

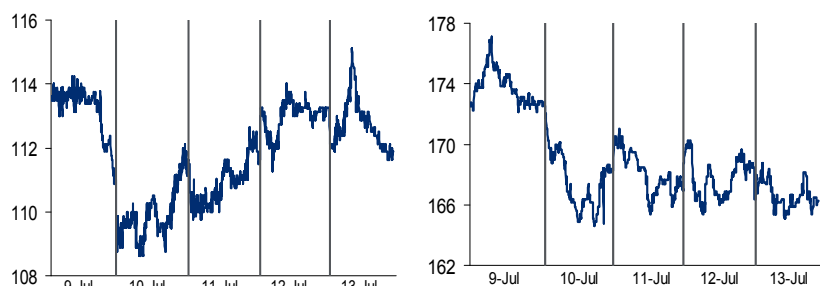
Buy Volatility in Europe, Pay by Selling US Tail Risk

18 July 2012

Market Outlook

Global economies have continued to show signs of slowdown over the past week. In Asia, the Chinese economy showed the slowest growth in Q2 since Q1 of 2009, falling to 7.6% (YoY) from 8.1% from the previous quarter. In the US, signs are beginning to emerge that the US economy has been losing momentum over the quarter. Unexpectedly low retail sales (down 0.5%), low confidence numbers (U of M number at 72, a 7-month low), and a lackluster earnings season have added to investor jitters. In Europe, the uncertainty related to the bank bailout conditions continues to be elevated – the most recent development being a news report stating that the ECB, in a sharp turnaround in its views, has advocated imposing losses on senior bond holders in a liquidation event.

Fig 1. Intraday Index Moves – 5Y CDX IG (left), 5Y iTraxx Main (right), bp



Source: Bloomberg, Citi Research

Credit indices have mainly been range bound over the past week, with most investors unwilling to take any strong directional views, stuck between fears of a global economic slowdown and strong central bank action. The US credit indices have barely budged in the last 7 days, despite an initial tightening earlier in the week on the back of positive expectations related to the FOMC meeting minutes. However, they continued to leak wider over the rest of the week, driven by weaker earnings guidance from reporting corporations as well as worse than expected macro news. The European indices have, however, exhibited some spread tightening (Main 5.5bp, Xover 15bp over the week), outperforming their US peers. This move tighter was driven by a short squeeze at the beginning of the week, but both indices stabilized subsequently and continued to be range bound over the remainder of the week. The market mood continues to be somber, and investors lack conviction – we expect the markets to remain range bound in the short term, with a widening bias.

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Credit

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Global

Derivatives

Recent Citi Research

Global Structured Credit Strategy - Summer volatility returns, Euro CLOs as a recovery play

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US Credit Weekly - Turning to Earnings

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The Credit Index Call - A Few Good Skews

The Credit Index Call - Take Advantage of the Roll-Down

The Credit Index Call - What's On Your Calendar?

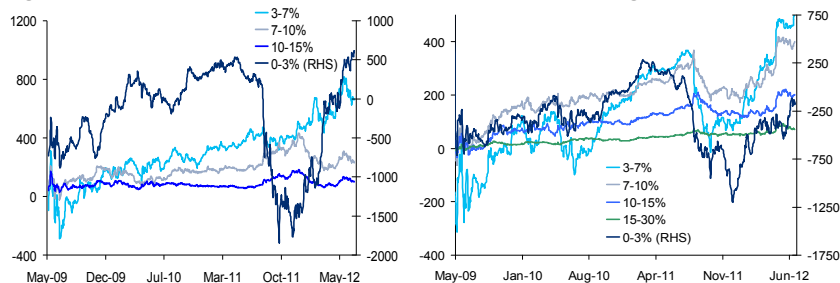
The Credit Index Call - Curve Flatteners in Mezzanine Tranches

The Credit Index Call - Be Bullish for (Almost) Free?

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Fig 2. CDX IG Tranche Curves – 5s-7s (left), 7s-10s (right), bp



Source: Bloomberg, Citi Research

Trading volumes in the US tranche markets continue to remain low. In junior tranches, spreads have been generally tight, especially for the 5Y CDX IG9 equity tranche which is scheduled to expire near the end of this year. Negative news on MBIA (the widest name in the portfolio) last week caused further steepening in both the 5s-7s and the 7s-10s equity tranche curves (see Fig 2). In particular, the 5s-7s tranche curve reached historically high levels, given the extremely short duration of the 5Y CDX IG9 0-3% tranche. The 7s-10s curves for the junior mezzanine tranches (3-7% and 7-10%) have also steepened over the last week, especially for the 3-7% tranche – in contrast, the senior mezzanine 7s-10s curves have remained the same or flattened slightly, with the 15-30% tranche curve flattening significantly. Going forward, we expect the steepness of the 3-7% 7s-10s curve to remain at historically high levels as idiosyncratic default risk continues to accumulate in the 6M – 2Y portion of the CDS curves for MBIA and RDN, the two widest names in the portfolio.

Fig 3. CDX IG volatilities – ATM (left), 25 Delta OTM skew (right), %



Source: Citi Research

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In the US credit option markets, tail risk hedging activity has been slowing down over the past week, as indicated by the recent fall in out-of-the-money (OTM) volatility levels for CDX IG. Sellers of at-the-money (ATM) volatility have been mainly focused on the front month, which has fallen by close to 3% in the past week (see Fig 3) – ATM volatility for other option expiries have remained more or less unchanged over the week. Further, front month (1M) skews have mostly steepened across various deltas, whereas 3M skews have flattened, mainly as a result of the continued selling of ATM volatility in the front month (Fig 3 shows 25 delta OTM skews). We continue to like skew flattener trades in the front month, given the current steepness of the front

month skew curve, compared to the other option expiry tenors. In Europe, as in the US, ATM volatility in iTraxx Main has been falling, mostly as a result of increased investor selling.

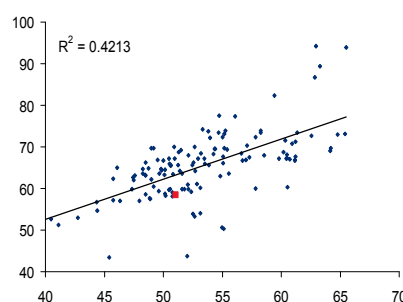
Trade Idea: Long Volatility in Europe, Short US Tail Risk

Our trade idea this week is to go long European volatility by buying an ATM straddle, and partially offset the costs by selling US volatility using an OTM strangle. Since volatility in credit markets continues to fall, and the event risk overhang in Europe ("Grexit" and/or Spanish meltdown) and the US (fiscal cliff) has not disappeared, we believe that this is an opportune time to buy volatility cheaply to offset tail risk as events unfold globally over the rest of the summer and early fall.

Fig 4. Normalized 2M Implied Volatility IG and Main (1/3/2012 = 100)



Fig 5. Main (Y-axis) versus IG (X-axis) 2M Implied Volatility, %



Source: Citi Research

There are multiple factors that motivate this trade. First, given that the primary US risk factor (fiscal cliff) is not expected to manifest itself till early 2013, we believe that the potential for extreme moves in the next 2 months (ending mid September) is higher for European indices. This would indicate that hedging tail risk using European volatility is more appropriate.

Second, we observe that despite the current sell off in ATM volatility in the US, on a relative basis, CDX IG volatility is still rich compared to iTraxx Main volatility. This is clear from Fig 5, which shows a simple regression of the two volatilities, with the red marker representing the most current values.

Fig 6. Realized versus Implied Vol Betas (as of 7/16/2012)

Index Name	Realized Beta	2M Implied Vol	Index Level	Annual Move	Daily Move	Implied Vol Beta
CDX IG	0.34	51%	113.125	57.69	3.63	0.59
iTraxx Main	1.00	58%	169.750	98.46	6.20	1.00

Source: Citi Research

Finally, the beta of CDX IG spreads versus iTraxx Main spreads is about 0.34, based on a regression of realized daily spread moves since the beginning of the year. We can also back out the ratio of daily spread moves for the two indices (see Fig 6) based on 1 standard deviation spread moves from implied volatilities – this comes out to be about 0.59. Therefore, the volatility markets in the US are pricing a much higher relative move (volatility implied beta) in the underlying compared to what has actually happened in the past (realized beta). In other words, volatility in the US is priced richer to European volatility, once we take into account realized spread moves.

Fig 7. Trade Details (as of 7/16/2012)

Trade	Security	Expiry	Strike	Notional	Price (USD)	Delta	Theta (USD)	EURUSD
Buy ATM Straddle	iTraxx Main Payer	9/ 19/ 2012	180	100MM	824,029	50.30%	(7,299)	1.2273
	iTraxx Main Recv	9/ 19/ 2012	180	100MM	1,093,293	-49.70%	(7,230)	
Sell OTM Strangle	CDX IG Payer	9/ 19/ 2012	140	-250MM	(438,159)	-26.50%	7,845	
	CDX IG Recv	9/ 19/ 2012	105	-250MM	(469,728)	25.90%	6,607	
Net					1,009,435		(78)	

Source: Citi Research

The details of the trade are shown in Fig 7. The core trade is a long iTraxx Main ATM straddle with September expiry. In order to reduce the upfront cost, we advocate selling tail risk in US indices, using an OTM strangle. In particular, given our estimate of 3.6bp daily spread moves in the CDX IG index (using 2M implied volatility), we think a payer strike of 140bp would be appropriate – this is roughly equal to the ATM 2M forward (116bp) plus expected volatility over 2 months (40 trading days – 23bp). This translates to a 25 delta OTM strangle for CDX IG, with a receiver strike of 105bp.

The trade breaks even if iTraxx Main moves more than 19bp in either direction (given a forward duration of 4.4). Based on the distribution of realized spread moves of iTraxx Main over a period of 2 months (going back to May 2011), this translates to a 54% probability of being in the money at option expiry, assuming the OTM strangle on CDX IG expires worthless, which we believe is likely given the way we have chosen the strikes. The trade would lose money if there are extreme moves in CDX IG spreads combined with relatively modest moves in iTraxx Main spreads. An outperformance of implied volatility in the US versus Europe would also be a negative for the trade.

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Appendix A-1

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