return of leveraged buyers of senior tranches in our forecasts as we feel that most investors are reluctant to take leverage on margin at this stage. Moreover, we believe most dealers are unwilling to inflate their balance sheets right now. If the situation changes, this could magnify the scale of the tightening.

Figure 10. CLOs exiting their reinvestment period, $bn



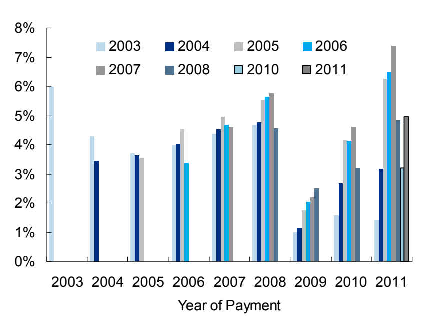
Source: Citi Research

Figure 11. Median amortization rate of CLOs exiting reinvestment periods in 2009, 2010 and 2011. Also shown is number of CLOs in each year of amortization, and bars showing 25th and 75th percentile



Source: Citi Research, Intex, S&P LCD

Figure 12. Quarterly US distributions by year of origination



Source: Citi Research, Intex

Prepayment creates a AAA curve

A development that has become apparent only over the last few months is the steepening of maturity curve for CLO bonds. Nowhere is this more obvious than in the senior bonds. First, many CLO 1.0 portfolios will be exiting their reinvestment period over the next few years (Figure 10) leading to triple-A bonds being repaid. For a long while, triple-A investors had feared that managers would use the lower financing costs of older deals to use every opportunity to continue reinvesting well after the reinvestment period, and did not differentiate between vintages.

The reality is, however, a little different. As Figure 11 shows, most CLO 1.0s are amortizing at a healthy pace, reasonably consistent with the broader loan market. First, many collateral pools are hitting their weighted average life and asset maturity tests which prevent them from buying longer-dated assets. Second, upcoming regulation on possible taxation of loans in older deals (see FATCA cancels equity extension value, Global Structured Credit Strategy) may accelerate that deleveraging as managers choose not to use flexibility in reinvestment language to buy new loans post the reinvestment period.

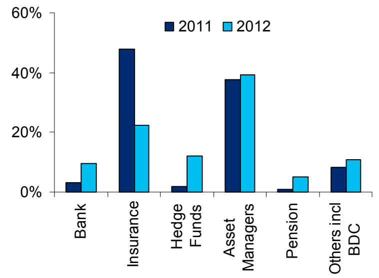
Investors may also be hoping that equity will call deals, as the economics of remaining invested in an old deal weakens. Either CLOs can refinance cheaply as CLO liability costs compress (as 2008 deals did in 2011), or deals exit their reinvestment period and equity investors realize that their payments are declining because of decreasing leverage and higher funding costs as triple-As get repaid. For example, we estimate that of the 40 deals that became static in 2009, 13 have since been called, while of the 62 deals that became static in 2010, 12 have been called. This run rate implies that we should see more of the approximately 330 deals which became static in 2009-2012 get called in the next couple of years, in addition to the natural amortization rate that we are seeing as loans get prepaid.

The shorter maturity, amortizing CLO 1.0 triple-A appeal to money market funds who are looking for high quality assets as cash substitutes. Conversely, banks would prefer to own newer issue CLO 2.0 bonds for better capital treatment.

Vintage equity with right documentation

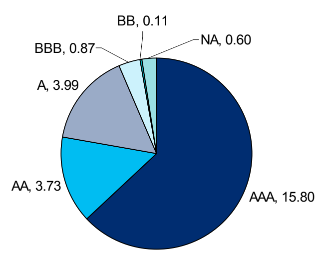
The rally in CLO 1.0 equity prices makes us wary of the prospective returns (Rally puts focus on CLO 2.0 and BBs, Global Structured Credit Strategy) but it is difficult to argue against deals which can maintain their low cost leverage for an extended period because of their documentation. Structure and manager differences do have a strong effect in CLO amortization (Global Structured Credit Strategy) which is quite well illustrated in the dispersion seen in Figure 11. Secondary market equity investors should consider this fact (as well as risk factors such as loan spreads tightening, or the call risk of CLOs) as they forecast future cashflows of their prospective investments. Given the spread requirements of CLO 2.0 pools and the yield bogeys of high yield funds, we do not think that loan spreads will shrink dramatically in the short term, even if the benefit of Libor floors diminish as rates start to rise. As such, investors who can find opportunities in legacy CLO equity, and be mindful of the risks and structural differences, may enjoy the high distributions that are being achieved by many deals from these vintages (Figure 12). A more predictable source of cashflows, however, will be new issue deals where there is more consistency in language, and equity holders still have the right to call the structure should liability spreads tighten.

Figure 13. Buyer base for CLO 2.0 non-AAA debt classes



Source: Citi Research,, internal placed deals only

Figure 14. Insurance CLO holdings, by original rating, $bn as of 08/12



Source: Bloomberg, Citi Research

Figure 15. Largest CLO Purchases during Q3 by insurer and rating

	AA/AAA	A	<=BBB	Total
AIG	124.4	88.1	32.2	244.7
Fidelity	136.5	45.5	-	182.0
AFG	164.6	14.2	-	178.7
AEL	-	85.1	52.9	138.0
Genworth	99.8	29.7	-	129.5
New York Life	69.6	-	-	69.6
Prudential	68.3	-	-	68.3
Metlife	51.3	-	-	51.3
Guggenheim	-	15.2	21.8	37.0
Mass Mut	29.9	-	-	29.9
TIAA	25.0	-	-	25.0
Mutual of Omaha	22.5	-	-	22.5
Athene	-	7.3	14.4	21.7
Total	**791.8**	**285.0**	**121.4**	**1198.2**

Source: NAIC, Citi Research

More funds, and more new managers

We believe more funds will be involved in next year's issuance. Insurance companies led the growth in CLO investing as the CLO 2.0 market restarted, but their share of the bigger new issue volume has since dropped (Figure 13), even though the total money invested has not shrunk significantly. Part of the reason for the increased share of third-party managers (hedge funds and asset managers) is the lack of yield opportunities elsewhere (especially after the rally in secondary private-label mortgage bonds). The other reason is that many new investors such as smaller insurance companies, pension accounts and smaller banks will not make direct investments, but will allocate their investments to external managers.

As a sign of investor appetite, we also see more first time managers, and very quickly, first-time managers becoming repeat issuers as such institutions price their second deal in 2012. Examples of first time managers, most of whom have previous CLO experience in other institutions, are Onex, Aegon, Crescent Capital, KVK, Valcour, Sound Point, Matlin Patterson, and Providence. Moreover, two of these - Onex and Crescent Capital - have already done two deals this year, and other first-time issuers are marketing their second deal. In some cases (such as Anchorage Capital and Och-Ziff) existing hedge fund tranche investors with high yield experience, are turning their hand to CLO management. We see this development, that is, CLO investor-turned-manager, as a growing niche.

More insurance companies in junior mezz

Despite the smaller share of insurance companies in the bigger new issue volume, the largest insurers continue to add to their holdings. This makes sense as, despite the tightening, CLO bonds look attractive relative to many structured assets and corporate bonds. However, there is an interesting pattern that we see in recent investments. We always knew that all insurance companies did not see value at the same part of the capital structure. Looking at the total universe of insurers in Figure 14, we see that investors are focused on the senior, and senior mezz, parts of the CLO capital stack. However if one drills down into the holdings of different companies, there are striking differences. The seven largest holders (MassMutual, Hartford, Prudential, AIG, Metlife, New York Life and Allstate) each have portfolios that exceed $1.5 billion, but it is only Hartford, Prudential and New York Life that are almost exclusively focused on the triple-A part of the capital stack. AIG is much more present in the single-A universe, whereas Allstate's holdings are more balanced among triple, double and single-A bonds.

Recent purchases (Figure 15) have delved deeper into the capital structure than the historical pattern shown in the figure above. About 10% of the purchases were triple-B and lower, though bought by a small part of the universe. We think the reason for this is that insurers have a regulatory incentive to buy more junior bonds at discount prices (Global Structured Credit Strategy). Starting last year, insurance regulation (NAIC) ratings are adjusted based on price. For example, if a life insurance company were to look at a security with current rating BBB, they would consider the rating along with the purchase price. A triple-B rating is considered as NAIC2. But if it is trading at $97.88 or below it becomes NAIC1. The capital set aside decreases from 100bps (NAIC2) to 30bps (NAIC1). In addition, the charge is applied on a lower notional (price of a bond trading at discount). Needless to say, the insurance company would need to be comfortable with the credit risk of the bond; the regulatory incentive would then be a sweetener.

Collateral drift in new deals

Though CLO 2.0 is still keeping up its higher tranche subordination and absence of structured finance buckets, the weakening in collateral characteristics needs to be watched. With a few exceptions, the structural homogeneity that characterized the first rush of v2.0 is still being maintained.

So what are the most salient changes – small as they are? First, the pressure to boost equity returns, in an environment of tighter loan spreads and limited loan issuance, has led portfolios to have a much greater percentage of single-Bs and lower double-Bs compared to the beginning of the year. Some recent deals such as ALM VII were expected to have only 10% of their loans in the double-B category. Six months previously, ALM VI was targeting a 20% double-B bucket. With that increase, deal average rating constraints have also dropped, and it also more common to see a 90-92.5% minimum first-lien constraint rather than 95%. Investors also point to the higher covenant-lite bucket, and its increased size (many recent deals have as much as 50%). Covenant-lite is a complex issue on which it is unfair to make generic comments. On one hand, it may be that the weakest companies need to have covenants to get their borrowing done. On the other hand, private equity sponsors of LBO deals, which may be weaker in credit quality, will be better positioned to negotiate covenant-lite deals. It is difficult to statistically prove either side of the argument as covenant-lite deals are not better-rated on average, but do appear to have suffered no worse during the credit cycle. Finally, there were two deals done this year (Goldentree Credit Opportunities 2012-1 and Mercer Field CLO from Guggenheim) with much higher bond buckets, and lower triple-A attachments (the Goldentree deal has only a 50% minimum for senior secured loans).

Figure 16. Two examples of deal changes in last 12 months (noteholders need to look at actual deal indentures for full conditions)

	CIFC		Ares	
	CIFC Funding 2011-1	CIFC Funding 2012-III	Ares XXIV CLO	Ares XXV CLO
Closing Date	Jan 2012	Jan 2013	Sep 2012	Jan 2013
Amendment to extend asset maturities	Not beyond legal, and life test must be maintained, or improved	Not beyond legal, and life test must be maintained or improved unless credit will default	Limited restrictions as manager can extend loans without WAL limits	Limited restrictions as manager can extend loans without WAL limits (but not beyond legal)
Reinvestment Period	3	4	4	4
Min Senior Secured Loans	95%	90%	95.00%	92.50%
WARF Exptd / Covenant	2234 / 2550	2660 / 2725	2680 / 2840	2585 / 3190
WARR Exptd / Covenant	NA / 44%	50.1% / 48.6%	49.0% / 44.5%	49.3% / 43.0%
WAS Exptd / Covenant	3.76 / 3.75%	4.34% / 4.00%	4.43 / 3.60%	4.15 / 4.10%
WAL Exptd / Covenant	5.7 / 6.5	5.5 / 7.5	NA / 8	5.6 / 8
Max Cov-Lite loans	50%	45%	30-40%	50%
Expected Ba/B %	26.6/ 73.3	9.9 / 89.6	18.5 / 79.5	14.1 / 84.7

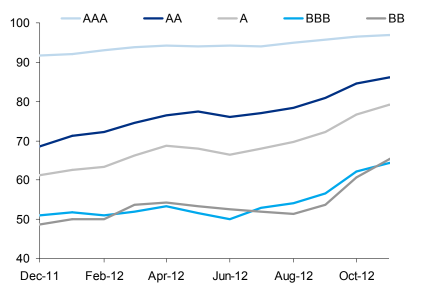
Source: Citi Research, Moody's pre-sales

The second change in CLOs is that loan amendment terms in a few deals have become looser. In ALM VII, for instance, the manager can amend a loan if it believes that the amended loan has greater economic value, even if the amended maturity is greater than the legal life. However it must make a reasonable effort to sell the loan in 10 days. In the latest CIFC deal (CIFC Funding 2012-II) the manager can make similar amendments (that is, assets extending beyond the CLO legal life, or those that worsen the average life test) if it believes that the amendment will prevent a default. In other deals such as Jamestown CLO I from 3i Debt Management and Ares XXV CLO, the manager can allow amendments during the reinvestment that do not satisfy the average life test, and thus lead the test threshold to creep higher. In many new deals, active noteholder consent is not required for amendments. Compare that with older deals where either no amendment is allowed, or noteholder consent is often needed.

Euro and middle-market CLOs

Better prospects for Euro secondary mezz

Figure 17. Euro CLO price rally

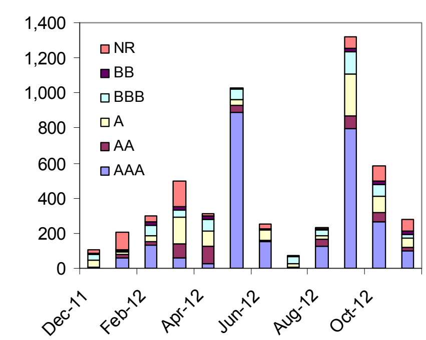


Source: Citi Research

The last 12 months has seen a significant price rally in the price of Euro CLO secondary bonds (Figure 17) which has got many investors excited about the prospects for new issuance. However the biggest impact of the rally was increased secondary supply in the last few months of the year (Figure 18) with several early investors taking profit as prices rose. Given the lack of depth in the market, the supply dampened the rally in the last month of the year as shown in the figure.

For the moment though we think Euro CLOs will remain an illiquid, high-beta secondary product susceptible to the gyrations of a risk-on, risk-off market. Senior bonds, which we had recommended earlier in the year, have rallied substantially and are at spread levels not far from US bonds and, in our view no longer reflect the greater liquidity risk. The mezz bonds (single-A and triple-Bs) reflect much better relative value versus US CLOs and versus other structured assets, but, at the risk of sounding like a broken record, the adage that the devil's in the detail holds much more for Euro CLOs than for US ones.

Figure 18. Euro CLO BWIC by original rating, EUR mil



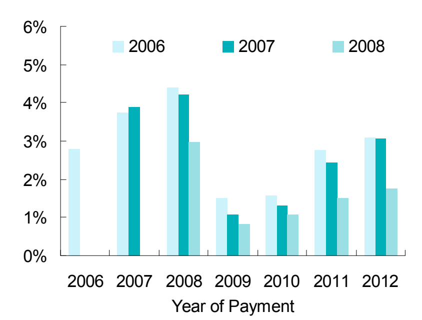
Source: Citi Research

Euro CLO Equity: longer cashflows best case

While secondary debt holders have to contend themselves with low coupons set during the 2006 / 2007 years, Euro equity is benefiting from higher cashflows (see our recent note European CLO Equity: On the Brink) with more deals passing their cashflow triggers compared to the post crisis 2009-2010 period, and benefiting from somewhat higher loan spreads. The combination has led to a recent increase in the average quarterly payments that deals have received (Figure 19).

Looking forward, we think the recent rally in some of the performing equity is justified by a combination of increasing dispersion among manager performance (see our piece above) and a longer duration of loan cashflows. A combination of amend-to-extend activity has pushed out the maturity wall (Figure 20) so that CLOs should have a higher portfolio average life in many CLOs compared to some time ago. Though senior low-coupon tranche holders will be unhappy at this extension, the ability of Euro CLOs to extend loans, unfettered by specific A-to-E restrictions, is good for existing borrowers facing a financing cliff. It can also be good for CLO equity holders in deals that are passing their diversion tests – such deals can benefit from their lower leverage cost for a longer period.

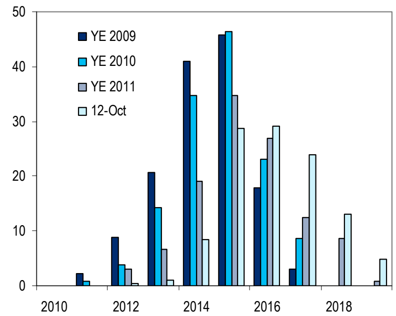
Figure 19. Quarterly Euro CLO distributions by vintage and payment year



Source: Citi Research

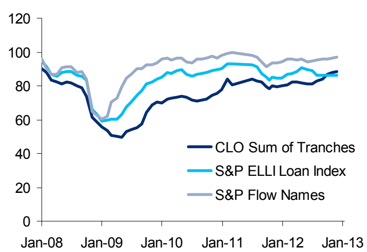
As a risk factor, though, investors should also note the increased level of prepayments which hit a three-month high in the month ended Nov. 1 – up sharply from the two-year low observed in September. Although institutional new issuance during the last three months has outpaced repayments, since 2009 the opposite has more typically been the case. If a CLO has restrictions in its documents that prevent it from reinvesting such prepayments – for example, because the tranches are downgraded beyond a certain level – equity holders are hurt by the prepayments. Also worth pointing out is the fact that there is likely to be adverse selection as the best borrowers refinance, and the less creditworthy ones have little option but to seek A-to-E agreement. Since it's a tough job finding the deserving loan candidates for extension, and simultaneously a CLO structure that does not delever prematurely, investors need to do significant due diligence or trust a third-party manager.

Figure 20. Loans refinanced or amended into a longer maturity



Source: S&P LCD

Figure 21. Difficult arbitrage – CLO price lower than loan prices



Source: Citi Research, S&P LCD

Figure 22. Four middle-market CLOs in 2012

	Cerberus Offshr	TICC CLO 2012-1	NXT Capital 2012	A5 Funding
Moody's WARF limit	4800	3250	3350	4800
Average spread limit	7.00%	5.25%	4.75%	7.00%
Average life, yrs	4.0	8.0	7.5	5
Reinvest. period, yrs	1	4	3	1
First-lien min	80%	75%	97%	80%
Triple-C bucket	n/a	20%	17.5%	n/a
Subdn below senior	52%	45%	42%	52%

Source: Moody's

Figure 23. Distribution by rating of broadly syndicated and middle-market loans, % (2011 issuance $bn issuance in parentheses)

	>=BB	Split BB/B	B	Split B/CCC and NR
Broadly-synd (231)	34.3	18.1	33.1	14.4
Middle-market (11)	0	1.1	43.5	55.4

Source: S&P LCD

Arbitrage still weak for primary

The rally in Euro CLO secondary prices should have helped the prospects for CLO new issue as primary spreads tend to follow secondary, but a rally in loan prices have diluted some of the benefit. The increased level of repayments that we mentioned in the section above has largely come from refinancings – typically through the bond market - and many high yield participants expect that the rate will not slow. S&P also make the point that, along with the refinancings, the market for secondary buyouts has also collapsed further reducing the supply of loan collateral. There is therefore the twin problem of a smaller collateral pool and higher loan prices. Looking at Figure 21, we see that loan prices, especially for the more liquid S&P Flow Names are significantly above where tranche prices trade.

To re-ignite the arbitrage, one of two things is needed. Either CLO liability spreads need to tighten further, which is possible as more investors look for relative value in structured credit. Alternatively, loan spreads need to widen. It is possible that this could happen as many Euro CLOs leave their reinvestment period and private equity sponsors look for new buyers. To date, though, total Euro loan spreads with no Euribor floors, are significantly below those of new US loans.

Middle-market to remain a significant niche

Middle-market issuance for 2012 was about $4bn, which was a little less than 10% of the total issuance for the year. Looking at a sample of four deals (Figure 22) we see significant differences among them. Cerberus Offshore Levered Fund, for example, is Cerberus' second deal of the year, the first being A5 Funding. These deals have worse-rated collateral than their peers (for example those from TICC and NXT Capital), though Cerberus deals have shorter reinvestment periods. For debtholders, another negative feature is that middle-market deals can also have significant second-lien and triple-C buckets as shown in the deal comparison table (here too deal differences exist, with managers like Golub Capital and NXT Capital working with a higher 95-95% first-lien bucket). The diversity in portfolios reflects as much the manager's sourcing strengths, as it does on the broad definition of the term "middle-market". Compared to the broadly syndicated universe, the middle market universe has a similar single-B share (Figure 23), but a bigger triple-C and unrated share (which may be shadow-rated by agencies). The manager decides the degree of leverage (as measured by subordination below senior bonds), collateral spread and rating that suits its investment style and return targets.

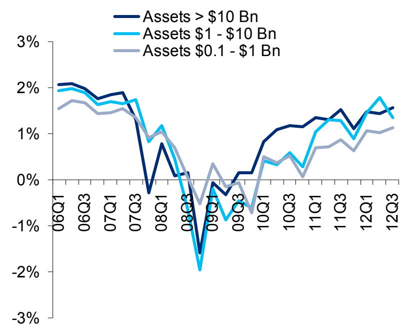
Middle-market deals have created interest with some CLO mezz investors because of their wider spreads. Many investors find it difficult to simultaneously meet their yield and rating targets after the recent spread rally and are looking at alternatives. Middle-market deals can provide that, but many investors dislike the fact that most of the issuers are not household names, and the deals can often have a long ramp-up period (in addition to the points we made above). The triple-A bonds of Cerberus deal, for example, have higher subordination and a coupon of 250-275bps over Libor which is well above that for a broadly syndicated loan deal. Where the collateral is cleaner, the pick-up will be less but that will suit more conservative investors. When Golub Capital CLO 14 priced in October, for example, the single-As, triple-B and double-Bs priced at 410bp, 575bp and 775bp respectively which were about 75-100bp wide to broadly syndicated deals from the same month. Overall, though, we think the low issuance volume of loans (total issuance during Q1-3 was only $5bn compared to $11bn in 2011, according to S&P) will keep middle-market CLOs as an interesting but small niche.

Bank TruPS – regulation helps credit story

Even small bank fundamentals improving

Banks, both big and small, continue to be in better shape, compared to even quite recent periods. According to the FDIC, the number of failed institutions has dropped rather substantially from 157 in 2010 to 92 in 2011 and to 32 in 2012, at the end of Q3. Moreover, the number of FDIC-insured "problem" banks has also declined over the same period. At the end of Q3 2012, this number registered at 694 banks, compared to 813 in the previous year. Importantly, we note here that the average asset of such banks is $0.38bn; thus, the picture is improving for even the smaller banks, exactly the type of borrower one finds in TruPS CDO pools. To further illustrate this point, FDIC data (Figure 24) shows that in terms of return on assets, even the small banks have steadily improved. These improvements can be observed in a combination of rising total loan balances, falling non-current loan balances, and declining net charge-offs.

Figure 24. Quarterly average pre-tax return on assets by FDIC bank asset size

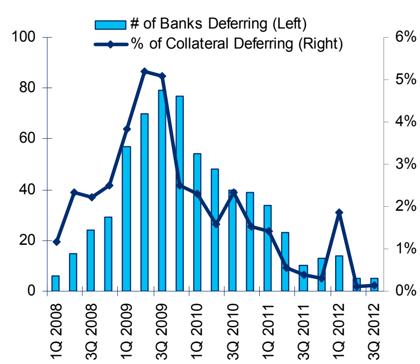


Source: FDIC

New Deferrals Down, New Cures Up

Reinforcing the stabilization story, a recent Fitch publication showed that the number of new defaults and new deferrals for banks in TruPS CDOs through end of October have come down to 18 and 27, respectively, from 37 and 72 in the same period last year. The average size of new deferrals has also decreased, when compared to the numbers from a year earlier. Fitch data (Figure 25) further shows how this decline is not a one-time event, but consistent with the downward trend we've seen in new deferrals since the peak in 2009. In terms of cumulative defaults and deferrals, 2012 was the first year that we saw a decline, albeit small, in the total number of deferrals and defaults. Finally, it is particularly encouraging that the number of TruPS issuers who cured a previous deferral and have resumed their interest payments, continued to increase this year to 39, from 33 in 2011. If these trends of declining deferrals and defaults and rising new cures persist into 2013, we find a convincing story for the TruPS CDOs. The argument for senior TruPS CDO tranches becomes even stronger from a regulatory capital perspective.

Figure 25. New deferring banks



Source: Fitch

High return on US regulatory bank capital

US banks, after the Dodd-Frank Act, have market risk capital rules for securitized products that are not based on credit ratings from the agencies but are instead based on a formula (or internal models for approved banks). The approach (see US Bank Capital Rule on Structured Credit) starts with the risk capital for the unsecuritized collateral and derives the capital charge for the securitized asset based on the tranche subordination and thickness, and the amount of defaulted assets still in the pool. As a result, downgraded bonds with high notional subordination below them are treated favorably. Moreover bonds which are considered resecuritizations are penalized (such as CLO 1.0). This methodology is favorable for TruPS CDO senior bonds, since many are rated non-investment grade but have high subordination because the collateral pools are non-diversified and subordinated bank debt. In our simplified calculations for a recent BWIC of TruPS first-pay bonds in Figure 26 (the numbers are only illustrative and investors should discuss with internal counsel) we see that investors earn a higher margin for the same regulatory capital (20% RWA floor, equating to a 1.6% capital) than the 140bp DM for senior CLO 2.0 bonds. The last two bonds in the figure have, as expected, higher charges because of higher delinquent baskets and a small CDO bucket. We think bank investors who understand the credit risks in this illiquid asset class should benefit from the improving credit story and the regulatory incentive\

Figure 26. Comparison of spreads and our expectation of regulatory (SSFA) capital for some TruPS bonds in recent BWICs

Bond	Assumed Price	WAL (yrs)	DM (bp)	SSFA Capital*
TRAP 2003-2A A1B	78	12.6	365	1.6%
PRETSL XV A1	66	13.3	480	1.6%
ALESC 2A A1	78	12.7	320	1.6%
ALESC 3A A1	78	9.1	415	1.6%
PRETSL XIV A2	46	21.5	585	5.5%
PRETSL VII MEZ	45	17.1	550	39.8%
PRETSL XVIII A1	72	10.2	510	32.7%

*Simplified calculations for SSFA based on assumption that bank TruPS are 100% RWA (8% capital) and defaulted and delinquent issuers have a 50% loss. Assumptions for prepayment, default rate and loss post-default for DM calculations are 0%, 2% and 90% respectively.

Source: Citi Research

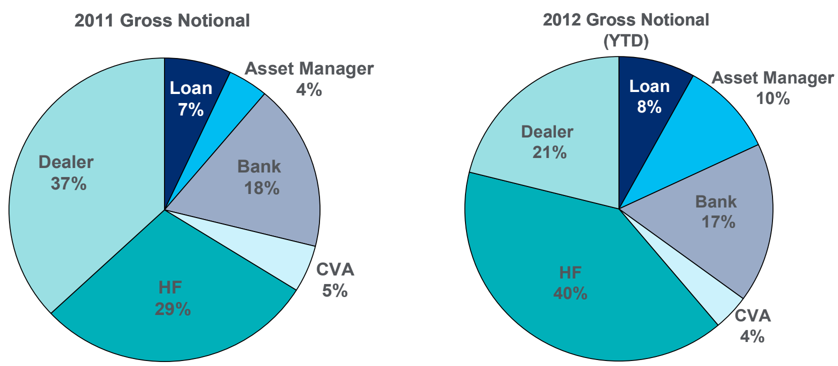
Credit Option Markets – Maturing Slowly

A Broader, More Liquid Market

Investing in options is not suitable for all investors. Please see the disclosures concerning the risks of investing in options below and discuss with your Financial Advisor whether this particular options strategy is suitable for you. Note that all option prices are indications, based on intraday prices as of 11 December 2012. Interested investors should contact our trading desk for updated price and liquidity information. Also, complex option strategies may entail higher commissions costs.

It is now fair to say that the credit option markets have finally come out of their infancy. During the past year, bid ask spreads in option markets have reduced dramatically and the client base in the option markets has also evolved. In particular, what stands out is the increased participation of (real money) asset managers in an asset class that was more of a domain for hedge funds and dealers (see Figure 27). We expect this trend to continue – indeed, in our conversations with investors, we are increasingly seeing interest from asset managers in using credit options as an asset class, both for hedging tail risk as well as alpha generation. While the credit option markets are relatively smaller in size compared to the equity or FX option markets, the increased liquidity and broader participation from the different investor classes lead us to believe that it is on the right path.

Figure 27. Increased Client Participation in Credit Option Markets



Source: Citi Research

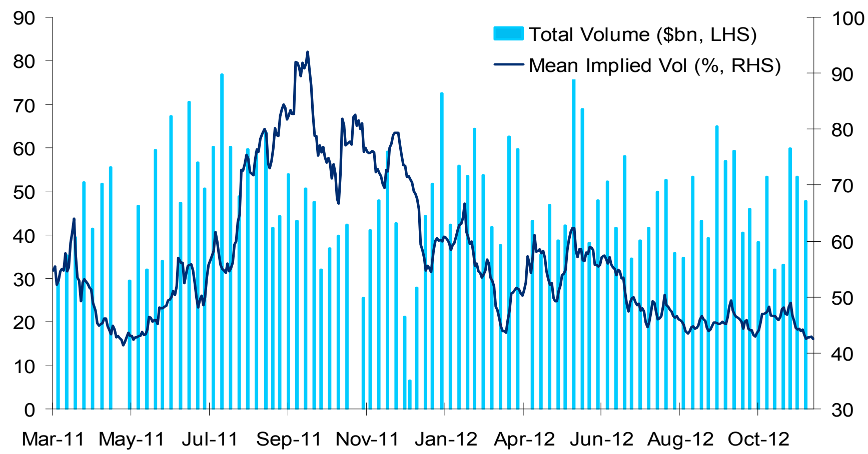
Another trend over the past year has been the significant decrease in intra-dealer volume which also indicates increasing client participation in these markets. In general, asset managers (real money) have been using options to put on low cost hedges (usually through payer spreads) to hedge tail risk in their long credit books, while leveraged loan accounts have been preferring deep OTM payers to protect against 2008-like stresses. We expect asset managers to evolve into using options for yield enhancing trades as they look for yield outside of conventional asset classes. Another area where we expect growth in 2013 are the CVA desks, which are now allowed to use options to mitigate CVA VaR for capital under Basel III regulations that come into force next year.

An interesting feature of credit option markets is the drastic change in the lagged correlation between traded option volumes and implied volatility. Figure 28 shows weekly option volumes from DTCC aggregated over all traded credit options versus the mean implied volatility of the four major credit indices (CDX IG, CDX HY, iTraxx Main, and iTraxx Xover). Over 2011, we see a strong positive correlation between implied volatility and a lagged version of the weekly option volume data – in other

words, increased activity in the option markets was driving up implied volatility. This indicates that the credit option market in 2011 was largely a one-way market with mostly buyers of option volatility for hedging. This correlation has broken down in 2012, which is indicative of a more mature market with two-way flows – this is also

Figure 28. Weekly Option Volume ($bn) versus Mean Implied Volatility (%)

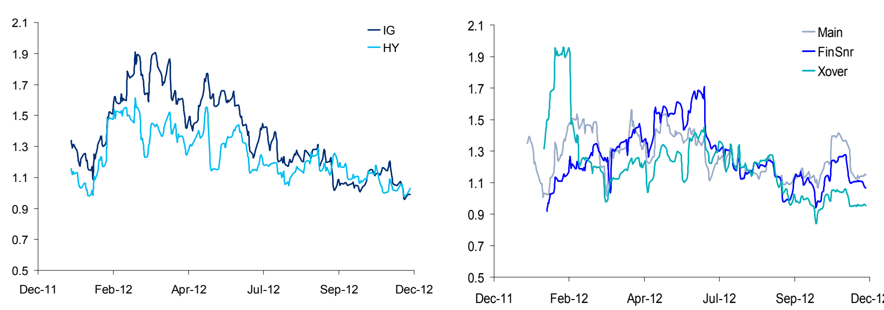
Mean Implied Volatility is calculated as the mean of the 3M ATM implied volatility of the major credit indices.



Source: DTCC, Citi Research

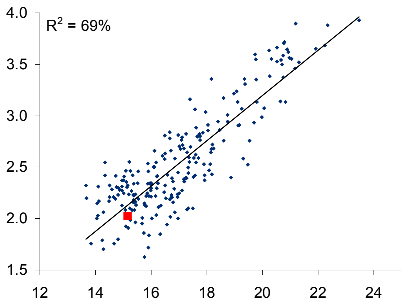
borne out in our conversations with investors where we have observed that hedge funds and other fast money investors have now entered the market as volatility sellers. We consider this to be a very important development in the maturing of credit option markets – as dealer flows become more balanced, we expect the market efficiencies to increase since dealers will no longer need to charge a large premium to be a source of volatility.

Figure 29. 3M ATM Implied Volatility to 3M Realized Volatility Ratio Coming Down



Source: Citi Research

Figure 30. 3M ATM SPX Vol (X) Fairly Valued vs 3M ATM CDX IG Price Vol (Y)



Source: Bloomberg, Citi Research
Data point in red indicates current levels.

A consequence of more balanced flows has been the steady tightening of the volatility risk premium. Figure 29 shows the ratio between 3 month implied and realized volatility for a variety of credit indices over 2012 – this indicates that investors are being charged less for volatility compared to early 2012. A favorite trade for investors in the past has been to arbitrage the overpricing of volatility in credit markets by selling credit volatility and buying equity volatility. We expect this arbitrage to fade as credit markets become more efficient – in fact, we see credit volatility coming close to fair value versus equity volatility for some credit indices such as CDX IG when compared to the implied volatility for S&P futures (see Figure 30). Note that the figure shows CDX IG price volatility which was computed from the standard quoted spread volatility to ensure like-for-like comparison with S&P futures implied volatility.

But Is Anyone Trading Credit Volatility?

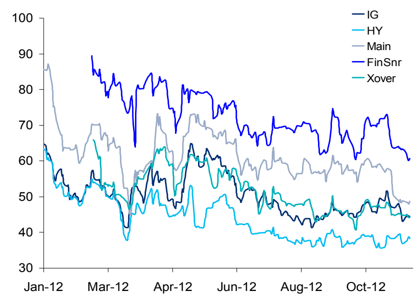
Despite the growing signs of maturity in credit option markets, one particular aspect of the market has been lacking – investors who invest in pure credit volatility as an asset class. Specifically, investors have been mainly focused on using credit options as a way of expressing macro views – what makes options attractive in this context is the structural leverage inherent in options that makes them very cost effective.

We believe that the lack of “pure credit volatility” players can be mainly attributed to the difficulty in automatically trading the underlying credit indices, which are mostly traded over-the-counter. In order to only have exposure to the pure “credit volatility” component of the risk associated with credit options, investors need to delta hedge their option positions periodically (e.g. daily) as the delta moves over time for an option with a fixed strike. This task can be quite onerous for an investor with a large option book in so far as it involves (re) computing the deltas and then finding a counterparty to adjust the delta hedge of the underlying index every day. In contrast, the more developed option markets in other asset classes offer automated trading of the underlying which allows the volatility players to focus on managing the pure volatility risks.

So what is needed in credit option markets to make credit volatility an asset class in its own right? Clearly better execution (preferably automated) in the underlying index would be a good start. Indeed, as a result of new regulations, which require (vanilla) credit derivative trading to move to exchanges, we expect automated execution of credit index trades to become more and more available over the next few years. We are already seeing some evidence of this as more broker dealers are starting to offer platforms with automated market making in credit indices – as this trend continues over the next year or two, we believe that credit volatility trading will come into its own.

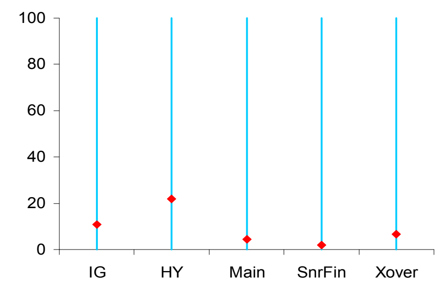
Better Macro Environment to Send Volatility Lower

Figure 31. 3M ATM Implied Volatility, %



Source: Citi Research

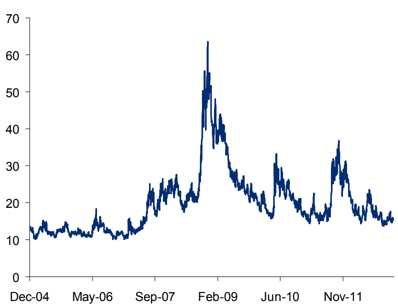
Figure 32. 3M ATM Implied Volatility, YTD Range



Source: Citi Research
Data points in red indicate current levels.

If we look at what happened in credit option markets over the last year, we see a steadily decreasing trend in implied volatility of the major indices (see Figure 31). This has been driven by two factors – increasing interventions by central banks in capital markets to maintain market stability and the rise of volatility sellers to profit from the sizeable volatility risk premium in credit markets. Implied volatility in the major credit indices is poised to end 2012 close to the yearly lows (see Figure 32), and the volatility risk premium has also drastically shrunk over the past year in most major indices (see Figure 29).

Figure 33. Mean Reversion in 3M ATM SPX Implied Volatility



Source: Bloomberg, Citi Research

Given that volatility in other asset classes (e.g., equity, FX, etc.) tends to be mean reverting (e.g., see Figure 33), we do expect implied credit volatility to tick up from current levels as we go into the New Year. In fact, in the short term, rising concerns about the US fiscal cliff (till there is a resolution) could drive up implied volatility. Other tail risk events in 2013 include Grexit (which we have talked about before), an unexpected deterioration in conditions in a peripheral country such as Italy or a soft core country such as France or Belgium – all of which should be catalysts for a sharp rise in implied volatility. However, on balance, we feel that central bank action through various liquidity injection programs should be able to keep a lid on spreads from blowing out, which will also result in implied volatility eventually coming down. Overall therefore, our base case scenario in 2013 is a mostly low volatility environment, kept in check by central bank action as needed, with possible spikes driven by negative headlines. The only exception to this would be a sequence of events leading up to (or causing) an actual exit of Greece from the Euro zone. In such a scenario, implied volatility should spike higher and remain at those levels for the short to medium term. However, as we have argued earlier, we think that the probability of such a sequence of events is very low.

In such an environment, we would caution investors against aggressively buying volatility using ATM or OTM payers, despite the fact that a period of low volatility would make options optically cheaper compared to earlier periods. This is because of the time decay (or theta bleed) in a long option position where an option loses value as it gets closer to expiry without the anticipated event (that would trigger an option payout) taking place. Given the highly uncertain timing of these triggers (being mainly headline and politician driven), we think that the economics of a long volatility trade under such circumstances would not justify the expected payout. We believe that a more optimal way to position for such an environment would be to buy

payer spreads (long ATM payer, short OTM payer) which have considerably lower time decay, so the cost of holding the option is relatively low, but the trade would benefit from an increase in implied volatility and/or spread widening in a range bound spread environment.

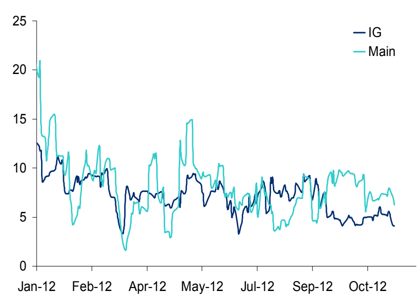
Skew Trades Can Provide Opportunities

While upside (receiver) skews are now relatively flat, downside (payer) skews have become relatively steep (see Figures 7 – 10). In other words, both upside and downside tails are now relatively expensive to ATM for almost all indices. This is a result of technicals that are being driven by investors who have turned more constructive on credit spreads. Consequently, they have been going long using OTM receivers which have been relatively cheap and unwinding some of the low cost hedges that had been put on using payer spreads. In light of our view of range bound spread moves over the next year with a tightening bias, we believe that the current environment is especially conducive for taking advantage of the shape of the skew curve.

Figure 34. 6M 20 Delta Downside Skews, %
Downside Skew = 20 Delta Pay – 50 Delta Pay

Source: Citi Research

Figure 35. 6M 20 Delta Upside Skews, %
Upside Skew = 50 Delta Recv – 20 Delta Recv



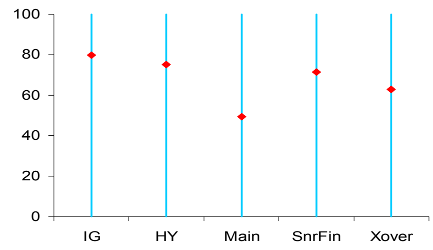
Source: Citi Research

Specifically, we believe that the flat upside (receiver) skew makes receiver spreads (or bullish risk reversals) particularly attractive (see Figure 37). In the US, the macro economic data is definitely beginning to show signs of improvement, especially in comparison to Europe, and even a partial resolution of the fiscal cliff (our baseline scenario) has the potential to send credit spreads gapping tighter. In our opinion, a good way for investors to position for this would be to buy receiver spreads (or bullish risk reversals) in the CDX IG or the CDX HY index, particularly in the 6M expiry where the skew is the flattest. Our expected time frame for a resolution in the fiscal cliff situation is the next 1-2 months going into the New Year, thus a 6M receiver spread should be well positioned to benefit from the subsequent tightening in spreads in our view.

In Europe, we are less constructive on the economy, and given the outperformance of the European indices compared to their US counterparts, we believe that the upside may be limited. However, iTraxx Main still remains a comparative underperformer compared to its other European counterparts. Clearly, the high beta of financials and Xover names has benefitted the corresponding indices as ECB induced liquidity has lifted markets, but we believe that we have reached a point where some of this underperformance could start to see some reversals, especially over the next 6 months. In the absence of negative headlines, we think that the higher quality names in iTraxx Main have a significant chance of outperforming and

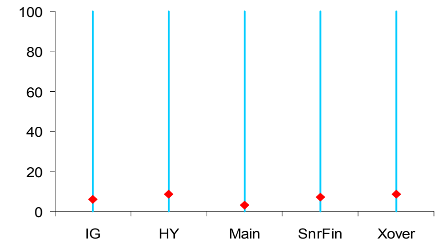
the extremely flat receiver skew in Main makes it another very attractive candidate for buying receiver spreads.

Figure 36. 6M 20 Delta Downside Skew Close to Highs of YTD Range



Source: Citi Research
Data points in red indicate current levels.

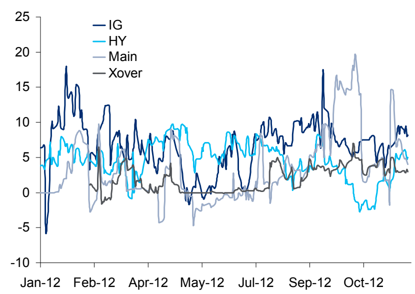
Figure 37. 6M 20 Delta Upside Skew Close to Lows of YTD Range



Source: Citi Research
Data points in red indicate current levels.

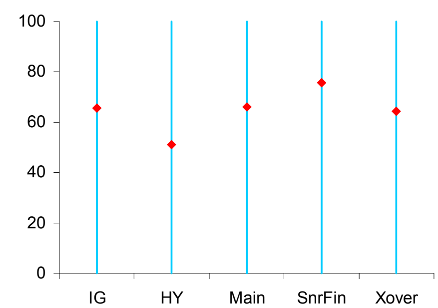
So what of the tail risks? They are still here with us – structural reforms are still required in Europe and tax and entitlement reforms in the US have not taken off either. What has really happened is central bank induced liquidity has bought time for some of these reforms, but the tail risks related to some of these fundamentals still lurk beneath the surface. Using credit options for hedging can be tricky because of short maturities (the longest liquid option expiry is 6 months) which lose time value faster as they get closer to maturity (theta decay). Thus, investors holding options as a hedge against a possible market blowout can find it to be quite expensive as the cost of holding the option mounts while the expected event fails to materialize. Under such circumstances, we recommend payer spreads as a possible solution. Even though a payer spread requires the option holder to give up some of the benefits in case of an extreme spread widening, the lower theta decay (the negative theta of the long ATM payer is partially offset by the positive theta of the short OTM payer) of the net position makes it more economical to hold the option as a hedge against a possible tail event whose timing is uncertain.

Figure 38. 20 Delta 3M-6M Calendar Skew, %



Source: Citi Research

Figure 39. 20 Delta 3M-6M Calendar Skew Close to Highs of YTD Range



Source: Citi Research
Data points in red indicate current levels.

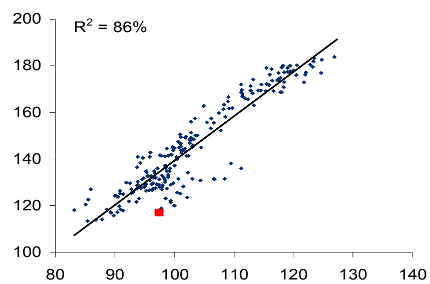
Calendar skews (or term structures), another indicator of macro economic health, are ending the year closer to the steeper end of the YTD range, especially for OTM payers in the 3M-6M part of the curve (see Figure 38 and Figure 39). Despite the general steepening in the term structure, we do observe a bifurcation between the US and European indices, where the US curves are currently steeper in absolute

terms compared to the European curves, particularly for the OTM payers. This is consistent with our view that the US macroeconomic conditions are relatively better than in Europe, and we expect this bifurcation to continue into the New Year with the US calendar skews steepening further. In fact, the most dramatic change has been in the CDX HY 3M-6M term structure which has gone from an inverted curve to a normal upward sloping curve in the past month, as investors have unwound bearish positions that had been set up using CDX HY index options. We think that investors should take advantage of the (still somewhat) flat term structures in indices such as CDX HY and iTraxx Xover to put on calendar skew steepeners as systemic tail risk is reduced further.

As Can Cross Index Option Trades

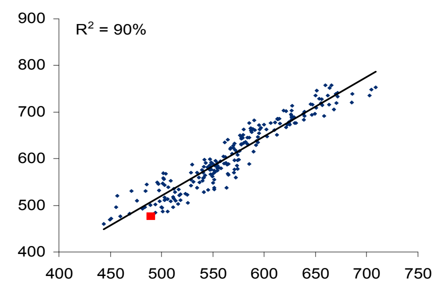
Continuing our theme of a bifurcation between Europe and the US, we think that this is an opportune time to express relative value trades between European and US indices using the credit option markets. Over the past year, we have seen US indices underperform European indices (see Figure 40 and Figure 41) mostly on the back of ECB liquidity injections. Given the relatively better macroeconomic data coming out of the US and future projections by our economists, we believe that the US credit indices are poised to reverse some of this underperformance in 2013.

Figure 40. Main (Y) Outperforms IG (X) YTD, bp



Source: Citi Research
Data point in red indicates current levels

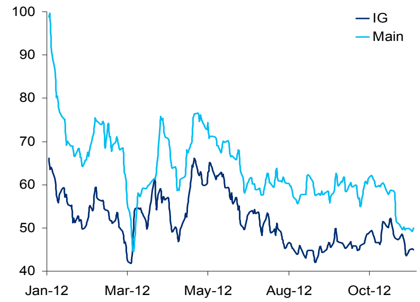
Figure 41. XO (Y) Outperforms HY (X) YTD, bp

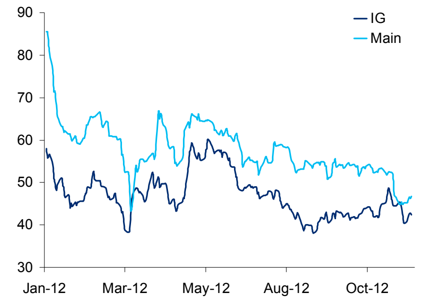


Source: Markit, Citi Research
Data point in red indicates current levels

Using options can be a very cost-effective alternative to express some of these views, especially in light of where implied volatility levels are relative to each other. As we can observe in Figure 42, both ATM and OTM IG receiver volatility remains stubbornly below the corresponding Main volatility, despite a dramatic move lower in Main volatility recently. We believe that the current situation provides an attractively priced entry point for doing a long IG short Main trade.

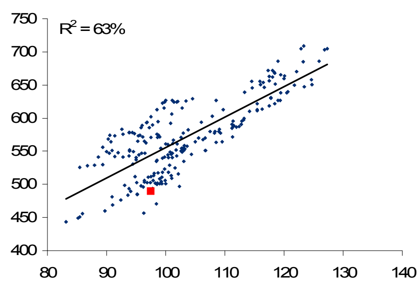
Figure 42. 3M IG Recv Vol Remains Below Main Vol, 50 Delta (left), 20 Delta (right), %





Source: Citi Research

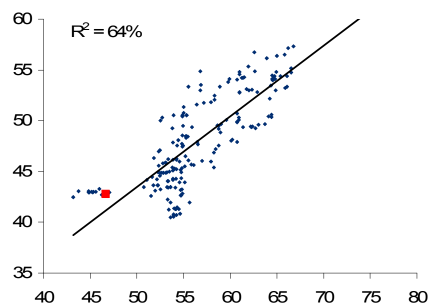
Figure 43. HY (Y) Outperforms IG (X) YTD, bp



Source: Markit, Citi Research
Data point in red indicates current levels.

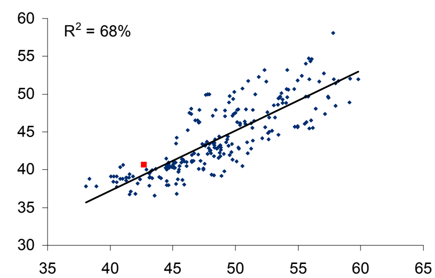
The past year has also been a time of outperformance by high-beta credits, especially the financials and the high yield names. We see evidence of this across the board in both the European and US indices where Xover and FinSnr have outperformed Main and CDX HY has outperformed CDX IG (see Figure 43 and Figure 47) – to us this outperformance looks overdone. At the same time, corporations have been taking advantage of the low yield environment to issue debt for a variety of purposes including share buybacks and dividends. Consequently leverage has been creeping up, particularly in non-IG credits. As an example, consider the fact that the median gross leverage ratio (total debt/LTM EBITDA) has gone up by 16% for US IG names (ex financials) and by 23% for US HY names (ex financials), between Q2 2010 and Q2 2012. If the modest "muddle through/low growth" scenarios suffer from a hiccup because of tail risk events, it would have a disproportionate negative effect on non-IG names. Therefore, we advocate a long low-beta (IG) versus short high-beta (non-IG) trade in options, especially given the relative implied volatility levels. In particular, OTM Main receivers and OTM IG receivers look cheap to corresponding Xover and HY receivers, respectively (see Figure 44 and Figure 45).

Figure 44. 6M 20 Delta XO Recv (Y) Rich to Main Recv (X), %



Source: Citi Research
Data point in red indicates current levels.

Figure 45. 6M 20 Delta HY Recv (Y) Rich to IG Recv (X), %

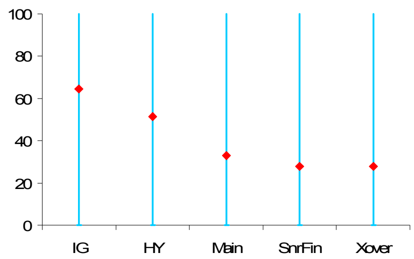


Source: Citi Research
Data point in red indicates current levels.

Trades That We Like for 2013

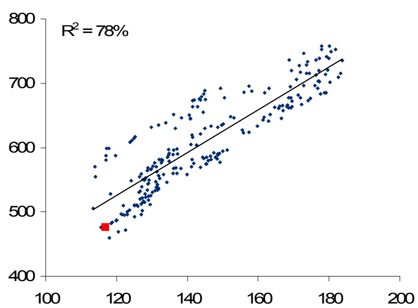
Note that a negative cost for a trade implies that the investor gets paid to put on the trade.

Figure 46. 6M Full Skews, YTD Range



Source: Markit, Citi Research
Data point in red indicates current levels.

Figure 47. XO Outperforms Main YTD, bp



Source: Citi Research

The "Positive View on Credit" Trade. CDX IG has underperformed its peers (both CDX HY and iTraxx Main) over the past year (e.g., see Figure 40), primarily because the central bank induced liquidity has benefitted high beta credits disproportionately. Over 2013, we look to see some of that underperformance get reversed and CDX IG to tighten further from current levels. In particular, over the next 6 months, we expect tail risks from the US fiscal cliff to subside. In Europe, we are emboldened by the recent progress made on the Single Supervisory Mechanism (SSM) and the disbursement of the next Greek aid tranche and expect no major negative headlines. In addition, we observe that the 6M 20 delta receiver – payer skews in CDX IG are now very steep (see Figure 46), and therefore recommend buying a 85 – 160 June bullish risk reversal in CDX IG for a total cost of -1.3 cents – details are shown in Figure 48.

The "Low Beta Beats High Beta" Trade. As we have commented earlier, high beta credits have outperformed low beta credits over 2012 – in Europe, iTraxx Xover spreads have significantly tightened compared to iTraxx Main (see Figure 47). Going into 2013, in a low growth, low yield environment, where corporations continue to add to leverage to appease shareholders hungry for income, we think that IG credits with stronger balance sheets than their HY counterparts have the potential to outperform. The relative richness of OTM Xover receivers to OTM Main receivers (see Figure 44) makes it possible to express the view in a very cost effective manner. We therefore recommend buying the March 100 strike (20 delta) receiver in iTraxx Main and selling the June 415 strike (20 delta) receiver in iTraxx Xover in a ratio of 3:1 for a total cost of -1.6 cents – details are shown in Figure 48. The ratio 3:1 is computed as the price beta of iTraxx Xover relative to iTraxx Main using pricing data over 2012.

The "US-Europe Bifurcation Trade". 2013 is increasingly looking likely to be the year where we will see a significant divergence in the macroeconomic conditions between the US and Europe. In particular, once the fiscal cliff issues are (partially) resolved, US GDP growth should benefit from tailwinds such as a nascent housing recovery and better manufacturing and employment data. In contrast, Europe has a long way to go in structural reforms before it can return to long term growth. In 2012, we have seen European credit indices outperform their US counterparts handsomely, and our current view is a reversal of that outperformance. We therefore recommend buying the March 85 strike (20 delta) receiver in CDX IG and selling the March 100 strike (20 delta) receiver in iTraxx Main for a total cost of -6.3 cents (adjusted for EURUSD rate) – details are shown in Figure 48.

The "Cheap Tail Risk Hedge" Trade. While we maintain an overall positive view on credit for the next year, we have argued earlier that tail risks have not exactly been eliminated. While we do believe that there will be a positive resolution to the fiscal cliff debate, the US is still facing headwinds from a weak labor market and sub par growth. In addition, contagion from a still weak Europe continues to be a threat and further unrest in the Middle East has significant probability. At the same time, 6M downside skews on CDX IG are close to YTD highs (see Figure 36) – this provides a low cost way of hedging tail risk with an option construct that has low theta decay (cost of holding the option). We therefore recommend the June 110-170 payer spread in CDX IG with a total cost of 33.0 cents – details are shown in Figure 48.

Figure 48. Trade Details

Trade	Leg	Index	Strike	Maturity	Price	Delta	Volatility	Comments
Positive View on Credit	Buy OTM Receiver	IG19	85	6/19/2013	19.4	-19.70%	44%	
	Sell OTM Payer	IG19	160	6/19/2013	20.7	22.80%	60%	
Net					-1.3			
Low Beta Beats High Beta	Buy OTM Receiver	MA18	100	3/20/2013	15.5	-17.90%	55%	MA:XO ratio = 1:3
	Sell OTM Receiver	XO18	415	3/20/2013	17.1	-19.30%	43%	
Net					-1.6			
US-Europe Bifurcation	Buy OTM Receiver	IG19	85	3/20/2013	13.9	-20.50%	43%	EURUSD = 1.3005
	Sell OTM Receiver	MA18	100	3/20/2013	20.2	-17.90%	55%	
Net					-6.3			
Cheap Tail Risk Hedge	Buy ATM Payer	IG19	110	6/19/2013	51.8	52.20%	46%	
	Sell OTM Payer	IG19	170	6/19/2013	18.8	20.30%	63%	
Net					33.0			

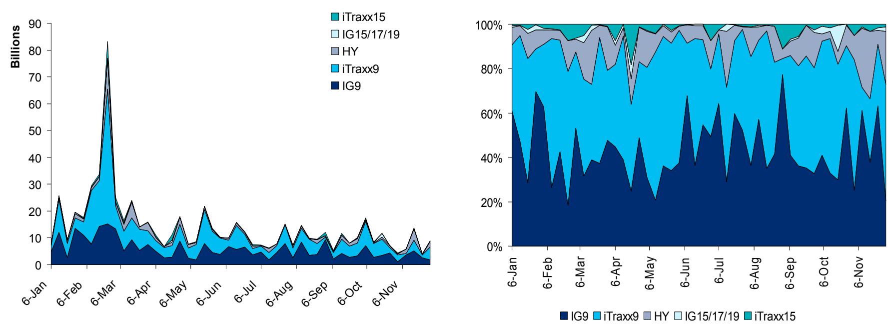
Source: Citi Research
All prices are mids (in cents), as of 12/11/2012. The above calculations do not include any additional fees or transaction costs.

Whither Tranches?

From Correlation to Levered Macro

The standardized index tranche market has been steady over 2012 – roughly $12-14bn of gross notional has traded on average every week. The brief, rather sharp peak in February (see Figure 49) was due to the unwinding of the J.P.Morgan CIO trades and since then, activity has been back to normal. Looking back at the transacted volumes, we find that legacy (IG9 and iTraxx9) tranches continue to totally dominate flows even now and the newer tranched indices (such as IG15, 17 and 19 as well as iTraxx15) have a very small share of the market (see Figure 49). Interestingly, HY tranches have been able to carve out a small, but stable niche for themselves and we expect their market share to be stable over 2013.

Figure 49. Weekly Tranche Volumes, Gross Notional ($bn, left), % of Market Share (right)



Source: DTCC, Citi Research

Obviously, the key question in all of our minds is how long is this party going to last? On the one hand, we see that tranche activity is not exactly dying out, but at the same time, the new kids on the block (post series 9 tranches) are not taking up the place of the mature players in any meaningful way. Unfortunately, the prognosis for the future does not look too hopeful. Tranches continue to face renewed regulatory pressure in 2013 from Dodd-Frank and Basel III which mandate higher capital requirements for (bespoke and) standardized tranches. In addition, under Basel III regulations, CVA desks can no longer use tranches for mitigating CVA VaR for capital requirements, which removes a significant source of demand from the tranche markets. As of now, legacy correlation books continue to be a source of demand for tranches but we expect that this demand will die out as the correlation books are allowed to wind down.

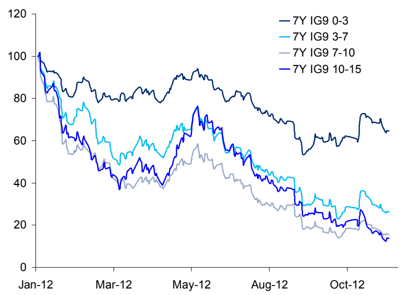
However, all is not lost – given the low growth, low yield environment that we expect in 2013, tranche products can play a very useful role. The structural leverage implicit in equity and junior mezzanine tranches can, if properly deployed, result in significant yield enhancements. Indeed, what we are already observing in the investor community is exactly this trend – participants in the tranche markets are increasingly using tranches (without delta hedging) to express fundamental macro views in a levered manner rather than trading pure correlation.

We believe that this is an interesting dynamic that could well breathe new life into the tranche markets. In particular, the cleaner portfolios of the newer tranched indices should offer attractive opportunities for investors looking to get long based on improving macroeconomic conditions, especially in the US. Admittedly, cash CLOs (which are also seeing a growth revival) can offer similar opportunities (with similar leverage) – however, we point out that the CLO market is constrained by the supply of leveraged loans used as collateral. The synthetic tranche market, on the other hand, has no such limitations, and we expect that the supply will only be

constrained by the regulatory capital charges required to maintain such assets on the dealer's balance sheet.

Legacy Tranches Still Have Value

Figure 50. IG9 Junior Tranches Underperform (Normalized All Upfront, Jan 3 2012 = 100)

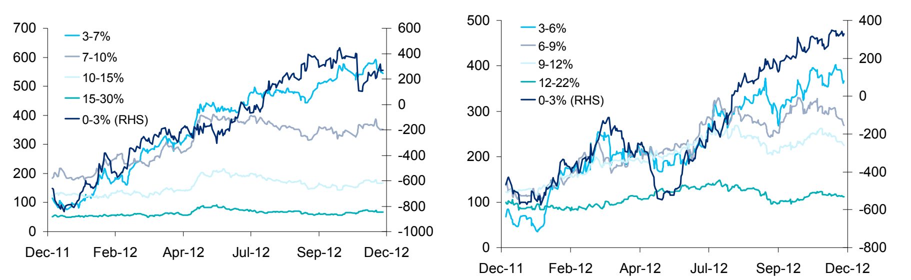


Source: Markit, Citi Research

Despite their inexorable march towards maturity, the legacy tranches in the IG9 and iTraxx9 indices still offer substantial value to investors looking for yield enhancements. If we look at the performance of the legacy tranches at the junior end of the capital structure, what stands out is the underperformance of the equity and (to some extent the) junior mezzanine tranches of IG9 (see Figure 50). This was mainly driven by the recent legal troubles of MBIA – the initial announcement by MBIA that it would seek investor consent to change bond indentures that accelerate payments under a cross-default provision with MBIA Insurance Corp (a subsidiary) to prevent a liquidity crisis sent tranches spreads in the junior part of the IG9 capital structure shooting up. Spreads have normalized somewhat since a successful consent solicitation was announced, but they have not come back to pre-announcement levels. There is still some uncertainty around Bank of America's attempts to spark a liquidity crisis at the mortgage insurer as a way to win its legal battle against MBIA over toxic mortgage securities but the common belief now is that a settlement is soon to be announced in this matter as well.

We therefore think that the junior parts of the capital structure in IG9 at the short end (7Y) are poised to outperform and at the current levels, provide a good entry point for setting up levered longs. Further, with a positive resolution of the fiscal cliff, the improving macro economic picture in the US should be constructive for the junior tranches in the short term. In contrast, iTraxx9 junior tranches appear to be fairly valued with respect to the other parts of the capital structure at this point, and we do not see a good opportunity to set up longs in this space.

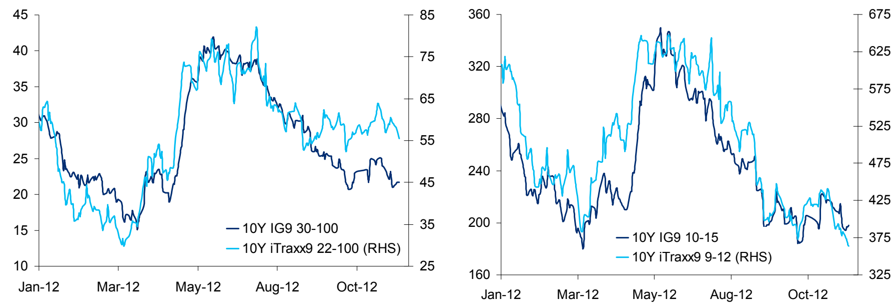
Figure 51. 7s-10s Curves in Tranches, IG9 (left, bp), iTraxx9 (right, bp)



Source: Markit, Citi Research

Tranche 7s-10s curves in the junior tranches were inverted at the beginning of the year but have continued to steepen throughout the year, as systemic risk fears have receded on both sides of the Atlantic (see Figure 51). The same dynamic has pushed senior mezzanine 7s-10s curves flatter after they steepened halfway through the year. In a low growth, low yield environment that we envisage for 2013, investors will become more sensitive to idiosyncratic credit risks in the series 9 index portfolios. We expect this to cause equity and junior mezzanine curves to steepen further as investors look to get out of longer duration credit risk in high risk portfolio names.

Figure 52. Rally in 10Y Series 9 Super-Senior (left) and Senior (right) Tranche Spreads, bp



Source: Markit, Citi Research

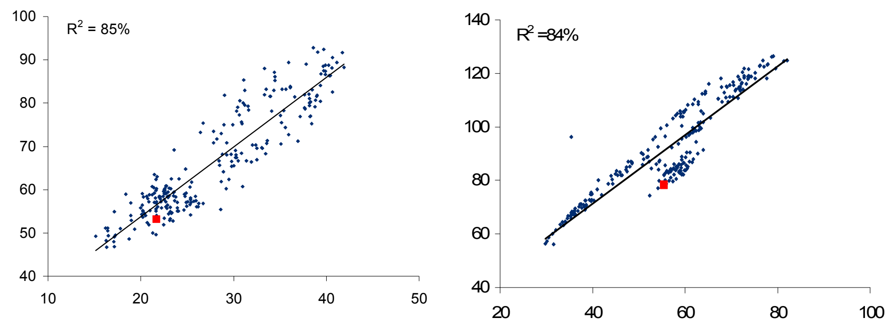
At the other end of the capital structure, the performance of the super senior tranches in the legacy indices reinforces our view of the US-Europe “bifurcation”. Since September, super-senior spreads in the US have tightened significantly, whereas in Europe, they have remained flat, despite liquidity injections by the central banks in both areas (see Figure 52). This reflects a reduction in systemic risk fears in the US owing to its relatively better macro economic condition. However, short of comprehensive policy reforms that can get the US back on a sustainable growth path, tail risks continue to lurk and can flare up unexpectedly. In Europe, as we have commented before, tail risks related to Grexit, Italian elections and unexpected deterioration in macro economic conditions in the periphery or a soft core country can send spreads spiraling up. We believe that the recent rally in some of the legacy super senior and senior tranches (see Figure 52) have made them quite affordable as low cost hedges.

In particular, our back tests indicate that hedges using senior mezzanine tranches (such as the 10-15% tranche in IG9 and the 9-12% tranche in iTraxx9) against a long credit cash portfolio perform really well in extreme spread widening scenarios such as those that we witnessed during the 2008 fiscal crisis. The longer duration and low cost of holding these positions make them particularly attractive when there is uncertainty around the timing of the trigger for a tail risk event, such as now. In addition, a modest widening of spreads accompanying a tail risk scenario will make these tranches at-the-money, which will therefore benefit from increased positive convexity.

Why We Like X-100 Tranches

Super-senior tranches, despite their convex behavior in the case of extreme tail events and relative cheapness, can often underperform because it requires a sizeable spread move for the protection to really kick in. Furthermore, because of the low delta, the hedge notional amount required in super-seniors for a given amount of index equivalent can be very high. Senior (or senior mezzanine) tranches that are further down the capital stack are more attractive given that they are closer to being at-the-money and have higher deltas, but they can often be expensive and the thinness of the tranche can be a problem. In times of stress, such thin tranches can be wiped out fairly quickly, which means further widening in spreads will not benefit the hedge, leading to negative convexity. X-100 tranches (depending on the attachment point) provide the best of both worlds as a hedge that has good convex behavior as well as low cost.

Figure 53. IG9 7-100 Spread (X) Tighter Than IG9 30-100 (Y) (left, bp), iTraxx9 9-100 Spread (X) Tighter Than iTraxx9 22-100 (Y) (right, bp)



Source: Markit, Citi Research
Data point in red indicates current levels.

Figure 54. X-100 Tranche Hedges

Index	10Y IG9	10Y iTraxx9
Spread	124bp	152
Expected Loss	5.93%	7.82%
X-100 Tranche	7-100	9-100
X-100 Spread	53bp	72bp

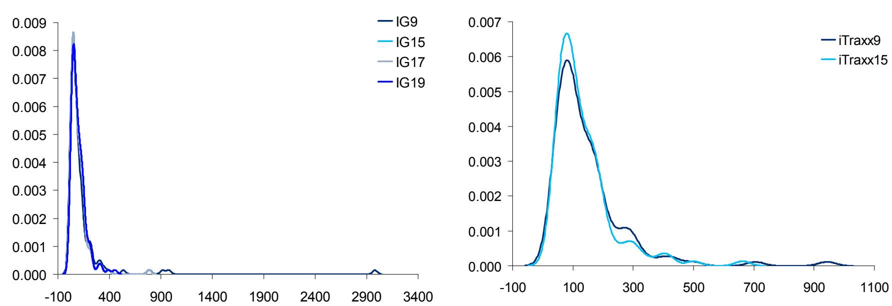
Source: Markit,Citi Research
Prices as of 12/6/2012

In particular, choosing X to be as close as possible to the expected loss percentage in the underlying index gives us a hedge that only requires a modest widening in index spreads for the tranche to become at-the-money and benefit from positive convexity. We therefore find the most attractive hedges in the 7-100 tranche in 10Y IG9 and the 9-100 tranche in the 10Y iTraxx9 tranche (see Figure 54). When compared to super seniors, the X-100 tranches appear very attractively priced as well (see Figure 53).

Despite the attractiveness of such tranches from a cost-performance viewpoint, investors should keep in mind that X-100 tranches are non-standard tranches and may not always be very liquid. This can mean that it could be difficult to monetize such trades in times of stress. However, given how attractive these tranches are compared to hedging with (super-) senior tranches, on balance we believe that the risk reward could be worth it.

Newer Tranches as Levered Longs

Figure 55. Outliers in the Legacy Credit Portfolios, IG9 (left), iTraxx9 (right)



Source: Bloomberg, Citi Research

Tranches in the post Series 9 indices have a lot to offer – especially if investors are looking for generating additional yield. We think this demand dynamic should actually help in stimulating activity in the tranche market in 2013. The newer indices (IG 15-19 and iTraxx 15) have cleaner portfolios without the high risk names. The spread distributions for the various index portfolios are shown in Figure 55 – we

Figure 56. 5 Widest Names, 5Y Spreads in bp

IG9	
Name	Spread
MBIA Insurance Corp	2,979
Radian Group Inc	976
JC Penney Co Inc	915
RR Donnelley & Sons Co	787
iStar Financial Inc	534
Jones Group Inc/The	395
IG15	
Name	Spread
RR Donnelley & Sons Co	787
Staples Inc	390
SLM Corp	315
Safeway Inc	315
Alcoa Inc	288
Hewlett-Packard Co	230
IG17	
Name	Spread
Pitney Bowes Inc	455
SLM Corp	315
Safeway Inc	315
Alcoa Inc	288
Hewlett-Packard Co	230
Xerox Corp	218
IG19	
Name	Spread
Pitney Bowes Inc	455
Staples Inc	390
SLM Corp	315
Safeway Inc	315
Alcoa Inc	288
Hewlett-Packard Co	230
iTraxx9	
Name	Spread
Hellenic Telecom	944
Peugeot SA	705
Banca Monte dei Paschi di Sien	500
Dixons Retail PLC	440
Banco Espirito Santo SA	416
Portugal Telecom International	393
iTraxx15	
Name	Spread
Nokia OYJ	663
Banca Monte dei Paschi di Sien	500
ArcelorMittal	423
Banco Popolare SC	405
Portugal Telecom International	393
Finmeccanica SpA	350

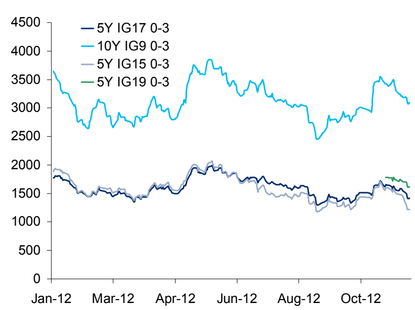
Source: Bloomberg, Citi Research

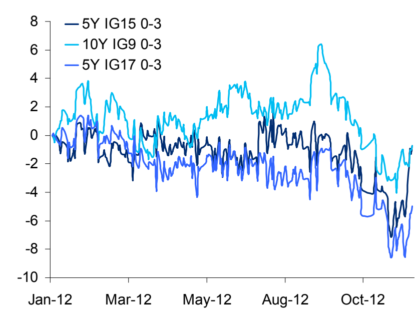
observe that the legacy indices share almost the same distribution with the newer ones except for the top few widest names, which give it a much longer tail. This is particularly significant for the IG spread distributions where MBIA (in particular) is a very wide outlier (the small bump near 2900 on the X-axis).

We observe that while spreads have indeed tightened on all of the IG equity tranches, the spread gap between the IG9 equity tranche and the newer equity tranches remains sizeable (see Figure 57). We attribute that to the high risk names in the IG9 portfolio, which are missing in the newer index portfolios. The delta adjusted performances of the various equity tranches show that the IG9 equity tranche has outperformed the newer tranches, though the IG15 equity tranche has recently started to catch up recently (see Figure 57). This is indeed surprising given the higher risk names in the IG9 portfolio. As we mentioned earlier, in the low yield, low default environment that we envisage in 2013, we expect idiosyncratic risks to dominate which implies that we should expect to see sizeable outperformance in the newer equity tranches. Indeed, in the past few weeks, there has been sizeable activity in these newer tranches, and we are hopeful that the demand for yield in the New Year will see the "new kids on the block" come out to play.

At the same time, we would advise investors to exercise some caution when evaluating these tranches as investment vehicles. Currently, market liquidity in the newer tranches remains constrained and pricing can be driven more by technicals than macro economic fundamentals. This can prove to be detrimental when attempting to monetize the trade, especially in a situation where the trade fails to perform. While we have seen some healthy increases in volumes in the recent weeks, we feel that liquidity in the newer tranches need to improve substantially to match the kind of market depth that the legacy tranches enjoy.

Figure 57. Spread Gap Between IG9 and Newer Equity (left, bp), Delta Adjusted Performance (right, pt)





Source: Markit, Citi Research

And Perhaps Short Duration Bespokes

The financial crisis of 2008 has also spelled the near-extinction of the bespoke tranche markets. For 2013, we believe that the conditions for the bespoke market to provide value are there – in a low growth, low yield environment that we envisage for 2013, the structural leverage of bespokes should be attractive for investors. However, regulatory headwinds are the main hurdle both from a demand and supply perspective. Our view is that bespokes in the form of short duration FTD baskets can fill a useful niche for investors looking for levered longs given the lack of short duration products in the cash space. Further, from a supply perspective, dealers would be more comfortable taking the correlation basis risk for short duration bespokes rather than longer maturity ones, given the absence of natural sellers of

senior protection (such as monolines) who used to provide a way to hedge correlation risk by completing the capital structure.

Trades That We Like for 2013

Note that a negative upfront for a trade means that the investor gets paid to put on the trade, negative carry implies that the investor pays the carry.

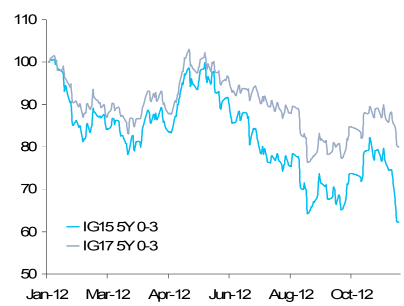
The "Kicking-the-Can" Trade. In the US, the Fed has managed to set expectations for the short term but longer term risks linger without structural reforms and while we believe that the policy actions from the Fed will provide short term relief, we are not so convinced about the longer term outlook for the US. Given this, we expect the short end of the 7s-10s IG9 equity curve to outperform the long end. In particular, MBIA has made progress in addressing its liquidity situation by a successful solicitation to change its bond indentures (see discussion earlier) and that should help to reverse some of the equity tranche underperformance at the short end, but the longer term outlook for the high spread credits in the IG9 portfolio is still bleak. We therefore recommend a 7s-10s IG9 equity tranche curve steepener in the ratio 1.9:1 (7Y:10Y) which is slightly higher than the duration ratios to make the net upfront payment slightly negative – details of the trade are shown in Figure 60.

Figure 58. Comparing Equity Tranches

Tranche	Upfront	Annual Rolldown
5YIG15 0-3	19pt	9.28pt
5YIG17 0-3	40.375pt	16.1875pt
5YIG19 0-3	30.3125pt	4.71875pt

Source: Citi Research

Figure 59. Normalized All Upfront (Jan 3, 2012 = 100)



Source: Citi Research

The "Cleaner Portfolio" Trade. As we have explained earlier, the newer tranched IG indices have much better quality credits than the legacy series 9 indices. Combined with our view of a low yield and low default environment, the equity tranches with significant structural leverage can provide very attractive yields. In the short term, as systemic risks recede somewhat, we believe that a long position in the new 5Y IG equity tranches provides an attractive entry point. Looking at the 5Y equity tranches in IG15, 17 and 19 indices, we recommend a long in the 5Y IG17 0-3 tranche, given its better roll down (see Figure 58) and current underperformance versus the 10Y IG15 0-3 tranche (see Figure 59). The details of the trade are shown in Figure 60.

The "Convex Hedge" Trade. Despite our expectations of a low default environment in 2013, we remain concerned about tail risk events, especially given the fact that long term solutions to address structural problems have not been developed. Therefore, even if central banks are able to keep the markets calm, danger lurks not too far away and there could be periodic episodes when tail risks flare up in the markets. We prefer using X-100 tranches to efficiently hedge tail risk in these circumstances, given their better convexity characteristics and low cost. We recommend the 10Y 9-100 iTraxx9 tranche as a tail risk hedge because it takes only about 40bp of spread widening for it to be at-the-money (and thus benefit from better convexity) and we feel that Europe is more likely to be a source of tail risk in 2013, compared to the US. The details of the trade are shown in Figure 60.

Figure 60. Trade Details

Trade	Leg	Notional	Duration	SNAC	Total Upfront	Annual Carry	Annual Rolldown
		(MM)		(bp)	(pt)	(bp)	(pt)
Kick the Can	Long 7YIG9 0-3%	19	1.55	2779	66.975	950	32.7750
	Short 10YIG9 0-3%	10	2.56	3086	66.25	500	10.3333
Net					-0.725	450	22.4417
Cleaner Portfolio	Long 5YIG17 0-3%	10	3.26	1423	30.625	500	16.1875
Net					-30.625	500	16.1875
Convex Hedge	Short 10YiTraxx9 9-100%	10	5.33	74	-1.376	100	
Net					-1.376	-100	

Source: Markit, Citi Research
All upfronts and spreads are mids, as of 12/11/2012. The above calculations do not include any additional fees or transaction costs.

RISKS

When buying calls and puts (or receivers and payers) the maximum loss is the premium paid. When selling calls (or receivers), the maximum potential loss would occur as the index spread decreases but is limited by the index spread being floored at zero. For puts (or payers), the maximum potential loss (amount below the strike) would eventuate should the index price fall to zero. Sector index options are cash settled. The above calculations do not include any additional fees or transaction costs.

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Appendix A-1

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