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Europe

Buy Main Straddles; Sell CDX IG Straddles

European Credit Derivatives – Trade Ideas

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- **European indices to remain more volatile than US ones – We expect iTraxx Main to outperform CDX IG on any tightening … but also to underperform it on any widening**. If investors continue believing in the value of the "central bank put" and keep reaching for yield, we expect them to favour longs in European financials and periphery; we believe the "central bank put" has more room to perform in Europe than in the US, where the Fed has been clearly more accommodative than the ECB for a long time. On the other hand, if investors lose faith in the ability of central banks to continue forcing everyone to add more longs, we expect the market to immediately start focusing again on the many sovereign and banking problems that have haunted Europe for the last couple of years. In that scenario, the probability of a European-led sell-off on the back of one of the many sovereign/bank problems that Europe faces is, in our view, very high.

- **Central bank announcements due this week can cause the market to aggressively move in one direction or another**. Later today, the FOMC statement will reveal if the Fed remains (as it is expected) accommodative in light of recent softer data. On Thursday, the ECB will announce its rate decision: a 25bp cut is widely anticipated.

- **Pricing for 3m options is telling us that the market currently prices a 1.5x beta between the two indices**. However, the recent realised beta has been higher than that level. Compared to the recently realised volatility, implied volatility in Main is high vs. implied volatility in CDX IG.

- **We construct a trade which profits if, going forward, Main moves more than 1.5bp for every 1bp that CDX IG moves** (either way) – i.e. if the realised beta between the two indices is above the 1.5x one currently priced in the 3m options market.

- **Trade: Buy iTraxx Main ATM straddles; sell CDX IG ATM straddles – July expiry, both delta-hedged**. In particular, for every €100m of notional in 100bp strike Main straddles bought, we sell €150m of 75bp straddles CDX IG straddles (which, using a 1.31 exchange rate, is equivalent to around $196.5m).

Investing in options is not suitable for all investors. Please see the disclosures concerning the risks of investing in options below and discuss whether this particular options strategy is suitable for you with your Financial Advisor.

Beta between Main and CDX IG: What's the options market pricing – and what has been realised recently?

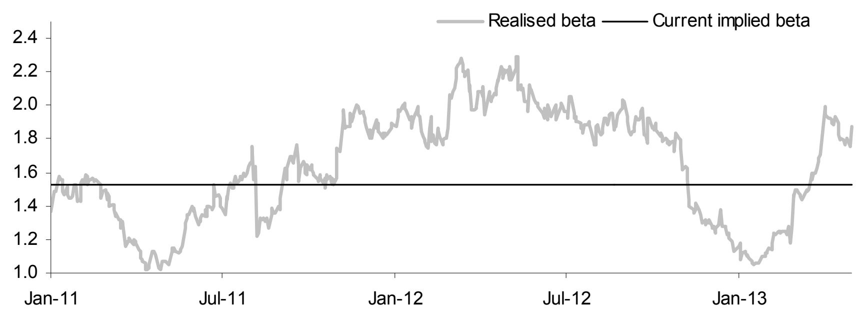
The 3m option market implies a ~1.5x beta between Main and CDX IG

- In iTraxx Main, the 3m implied volatility and forward spreads are 40% and 104bp respectively – which implies a daily change of 2.63bp.[1]
- In CDX IG, the 3m implied volatility and forward spreads are 35% and 79bp respectively – which implies a daily change of 1.72bp.
- Thus, if the options market is implying that Main will move 2.63bp per day and CDX IG move 1.72bp per day, the implied beta between the two is 1.53x (= 2.63 / 1.72).

Main has been realising a 3m beta well above 1.5x since mid-March

Figure 1 clearly shows that, since Jan-11, only before Jul-11 and between Nov- and Mar-12 the 3m realised beta of the two indices was below the current implied level.

Figure 1. 3m historical realised beta vs. current implied beta
Beta of Main vs. CDX IG – i.e. the "average" bp daily change in Main for every bp CDX IG moves



Source: Citi Research

A closer look at the options market explains why the implied beta between Main and CDX IG looks so low vs. the beta both indices have realised recently. Figure 2 shows the ratio of 3m implied volatility to realised volatility for both indices.[2] Currently, the implied to realised ratio of iTraxx Main is substantially higher than the ratio of CDX IG. In other words, **compared to the recently realised volatility, implied volatility in Main is quite high vs. implied volatility in CDX IG**.

The last time the difference between the two implied to realised ratios (and also the difference between realised and implied betas) was as high as the current difference was in April 2012. Back then, the ratio of implied to realised volatility in Main and CDX IG were 1.7x and 1.3x respectively; the realised beta was around 2x and the implied beta was around 1.5x. From Figure 1 we can clearly see that the realised beta from April to November last year was way higher than the 1.5x level the market was implying in April. We believe we are currently in a similar situation

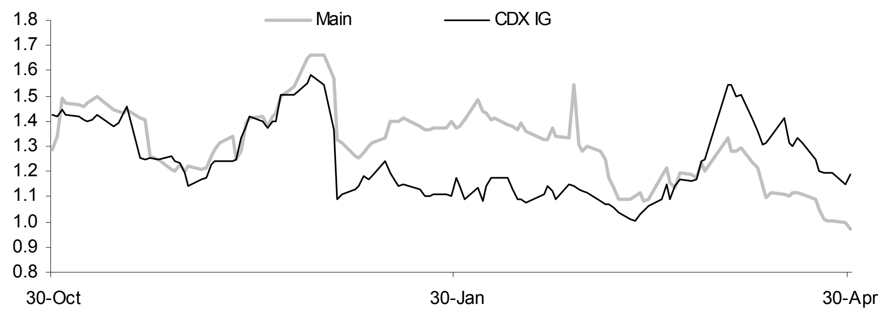
[1] 2.63bp daily move = (104bp forward spread x 40% annualised implied volatility) / Sqrt(252).

[2] The ratio of implied vs. realised volatility is a measure of the demand for implied volatility normalised by the recent realised volatility. If the ratio is one, investors buying options are willing to pay (in volatility terms) the same level of volatility the index has been realising.The P&L of a delta hedged option depends on whether implied volatility is higher than realised: for a ratio of, say, 2 an investor buying options needs realised volatility to be more than twice the recent one to make money.

and expect Main to move, going forward, much more than 1.5x the movement in CDX IG.

Figure 2. 3m Implied to realised volatility ratios

3m ATM implied volatility divided by 3m realised volatility.



Source: Citi Research

So – What's the trade? Buy Main & sell CDX IG straddles

Buy iTraxx Main ATM straddles; sell CDX IG ATM straddles – July expiry, both delta hedged

In the previous sections, we argued that:

- Fundamentally, we expect Main to move more than CDX IG either if spreads widen or if they widen.
- Pricing for 3m options is telling us that the market currently prices a 1.5x beta between the two indices.
- At least since Jan-11, the 3m realised beta has generally been higher than 1.5x.

If we believe that is going to be the case going forward (i.e. Main to move more than 1.5x whatever CDX IG moves) … what's the trade? In order to profit from this view we believe investors should buy ATM straddles in Main and sell ATM straddles in CDX IG (both delta-hedged); we use a July expiry and size the trade in order for the P&L to be positive if Main moves more than 1.5x CDX IG and negative otherwise.

Figure 3 shows the details of the trade – in particular, **we buy €100m of 100bp strike iTraxx Main straddles and sell €150m of 75bp strike CDX IG straddles (which, using a 1.31 exchange rate, is equivalent to around $196.5m)**.

Figure 3. Trade: Buy Main Straddle vs. Sell CDX IG straddle – both with July expiry and delta-hedged – **All notionals in EUR equivalent**

Index	Type	Strike	Expiry	Price	Position	€ Notional	€ Upfront	€ Carry*	€ Delta	€ Gamma	€ Theta	€ Vega
Main	Straddle	100	17-Jul-13	72.4c	Buy	100,000,000	-724,001	0	20,675,026	29,657,360	-5,043	16,401
Main	Index		5Y	@ 99bp	Sell prot.	20,675,026	-10,172	44,222	-20,675,026	0	569	0
						Main leg total	**-734,173**	**44,222**	**0**	**29,657,360**	**-4,474**	**16,401**

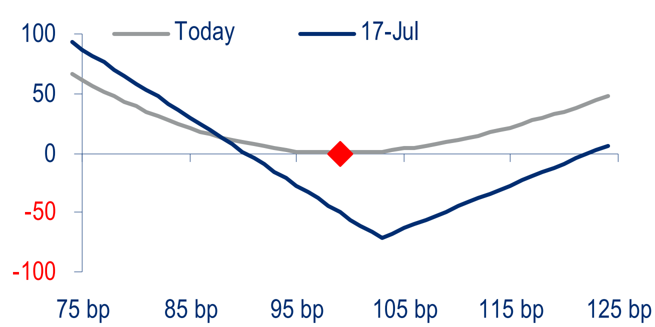
Index	Type	Strike	Expiry	Price	Position	€ Notional	€ Upfront	€ Carry*	€ Delta	€ Gamma	€ Theta	€ Vega
CDX IG	Straddle	75	17-Jul-13	48.1c	Sell	-150,000,000	720,957	0	-40,453,077	-44,355,360	5,720	-17,996
CDX IG	Index		5Y	@ 75bp	Buy prot.	-40,453,077	502,118	-86,525	40,453,077	0	-873	0
						CDX IG leg total	**1,223,075**	**-86,525**	**0**	**-44,355,360**	**4,847**	**-17,996**

	€ Upfront	€ Carry*	€ Theta
Total	**488,901**	**-42,303**	**373**

Source: Citi Research. * Carry up to the option expiry. Indicative mid prices as of open 1 May shown.

Figure 4. Delta-hedged Main straddle bought – MtM vs. index spreads

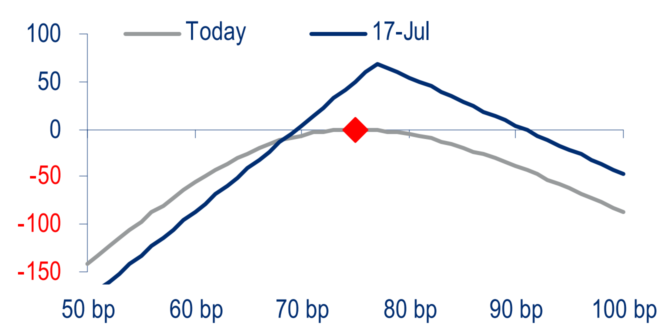
In cents of the Main straddle notional. 100 cents = 1%.



Source: Citi Research.

Figure 5. Delta-hedged CDX IG straddle sold – MtM vs. index spreads

In cents of the Main straddle notional. 100 cents = 1%.



Source: Citi Research

Figure 4 and Figure 5 show the P&L on each leg as spreads in each index move. We are, however, more interested in the total trade P&L for different realised betas between the two indices. Figure 6 shows the realised spread betas between Main and CDX IG for different spread movements on each index. We compute the realised beta as the change in Main spreads divided by the change in CDX IG spreads. We have constructed our spread grid by moving CDX IG spreads 5bp at a time (rows) and by moving Main 7.5bp (=5bp x implied beta of 1.5) at a time. As a consequence, as Figure 6 shows, spread movements along the two diagonals of the table generate as realised spread beta of 1.5, which is equal to the current implied beta. The shaded cells in Figure 6 indicate spread movements in both indices for which the realised beta is higher than 1.5, the current implied beta.

Figure 6. Realised spread betas for different spread movements

We take the ratio of each spread movement in Main and CDX IG.

			Main										
	Spread		**62 bp**	**69 bp**	**77 bp**	**84 bp**	**92 bp**	**99 bp**	**107 bp**	**114 bp**	**122 bp**	**129 bp**	**137 bp**
		Change	**-38 bp**	**-30 bp**	**-23 bp**	**-15 bp**	**-8 bp**	**0 bp**	**8 bp**	**15 bp**	**23 bp**	**30 bp**	**38 bp**
	50 bp	**-25 bp**	-1.5	-1.2	-0.9	-0.6	-0.3	0.0	0.3	0.6	0.9	1.2	1.5
	55 bp	**-20 bp**	-1.9	-1.5	-1.1	-0.8	-0.4	0.0	0.4	0.8	1.1	1.5	1.9
	60 bp	**-15 bp**	-2.5	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5	2.0	2.5
	65 bp	**-10 bp**	-3.8	-3.0	-2.3	-1.5	-0.8	0.0	0.8	1.5	2.3	3.0	3.8
	70 bp	**-5 bp**	-7.5	-6.0	-4.5	-3.0	-1.5	0.0	1.5	3.0	4.5	6.0	7.5
CDX IG	**75 bp**	**0 bp**						0.0					
	80 bp	**5 bp**	7.5	6.0	4.5	3.0	1.5	0.0	-1.5	-3.0	-4.5	-6.0	-7.5
	85 bp	**10 bp**	3.8	3.0	2.3	1.5	0.8	0.0	-0.8	-1.5	-2.3	-3.0	-3.8
	90 bp	**15 bp**	2.5	2.0	1.5	1.0	0.5	0.0	-0.5	-1.0	-1.5	-2.0	-2.5
	95 bp	**20 bp**	1.9	1.5	1.1	0.8	0.4	0.0	-0.4	-0.8	-1.1	-1.5	-1.9
	100 bp	**25 bp**	1.5	1.2	0.9	0.6	0.3	0.0	-0.3	-0.6	-0.9	-1.2	-1.5

Source: Citi Research.

Our objective is to generate a positive P&L if the realised beta is below the implied one (i.e. in the shaded spread scenarios in Figure 6). Figure 7 shows the trade P&L for different spreads today: the trade has a positive P&L if the change in Main spreads is more than 1.5 times the change in CDX IG spreads. Similarly, Figure 8 shows the trade P&L for different spreads at expiry: again, the trade has a positive P&L if the change in Main spreads from today until expiry is (roughly) more than 1.5 times the change in CDX IG spreads.

The positive vega on the iTraxx Main leg and the negative one in the CDX IG leg mean that the trade would benefit from implied volatility in Main

increasing relative to the implied volatility in CDX IG (given that the two vega amounts are of similar magnitude). Finally, as Figure 3 shows, the trade has a small positive theta (in € equivalent).

Figure 7. Trade P&L for different INSTANTANEOUS spread movements

In cents of the iTraxx Main straddle notional. 100 cents = 1%.

								Main					
	Spread		**62 bp**	**69 bp**	**77 bp**	**84 bp**	**92 bp**	**99 bp**	**107 bp**	**114 bp**	**122 bp**	**129 bp**	**137 bp**
		Change	**-38 bp**	**-30 bp**	**-23 bp**	**-15 bp**	**-8 bp**	**0 bp**	**8 bp**	**15 bp**	**23 bp**	**30 bp**	**38 bp**
	50 bp	**-25 bp**	**-6**	-49	-87	-116	-134	-140	-134	-120	-99	-75	-48
	55 bp	**-20 bp**	39	**-4**	-42	-71	-89	-95	-89	-75	-54	-30	-3
	60 bp	**-15 bp**	78	36	**-2**	-31	-50	-55	-50	-35	-15	10	37
	65 bp	**-10 bp**	109	67	29	**-1**	-19	-24	-19	-4	16	41	68
	70 bp	**-5 bp**	128	85	48	18	**-0**	-6	-0	14	35	59	86
CDX IG	**75 bp**	**0 bp**	134	91	53	24	6	**0**	6	20	41	65	92
	80 bp	**5 bp**	128	85	48	18	-0	-6	**-0**	14	35	59	86
	85 bp	**10 bp**	113	71	33	4	-14	-20	-14	**-0**	21	45	72
	90 bp	**15 bp**	93	51	13	-17	-35	-40	-35	-20	**0**	25	52
	95 bp	**20 bp**	70	27	-11	-40	-58	-64	-58	-44	-23	**1**	28
	100 bp	**25 bp**	44	2	-36	-66	-84	-89	-84	-69	-49	-24	**3**

Source: Citi Research

Figure 8. Trade P&L for different spread movements AT EXPIRY

In cents of the iTraxx Main straddle notional. 100 cents = 1%.

								Main					
	Spread		**62 bp**	**69 bp**	**77 bp**	**84 bp**	**92 bp**	**99 bp**	**107 bp**	**114 bp**	**122 bp**	**129 bp**	**137 bp**
		Change	**-38 bp**	**-30 bp**	**-23 bp**	**-15 bp**	**-8 bp**	**0 bp**	**8 bp**	**15 bp**	**23 bp**	**30 bp**	**38 bp**
	50 bp	**-25 bp**	**-14**	-56	-99	-142	-184	-227	-235	-207	-179	-151	-123
	55 bp	**-20 bp**	32	**-11**	-54	-96	-139	-181	-189	-161	-133	-105	-77
	60 bp	**-15 bp**	77	34	**-8**	-51	-93	-136	-144	-116	-88	-60	-32
	65 bp	**-10 bp**	122	80	37	**-5**	-48	-91	-98	-70	-43	-15	13
	70 bp	**-5 bp**	168	125	83	40	**-3**	-45	-53	-25	3	31	59
CDX IG	**75 bp**	**0 bp**	213	170	128	85	43	**0**	-8	20	48	76	104
	80 bp	**5 bp**	217	175	132	90	47	4	**-3**	24	52	80	108
	85 bp	**10 bp**	192	149	106	64	21	-21	-29	**-1**	27	55	83
	90 bp	**15 bp**	166	123	80	38	-5	-47	-55	-27	**1**	29	57
	95 bp	**20 bp**	140	97	54	12	-31	-73	-81	-53	-25	**3**	31
	100 bp	**25 bp**	114	71	29	-14	-57	-99	-107	-79	-51	-23	**5**

Source: Citi Research.

Recent Trade Ideas

Figure 9. Published Trade Ideas – reverse chronological order.

Trade Ideas	Date
Views & Trades on iTraxx Series 9 Tranches	18 April 2013
Beware of retail and food releveraging – short risk retailers & food vs. Main Non-Financials	18 April 2013
Receiver 1x2s – Mind the tail if going long	2 Apr 2013
Hedging menu: payer spreads, 3s5s flatteners and Jun 15/18 equity tranche flatteners	28 Mar 2013
Long insurers vs. short premium autos	19 Mar 2013
Flatteners in iTraxx Equity Tranches	6 Mar 2013
Long risk 3-6% vs. short risk 0-3% - Jun-15 iTraxx Series 9 tranches	12 Feb 2013
Long risk Main vs. Crossover via indices and receiver options	12 Feb 2013
iTraxx Main payer ladders	3 Jan 2013
iTraxx Main 3s5s duration weighted flatteners	3 Jan 2013
Long risk iTraxx Main vs. short risk iTraxx Crossover	3 Jan 2013
Long risk CDX IG vs. short risk iTraxx Main	3 Jan 2013

Source: Citi Research.

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Appendix A-1

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