

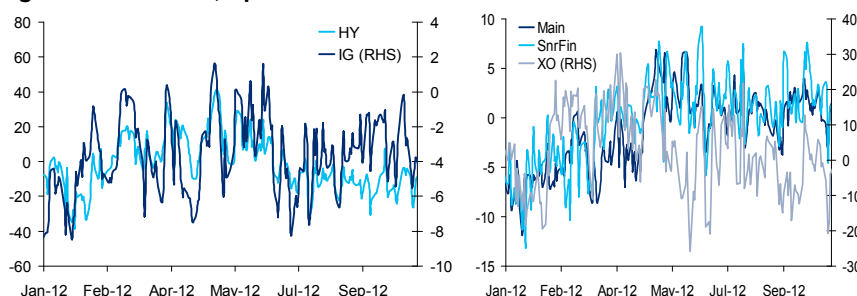
## In the Time of the Butterflies

BUY MARCH HY19 BUTTERFLIES

### Market Outlook

A lack of headline news in recent weeks has left the markets drifting without much conviction. The only exception to this was in the aftermath of Moody's decision last week to leave Spain's credit rating unchanged at Baa3 which caused all the major credit indices to move tighter. The housing market in the US continues to improve (housing starts and permits well above estimates) but recent unemployment numbers were weak, presenting a rather mixed picture of the US economy. Our US economists are of the opinion that US GDP growth should be above 2% in 2013 on improving fundamentals and continued monetary accommodation, and if the fiscal cliff is avoided, a release of pent up demand would strengthen growth further (see [U.S. Economics Weekly: Market and Policy Comments - Riding Out Yearend](#)). In Europe, the EU summit last week did not produce much by the way of progress. Our European economists believe that the Single Supervisory Mechanism (SSM) for banks and direct bank recapitalization using the ESM are unlikely before the German elections in September 2013 (see [Euro Area: Sovereign Debt Crisis Update - EU Summit – Many Questions Left Open](#)).

Fig 1. Index Skews, bp



Source: Markit, Citi Research

### iTraxx Xover Outperformance Looks Poised to End

After the initial tightening to close to (roll adjusted) year end lows on the back of Moody's rating actions on Spain, the major credit indices have generally drifted slightly wider. Most investors seem to be waiting on the sidelines to "buy on dips" keeping the indices mostly range bound. Accompanying the recent drift higher in index spreads, skews have been compressing across all major indices. While the skews remain firmly negative for CDX IG, CDX HY and iTraxx Xover, iTraxx Main and iTraxx SnrFin skews are slightly positive (see Fig 1).

Investor positioning in the indices have been mainly steady for CDX IG, CDX HY,

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Credit

Investment Overview

Global

Derivatives

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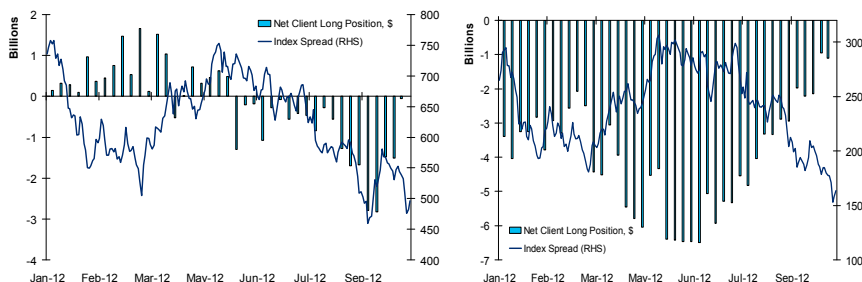
**The Credit Index Call - My Bazooka Is Bigger Than Yours!**

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and iTraxx Main where most investors have maintained a net long position over the past 3 weeks, according to DTCC data. In iTraxx Xover, a large net short investor position of roughly 1.4B from about 2 weeks ago is currently flat (see Fig 2). A similar dynamic is apparent in iTraxx SnrFin, where investors have also drastically reduced short positions by almost half to a net 1B short, while spreads continued to tighten and are now close to (roll adjusted) yearly highs (see Fig 2).

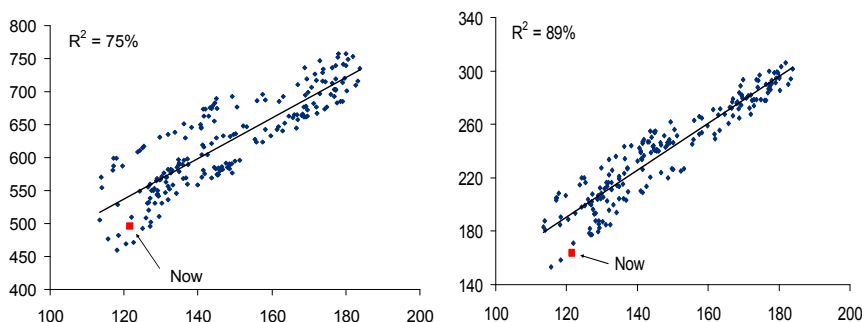
**Fig 2. Client Positioning in Credit Indices, Xover (left), SnrFin (right)**



Source: DTCC, Markit

During this period, both iTraxx SnrFin and iTraxx Xover have outperformed iTraxx Main (see Fig 3). **We believe that a decompression trade in iTraxx Main versus iTraxx Xover is currently particularly attractive, given the recent Xover outperformance partly driven by a squeeze that has flushed out the shorts.** In the US, CDX HY has continued to outperform CDX IG while net long investor positions in both indices have remained stable. The earlier dynamic of investors preferring to express shorts using HY options seems to have reduced demand for protection using the HY index itself, thereby driving some of its outperformance.

**Fig 3. Xover vs Main (left), SnrFin vs Main (right), bp**



Source: Markit, Citi Research

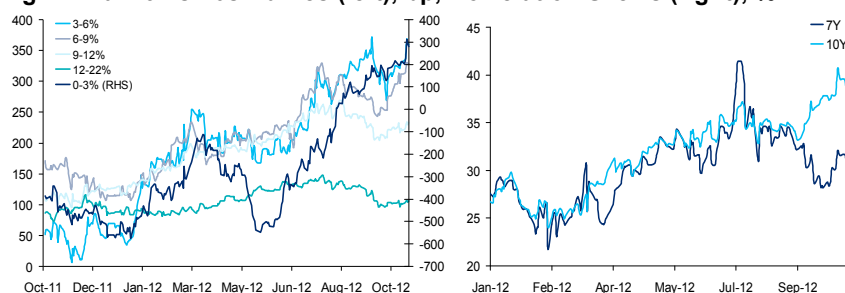
### **Value in 7Y iTraxx9 6-9% (Long) and 10Y IG9 10-15% (Short)**

Tranche spreads in both iTraxx9 and IG9 have drifted tighter on the lack of negative catalysts in headline news. In Europe, both 7Y and 10Y correlation skews (the difference between base correlation for 0-3% and 0-22% tranches) for iTraxx9 have started to drift lower in the past week after having diverged significantly in the past month or so (see Fig 4), indicating some relief from systemic risk on the back of ECB policy action and Moody's rating decision for Spain. While 7s-10s curves for equity and mezzanine tranches have all steepened (see Fig 4), especially in the 3-9% part of the capital structure, we still see value in these tranches, particularly in the 7Y maturity as systemic risk recedes. **We believe that the iTraxx9 7Y 6-9% tranche provides particularly good value as an inexpensive long given its recent underperformance against the 3-6% tranche. Relative value trades in the 6-9% tranche using**

## 7s-10s steepeners are also attractive.

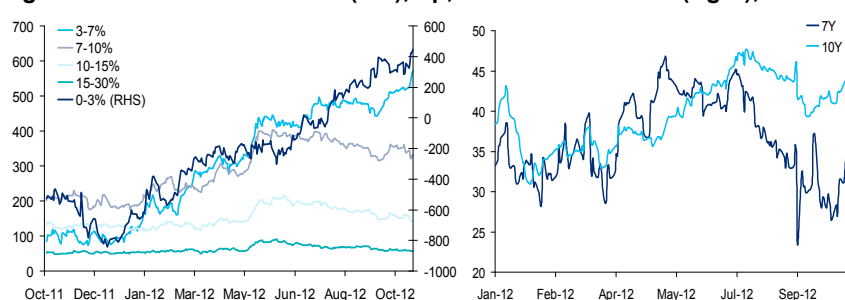
In contrast, correlation skews (the difference between base correlation for 0-3% and 0-30% tranches) in the US have steepened for both 7Y and 10Y CDX IG9 tranches over the past few weeks, as we see increasing market chatter about the deleterious effects of the impending fiscal cliff (see Fig 5). Tranche spreads have actually drifted slightly lower or remained flat for both 7Y and 10Y, and 7s-10s curves have steepened (3-7%) or remained flat (7-15%), as shown in Fig 5. We note that the 10-15% 7s-10s curve has flattened considerably more than the other mezzanine tranche curves over the past year, mostly because of outperformance at the long end. **We therefore think that investors interested in cheap hedges/shorts should consider the 10Y CDX IG9 10-15% tranche either as an outright short or funded by a corresponding long position in the 7Y 10-15% tranche (tranche steepener).**

**Fig 4. iTraxx9 7s-10s Curves (left), bp, Correlation Skews (right), %**



Source: Markit, Citi Research

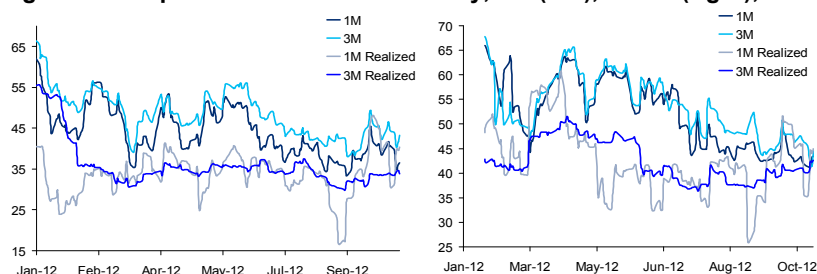
**Fig 5. CDX IG9 7s-10s Curves (left), bp, Correlation Skews (right), %**



Source: Markit, Citi Research

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**Fig 6. ATM Implied and Realized Volatility, HY (left), Xover (right), %**

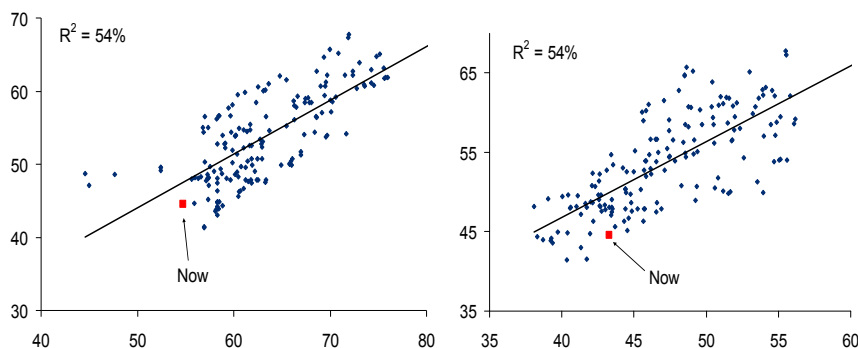


Source: Citi Research

## iTraxx Xover ATM Volatility Cheap to Other Indices

In option markets, at-the-money (ATM) volatility has generally been on a downward trend or remained flat for all the major indices. Realized volatility, on the other hand, has spiked, mainly driven by the sharp move lower in spreads post Moody's confirmation of Spain's Baa3 ratings on October 16<sup>th</sup>. The spike in realized volatility is most pronounced for the high beta CDX HY and iTraxx Xover indices (see Fig 6), especially for the 1M horizon. In a headline driven market such as now, we expect such spikes in realized volatility to occur periodically.

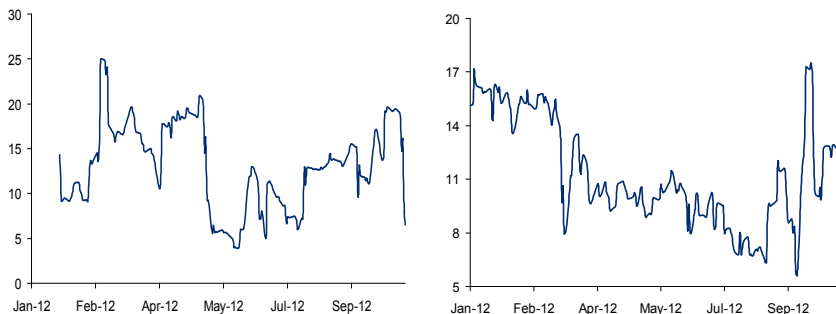
**Fig 7. 3M ATM Vol, Xover (Y) vs Main (X) (left), Xover (Y) vs HY (X) (right), %**



Source: Citi Research

For most of this current year, implied volatility for both 1M and 3M maturities have been significantly higher than realized volatility, which has made volatility selling strategies very profitable. However, on the back of Fed and ECB policy action, a certain degree of investor complacency seems to have set in. We observe this phenomenon in the steady downward march of ATM volatility which is getting closer to convergence with realized volatility for most indices, except for CDX IG. **Given that implied volatility tends to come down in healing or stable markets, investors who believe that there are upside risks due to further policy actions should consider buying ATM volatility, particularly in iTraxx Xover, which appears cheap to other comparable indices (see Fig 7).**

**Fig 8. 3M 20 Delta Volatility Skew, SnrFin (left), HY (right), %**



Source: Citi Research

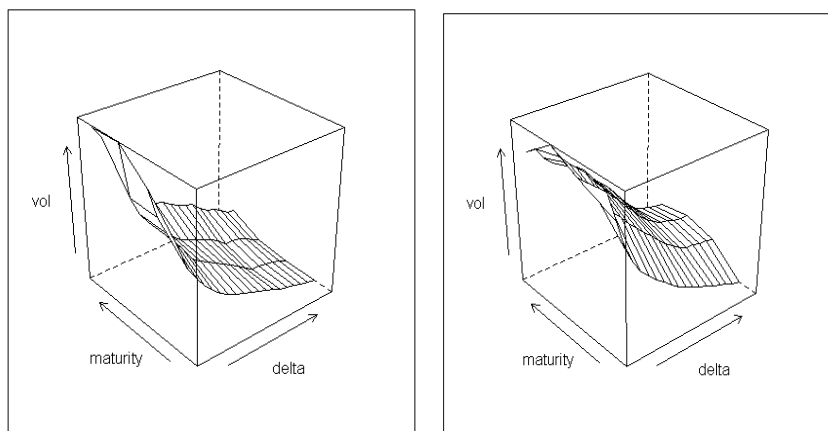
## Steeper Volatility Skew in CDX HY Provides Low Cost Hedges

Volatility skews have also been on a flattening trend recently across all major indices, except for CDX HY (see Fig 8) where it has remained unchanged in the past week or so. For CDX IG, iTraxx Main and iTraxx Xover, this is mainly a consequence of volatility coming down for OTM payer options, while OTM receiver volatility has remained unchanged. In particular, the volatility of OTM payer options on iTraxx Xover have come down significantly – for example, the 3M 20 delta volatility came down from a recent high of 54% to 47%. This mostly

indicates lack of investor demand in tail risk protection as underlying index spreads have mainly tightened over the past month. In contrast, in the iTraxx SnrFin index, the flattening is mainly due to an uptick in OTM receiver volatility, indicating investor confidence in the outperformance of the financial sector on the back of ECB policy actions. Overall, the main takeaway from volatility skews is a reduction of investor perception of tail risk. **In our opinion, the relatively steeper skew in CDX HY (compared to the other indices) makes it an attractive alternative for a low cost hedge using payer spreads (buy ATM payer, sell OTM payer).** The net long investor positioning in the CDX HY index also makes it more susceptible to a widening technical on the back of negative catalysts, such as a political gridlock in the context of the fiscal cliff.

### Trade Idea: Buy Mar HY19 90-97-101.5 Butterflies

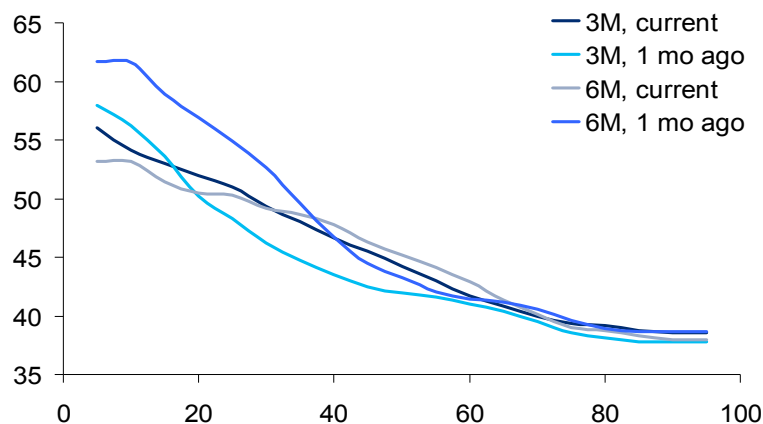
Fig 9. Volatility Surfaces, CDX IG (left), CDX HY (right), %



Source: Citi Research

The recent moves in the CDX HY volatility surface has made it negatively convex (especially compared to CDX IG, see Fig 9) where ATM volatility is rich compared to (OTM) tails, especially if we look at OTM puts. We believe that this move was partly due to long credit investors putting on low cost hedges using payer spreads on the CDX HY index. A good way to monetize negatively convex volatility surfaces is to buy butterflies, where we sell an ATM straddle and buy the tails using OTM payers/receivers. In other words, a butterfly is a short ATM straddle with capped downside, and is short volatility.

Fig 10. Volatility Skew Curves, CDX HY,%



Source: Citi Research

As we have opined earlier (see [The Credit Index Call - Clipping Premiums](#)), we expect credit spreads/prices to remain range bound, given the opposing forces of bearish macro economic fundamentals (especially in Europe) and central bank interventions to induce risk on sentiment. This makes the current environment very suitable for selling volatility, and the capped nature of losses makes butterflies very attractive.

In Fig 10, we look at both 3M and 6M volatility skew curves for CDX HY and how they have behaved over the past month. It is clear that the 6M volatility skew curve is more negatively convex, with the tails having moved much lower compared to the ATM (or belly) of the curve from 1 month before. We therefore recommend buying a 20-50-80 delta butterfly in CDX HY maturing in March 2013 which translates to a 90-97-101.5 butterfly in strike terms.

**Fig 11. Trade Details (as of 10/23/2012) – All Prices Shown are Mids**

Trade	Index	Maturity	Notional	Strike	Delta	Price	Cost
Sell ATM Call	CDX HY	3/20/2013	10MM	97.0	50	299	2,990,000
Sell ATM Put	CDX HY	3/20/2013	10MM	97.0	49	228	2,280,000
Buy OTM Call	CDX HY	3/20/2013	10MM	101.5	20	71	710,000
Buy OTM Put	CDX HY	3/20/2013	10MM	90.0	19	68	680,000
Net							3,880,000

Source: Citi Research

The details of the trade are shown in Fig 11. The net upfront on the trade is 3.88 pts which implies that the trade will be profitable as long as CDX HY trades within a range of 93.12 through 100.9. We believe it is unlikely that CDX HY will breach 93 between now and March – based on the distribution of 6 month price moves in the CDX HY index and the current price level of 99.6875, the probability is 28%. At the other extreme, the last time CDX HY breached the 100.9 level was in early September, right after the ECB OMT program was announced – we believe that absent such a major positive catalyst, it is unlikely that we will see this kind of move as well.

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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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