

## Crossover vol overshoots – Sell it vs. SenFin

### Dislocations in longer-dated iTraxx vol markets shouldn't last long

- **Investors are starting to fade the underperformance of high yield spreads and we think they will do the same in the European vol market; where dislocations are equally pronounced** – Crossover implied vol and implied to realised vol ratios have increased substantially more than in investment grade indices.
- **The entry point for a short Crossover vs. long Senior Financials (SenFin) ATM volatility trade looks attractive** – This is especially the case in longer-dated expiries. We prefer to buy volatility in SenFin than in Main given the lower implied to realised ratios in SenFin and the potential surprises which may come from the bank stress tests this summer.
- **We recommend investors to sell ATM January vol in iTraxx Crossover and buy it in iTraxx Senior Financials, via delta-hedged straddles** – Our target is for the current 6m vol difference between Crossover and SenFin, currently at >5%, to move back to its 6m average of -6%.
- We wouldn't do this trade using OTM payer vol given that, if the high yield weakness continues, the payer skew in Xover would steepen substantially after its sharp recent flattening.

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Abel Elizalde  
+44-20-3569-4446  
abel.elizalde@citi.com

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

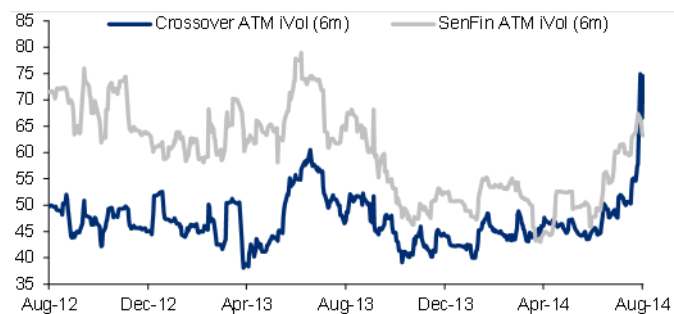
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**High yield has been the main victim of the recent widening, both in spreads as well as in vol terms.** The spike in Crossover implied volatility, especially in longer-dated maturities, has been substantial: Figure 1 shows Crossover and SenFin 6m implied vol.

**Not only Crossover implied vol has recently overshoot, compared to SenFin vol, but the implied to realised vol ratio in Crossover vol has also increased substantially relative to SenFin one (which has barely moved), as Figure 2 shows.**

Figure 1. 6m implied volatility

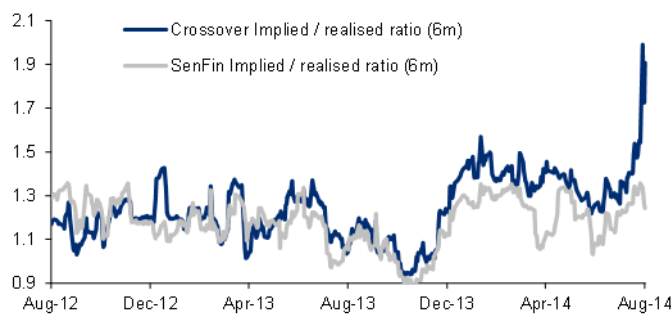
In %.



Source: Citi Research, Markit.

Figure 2. Ratio of implied to realised 6m volatility

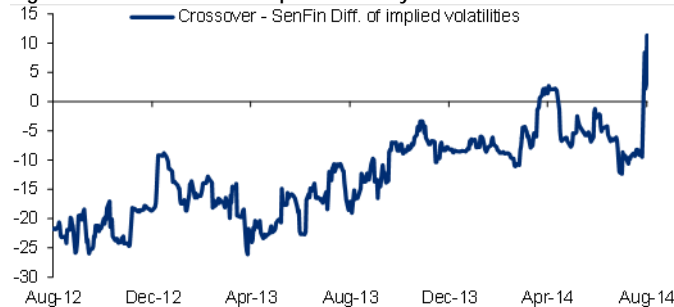
Ratio of current 6m implied volatility and past 6m realised volatility.



Source: Citi Research, Markit.

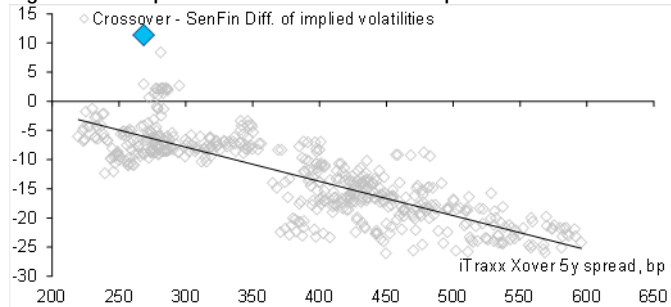
**The 6m implied vol differential between Crossover and SenFin has reached stretched levels, as Figure 3 and Figure 4 show – and we don't think this will last.** Over the past 2 years, Crossover vol has only been above SenFin vol once (earlier this year), and that didn't last very long.

Figure 3. Difference of 6m implied volatility



Source: Citi Research, Markit. In %.

Figure 4. 6m implied vol. difference vs. index spreads



Source: Citi Research, Markit.

**The entry point for a short Crossover vs. long SenFin volatility trade looks attractive.** This is especially the case in longer-dated expiries. Figure 5 looks, across tenors, at the difference in implied volatilities and implied to realised volatility ratios: the 6m differences are the highest, both comparing the current difference with the average over the past 6m as well as comparing the 6m z-score (i.e. correcting by the standard deviation). Moreover, **the daily bp volatility currently implied by 6m Crossover options is above both the average of the recent close-to-close and intra-day average spread changes; this is not the case for SenFin.** Figure 6 compares the current daily implied bp volatility in 6m options (13bp for Crossover, 3bp for SenFin) with the recently realised volatility: both close-to-close and intra-day range.

Figure 5. Implied vol and implied to realised vol ratios by expiry

Crossover minus Senior Financials.

	Implied volatility difference (%)		
	Current	6m av.	6m z-score
1m	-6	-7	0.2
3m	-7	-7	0.0
6m	11	-5	3.9

	Implied to realised vol ratio difference		
	Current	Current	Current
1m	9%	8%	0.0
3m	24%	10%	1.1
6m	66%	15%	4.8

Source: Citi Research, Markit. As of COB yesterday.

Figure 6. Daily bp spread changes

In bp.

	Crossover	SenFin
Close-to-close change (past month av.)	7	2.3
Intra-day range (past month av.)	12	4.6
Current daily bp implied vol (6m ATM options)	13	3

Source: Citi Research, Markit, Bloomberg. As of COB yesterday.

In our latest [European Credit Weekly](#) we recommended adding risk in high yield (and reducing it in investment grade) over the near term, in order to exploit the dislocations created by the recent widening. We believe the case is similar in the vol space. Although our long-term view is for Crossover to underperform Main and Senior Financials spread-wise, we believe that volatility-wise the recent dislocations will correct. We prefer to buy volatility in SenFin than in Main given the lower implied to realised ratios in SenFin and the potential surprises which may come from the bank stress tests this summer.

Our target is for the current 6m vol difference between Crossover and SenFin, currently at >5%, to move back to its 6m average of -6%.

## Trade

We recommend investors to sell ATM January vol in iTraxx Crossover and buy it in iTraxx Senior Financials, via delta-hedged straddles. We use a 4x higher notional in the Senior Financials leg (vs. the Crossover leg) to make the Vega and Theta exposures of each leg roughly equal. Figure 8 and Figure 9 show the details of each leg, and Figure 7 shows the trade sensitivities (on a €100m notional).

The Vega on each leg is around 6c of the Crossover straddle notional; i.e. if the current implied vol difference moves ~10% (as per our target above), the trade P&L would be around 60c.

Figure 7. Trade sensitivities – sell Crossover vs. buy SenFin Jan ATM straddles, delta-hedged  
In €, using the notionals in the next two tables.

	Delta	Gamma	Theta	Vega
Crossover S21	0	-327	11,448	-60,415
SenFin S21	8	4,868	-13,744	53,604
Total			-2,695	-6,811

Source: Citi Research.

Figure 8. Trade leg 1 – sell Jan Crossover 275bp straddles, delta-hedged

Type	Strike	Expiry	Position	Notional	Vol	Price (c)	Upfront	Delta		Gamma		Theta		Vega	
								% Notional	Ccy	% Notional	Ccy	Cents	Ccy	Cents	Ccy
receiver	275	21-Jan-15	Sell	100,000,000	65.98%	178.0c	1,780,000	39%	19,099	-0.37%	-183	0.25	2,550	-3.02	-30,208
payer	275	21-Jan-15	Sell	100,000,000	66.41%	249.0c	2,490,000	-61%	-29,902	-0.29%	-144	1.08	10,786	-3.02	-30,208
Index			Buy prot.	21,870,000	260.25	110.5c	2,297,336	100%	10,804	0.00%	0	-0.86	-1,888	0.00	0
Total trade							6,567,336	0%	0	0.00%	-327	0.00	11,448	0.00	-60,415

Source: Citi Research, Markit. Implied prices shown, using yesterday's COB levels.

Figure 9. Trade leg 2 – buy Jan SenFin 70bp straddles, delta-hedged - Notionals in € equivalent

Type	Strike	Expiry	Position	Notional	Vol	Price (c)	Upfront	Delta		Gamma		Theta		Vega	
								% Notional	Ccy	% Notional	Ccy	Cents	Ccy	Cents	Ccy
receiver	70	21-Jan-15	Buy	400,000,000	60.91%	50.0c	-2,000,000	-40%	-77,217	1.30%	2,511	-0.10	-3,853	0.67	26,802
payer	70	21-Jan-15	Buy	400,000,000	64.75%	65.0c	-2,600,000	60%	114,805	1.22%	2,357	-0.28	-11,378	0.67	26,802
Index			Sell prot.	78,040,000	66.000	101.6c	-1,256,084	-100%	-37,580	0.00%	0	0.19	1,486	0.00	0
Total trade							-5,856,084	0%	8	0.00%	4,868	0.00	-13,744	0.00	53,604

Source: Citi Research, Markit. Implied prices shown, using yesterday's COB levels.

The risk of this trade idea comes mainly from the current difference between implied vols increasing further from the current levels in a scenario where high yield underperforms further.

We are adding a trade idea in this report where we sell/buy 6m ATM delta-hedged straddles in Crossover/SenFin, keep them until they are no longer 6m and enter new 6m ones then.

## Analytics, Past Trade Ideas & Publications

### Analytics – Available at Citi Velocity

Options	<a href="#">iTraxx Volatility Report</a> <a href="#">CDX Volatility Report</a> <a href="#">European Cross-Asset Volatility Report</a> <a href="#">Volatility P&amp;L Report – Credit Indices</a>	Tranches	<a href="#">iTraxx Series 9 Tranche Report</a> <a href="#">iTraxx Series 19 Tranche Report</a> <a href="#">iTraxx Series 21 Tranche Report</a>
Curves	<a href="#">iTraxx Curve P&amp;L Report</a>	Indices	<a href="#">Main Report</a> <a href="#">Crossover Report</a> <a href="#">CDS Indices Positioning Report</a> <a href="#">CDS Indices Trading Volumes Report</a>
Returns	<a href="#">European Credit Derivatives Returns</a>		

### Recent Trade Ideas

Options -	<a href="#">Sell Xover receivers</a>	1-Aug-14
Tranches -	<a href="#">Long risk super senior tranches</a>	21-Jul-14
Options -	<a href="#">Main receiver 1x2s</a>	13-Jun-14
Options -	<a href="#">Main bearish risk reversal</a>	13-Jun-14
Curves -	<a href="#">5s10s Senior Fin flattener</a> (J. Faith)	30-May-14
Options -	<a href="#">European vs. US credit vol</a>	28-May-14
Tranches -	<a href="#">Sell 0-3% Jun-15 S9 protection: outright, vs. CDX IG 5y or vs. SX5E</a>	21-May-15
Indices -	<a href="#">Sub/Senior Financials compression</a> (J. Faith)	20-May-15
Curves -	<a href="#">5s10s Main Flatteners</a>	25-Apr-14
Options -	<a href="#">Main 70-75 May Receiver 1x2</a>	2 Apr 2014
Options -	<a href="#">Buy SenFin vs. Sell CDX IG straddles</a>	18 Mar 2014
Single names vs. Index	<a href="#">Releveraging Trade</a> (H. Lorenzen)	24 Feb 2014
Tranches vs. Options -	<a href="#">Sell protection and monetize the positive convexity by selling straddles</a>	20 Feb 2014
Tranches -	<a href="#">Buy 9-100% S9 Jun-18 protection, delta-hedged</a>	20 Feb 2014
Tranches -	<a href="#">Sell 3-6% S9 Jun-18 protection, delta-hedged</a>	20 Feb 2014
Options vs. Curves -	<a href="#">Flatteners vs. OTM payers</a>	13 Feb 2014
Options -	<a href="#">Sell Main vol, buy SenFin vol</a>	21 Jan 2014
Tranches -	<a href="#">More mezz, less seniors - 3-6% vs. super senior</a>	15 Jan 2014
Options -	<a href="#">SenFin vs. Xover Recs</a>	9 Jan 2014
Options -	<a href="#">Payer spread vs. index long</a>	9 Jan 2014
Options -	<a href="#">Sell 1m Main straddles</a>	9 Jan 2014
Options -	<a href="#">Sell Crossover Receiver</a>	9 Jan 2014
Options -	<a href="#">Sell strangles and go on holidays: Position for spreads to stay in the recent range in mid-January</a>	9 Dec 2013
Tranches -	<a href="#">Sell S9 Jun-18 6-9% protection vs. Xover 5y S20</a>	15 Nov 2013
Tranches -	<a href="#">Sell S9 Jun-18 22-100% protection vs. light delta</a>	15 Nov 2013
Indices -	<a href="#">Long risk Senior Fins. vs. short risk Main</a>	5 Nov 2013
Options -	<a href="#">Crossover receiver ladders</a>	23 Oct 2013

“European Credit Derivatives Views & Trades” Investor Presentation

Teach-in presentations: [Options](#) / [Tranches](#)

### Other publications

<a href="#">An Algorithm-driven Relative Value Signal: A simple method to monetize credit versus equity relative value</a> (A. Basu)	14-Aug-14
<a href="#">Time For Action On The CDS Legal Front: All You Wanted To Know But Were Afraid To Ask About The Switch To The New CDS Contracts</a>	13-Aug-14
<a href="#">Trading volumes in European credit</a>	5-Aug-14
<a href="#">iTraxx Roll - Potential Changes: Crossover to be expanded to 75 names</a>	1-Aug-14
<a href="#">Smart Ways to Sell Credit Volatility</a> (A. Basu)	24 Jul 2014
<a href="#">2014 CDS Definitions getting closer II: Update on protocol and CoCo supplement</a>	11-Jul-14
<a href="#">Hedging the tail – Why real money should consider all options</a> (with H. Lorenzen)	1 Jul 2014
<a href="#">Lazy longs for July</a>	23 Jun 2014
<a href="#">Where do we expect iTraxx rolls to trade?</a>	19 Mar 2014
<a href="#">Our preferred carry trades in indices, options and tranches</a>	11 Mar 2014
<a href="#">New 2014 CDS Definitions - What's new? What's changing? Why? When? How?</a>	26 Feb 2014
<a href="#">iTraxx Roll - Potential Changes: Crossover number of constituents will increase to 60 names</a>	10 Feb 2014
2014 European Credit Outlook: <a href="#">Strategy</a> // <a href="#">Positioning and Trades</a>	13 Jan 2014
<a href="#">Global Structured Credit Outlook: A Rockier Ride</a> (R Roy, A Basu, K Malhotra, R Brauchler)	20 Dec 2013
<a href="#">2013 Trading Volumes in European Credit: CDS Indices, Single Name CDS and IG Bonds</a>	5 Dec 2013
<a href="#">Credit Options - What did investors do in 2013? What will they do in 2014?</a> (2013 European Credit Conference Presentation)	4 Dec 2013
<a href="#">Credit Index Options 1-0-1: Launching our option pricing tool @ CitiVelocity</a> (2013 European Credit Conference Presentation)	2 Dec 2013
<a href="#">Europe Returns: Assessing value across flow and structured credit assets</a>	22 Nov 2013

Please click the links to see the complete trade ideas and rationales and pricing at time of recommendation.  
Source: Citi Research.

## Trade Recommendations Summary

We are opening the trade in this report.

Figure 10. Open trades – Summary and P&L

Trade Description	Leg	Format	Direct.	Notnl.	Entry Upfront	Entry Spread	Coupon	Current Upf.	Current Spread	P&L*
Sell 1m Main straddles *** 09-Jan-14	Sell 1m Main straddles	Price	Buy	1.00	0.00%			0.91%		0.91%
									<b>Total</b>	<b>0.91%</b>
Payer spread vs. index long *** 09-Jan-14	Buy 3m 25-60% pay spread Sell index prot.	Price Price	Buy Buy	1.00 1.00	0.00% 0.00%			-0.51% 1.25%		-0.51% 1.25%
									<b>Total</b>	<b>0.75%</b>
SenFin vs. Xover Recs *** 09-Jan-14	Buy 3m SenFin Recs Sell 3m Xover Recs	Price Price	Buy Buy	1.00 0.29	0.00% 0.00%			0.74% -2.16%		0.74% -0.64%
									<b>Total</b>	<b>0.10%</b>
Releveraging trade 24-Feb-14	Basket of low spread/leverage CDS Main NonFins	Prot. Prot.	Buy Sell	1.00 0.50	-3.14% -1.54%	35 67	100 100	-3.29% -1.71%	32 64	-0.47% 0.25%
									<b>Total</b>	<b>-0.22%</b>
iTraxx Main 5s10s flattener 25-Apr-14	Main S21 5y Main S21 10y	Prot. Prot.	Buy Sell	1.36 1.00	-1.42% 1.48%	71 117	100 100	-1.66% 0.58%	65 107	-0.75% 1.21%
									<b>Total</b>	<b>0.45%</b>
Series 9 Jun-15 0-3% 21-May-14	Series 9 Jun-15 0-3%	Prot.	Sell	1.00	-0.75%	430	500	0.18%	0	0.25%
									<b>Total</b>	<b>0.25%</b>
3-6% vs. Crossover 12-Jun-14	Sell 3-6% S21 Main prot. Buy S21 Xover prot.	Prot. Prot.	Sell Buy	1.00 1.00				7.89% -10.15%	273 273	-1.22% 1.11%
									<b>Total</b>	<b>-0.11%</b>
Long risk super senior 21-Jul-14	S9 22-100% Jun-18 S9 Index Jun-18	Prot. Prot.	Sell Buy	1.00 0.20	-0.35% -4.46%	16 58,000	25 175	-0.20% -4.31%	20 62	-0.13% 0.01%
									<b>Total</b>	<b>-0.13%</b>
Sell Xover Receiver 01-Aug-14	Xover Aug 250bp Rec	Price	Sell	1.00	0.14%			0.13%		0.01%
									<b>Total</b>	<b>0.01%</b>
Xover vs. SenFin vol *** 15-Aug-14	Sell 6m Xover DH straddles Buy 6m SenFin DH straddles	Price Price	Buy Sell	1.00 4.00	0.00% 0.00%					
									<b>Total</b>	

Source: Citi Research. Spreads and coupons in bp. \* P&L expressed as % of the leg with notional equal to 1. \*\* Over the last month. Prices as of COB yesterday. \*\*\* We track the trade P&L by using an initial 0% upfront and a current upfront equal to the trade P&L in %. DH = delta hedged.

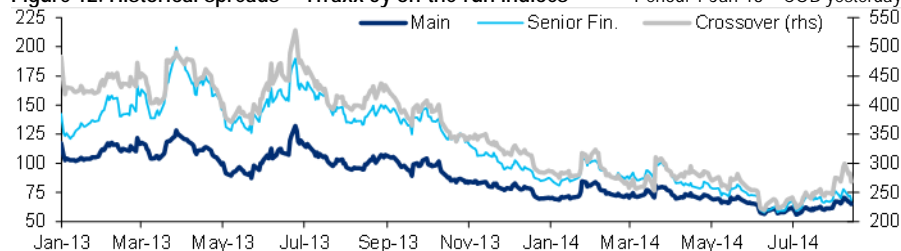
Figure 11. Open and closed trades summary statistics

Number	Open	Closed*	Percentage	Open	Closed*
In profit	6	20	In profit	67%	69%
In loss	3	9	In loss	33%	31%
	9	29			

Source: Citi Research. \* Since 1-Jun-13. Excluding the trade ideas opened in the current publication.

### Representative Market Conditions

Figure 12. Historical spreads – iTraxx 5y on-the-run indices



Source: Citi Research, Markit. In bp.

Figure 13. Closed trades since Oct-13 – Summary and P&L

Trade Description	Leg	Format	Direct.	Notnl.	Entry Upfront	Entry Spread	Coupon	Final Upfront	Final Spread	P&L* Total
S19 Jun-16 0-3% vs. 3-6%	Main S19 0-3% Jun-16	Prot.	Sell	1.00	8.00%	839	500	3.88%	725	5.11%
Open: 26-Sep-13	Main S19 3-6% Jun-16	Prot.	Buy	2.00	-7.00%	234	500	-9.75%	132	-7.47%
Close: 9-Dec-13									<b>Total</b>	<b>-2.36%</b>
SenFin vs. Main	Senior Fin. 5y S20	Prot.	Sell	1.00	0.60%	112	100	0.07%	102	0.61%
Open: 26-Sep-13	Main 5y S20	Prot.	Buy	1.35	-0.79%	84	100	-0.94%	81	-0.32%
Close: 9-Dec-13									<b>Total</b>	<b>0.29%</b>
S9 super senior vs. light delta	Main S9 22-100% Jun-18	Prot.	Sell	1.00	0.18%	30	25	0.03%	26	0.19%
Open: 15-Nov-13	Main S9 index Jun-18	Prot.	Buy	0.33	-3.65%	93	175	-4.24%	77	-0.29%
Close: 14-Jan-14									<b>Total</b>	<b>-0.10%</b>
75-85 Main January strangle	75bp Jan Main receiver	Price	Sell	1.00	0.08%			0.19%		-0.11%
Open: 9-Dec-13	85bp Jan Main Payer	Price	Sell	1.00	0.13%			0.00%		0.13%
Close: 14-Jan-14									<b>Total</b>	<b>0.02%</b>
Sell Crossover Receiver	275bp Feb. Receiver	Price	Sell	1.00	0.32%			0.17%		0.15%
Open: 9-Jan-14									<b>Total</b>	<b>0.15%</b>
Close: 13-Feb-14										
iTraxx Main Eq. Notional Flattener	Main S19 3y	Prot.	Buy	1.00	-0.97%	65	100	-1.57%	33	-1.04%
Open: 5-Sep-13	Main S19 5y	Prot.	Sell	1.00	0.24%	105	100	-1.47%	65	2.15%
Close: 13-Feb-14									<b>Total</b>	<b>1.11%</b>
S9 6-9% vs. S20 Crossover	Main S9 6-9% Jun-18	Prot.	Sell	1.17	-0.25%	294	300	-3.19%	223	4.37%
Open: 15-Nov-13	Crossover S20 Dec-18	Prot.	Buy	1.00	-7.07%	344	500	-9.80%	274	-4.06%
Close: 19-Feb-14									<b>Total</b>	<b>0.31%</b>
3-6% vs. super senior	Main S9 3-6% Jun-18	Prot.	Sell	1.00	-5.50%	366	500	-5.34%	367	0.34%
Open: 14-Jan-14	Main S9 22-100% Jun-18	Prot.	Buy	9.00	0.03%	26.625	25	0.12%	28	0.60%
Close: 19-Feb-14									<b>Total</b>	<b>0.94%</b>
Main vs. SenFin vol ***	Sell Feb 70 Main straddles, DH	Price	Buy	1.00	0.00%			-0.02%		-0.02%
Open: 21-Jan-14	Buy Feb 80 SenFin straddles, DH	Price	Buy	0.50	0.00%			0.02%		0.01%
Close: Expired									<b>Total</b>	<b>-0.01%</b>
Senior tranche short ***	Buy Jun-18 S9 9-12% prot., DH	Price	Buy	0.03	0.00%			0.26%		0.01%
	Buy Jun-18 S9 12-22% prot., DH	Price	Buy	0.10	0.00%			0.24%		0.02%
Open: 20-Feb-14	Buy Jun-18 S9 22-100% prot., DH	Price	Buy	0.78	0.00%			-0.05%		-0.04%
Close: 20-May-14									<b>Total</b>	<b>-0.01%</b>
Mezz tranche long ***	Sell Jun-18 S9 3-6% prot., DH	Price	Buy	1.00	0.00%			-0.55%		-0.55%
Open: 20-Feb-14									<b>Total</b>	<b>-0.55%</b>
Close: 20-May-14										
Main May Rec 1x2s	Main May 75bp Rec	Price	Buy	1.00	0.24%			0.16%		-0.08%
Open: 2-Apr-14	Main May 70bp Rec	Price	Sell	2.00	0.10%			0.02%		0.16%
Close: 20-May-14									<b>Total</b>	<b>0.09%</b>
Flattener vs. OTM payer ***	3s5s flattener Main	Price	Buy	1.00	0.00%			0.36%		0.36%
Open: 13-Feb-14	Sell 3m 120bp Main payer	Price	Buy	0.75	0.00%			0.12%		0.09%
Close: 27-May-14									<b>Total</b>	<b>0.44%</b>
Senior Fin vs. CDX IG straddle	SenFin Jun-14 90bp straddle	Price	Buy	1.00	0.97%			0.79%		-0.18%
Open: 18-Mar-14	CDX IG Jun-14 65bp straddle	Price	Sell	1.90	0.51%			0.19%		0.61%
Close: 27-May-14									<b>Total</b>	<b>0.43%</b>
Equity tranche vs. straddle ***	Sell Jun-18 S9 equity prot., DH	Price	Buy	1.00	0.00%			-1.48%		-1.48%
Open: 20-Feb-14	Sell 1m Main straddles, DH	Price	Buy	0.50	0.00%			0.33%		0.16%
Close: 21-Jul-14									<b>Total</b>	<b>-1.31%</b>
Main vs. CDX IG ***	Sell 3m Main DH straddles	Price	Buy	1.00	0.00%			-0.05%		-0.05%
Open: 28-May-14	Buy 3m CDX IG DH straddles	Price	Sell	1.00	0.00%			-0.07%		0.07%
Close: 21-Jul-14									<b>Total</b>	<b>0.02%</b>
Main July Rec 1x2s	Main July 60bp Rec	Price	Buy	1.00	0.13%			0.00%		-0.13%
Open: 13-Jun-14	Main July 55bp Rec	Price	Sell	2.00	0.04%			0.00%		0.09%
Close: 16-Jul-14									<b>Total</b>	<b>-0.04%</b>

Source: Citi Research. Spreads and coupons in bp. \* P&L expressed as % of the leg with notional equal to 1. \*\*\* We track the trade P&L by using an initial 0% upfront and a final upfront equal to the trade P&L in %.

**Notes:** The list of open trades reflects our current views; we have no plans to provide regular coverage or updates to these trades. P&L on trade ideas includes carry and roll costs but not trading commissions/costs. Results should not, and cannot, be viewed as an indicator of future performance.

## 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. Credit index options are physically settled. The above calculations do not include any additional fees or transaction costs. Note that ratio writing would leave the writer uncovered in one leg of the trade.



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## Appendix A-1

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