

iTraxx Tranches Views & Trades

Equity tranches short term, seniors long term

- **We like equity tranche risk in the short term** – in particular in Series 19 Jun-16 and Series 9 Jun-16, where correlations have fallen the most recently. If correlations were to get close to the record high levels reached in July, we would exit all equity longs.
- **Medium to long term, we still prefer senior tranche risk.** We maintain our thesis that investors should progressively build a long risk position in European senior tranches, in particular Series 9 tranches (9-12% / 12-22% and 22-100%).
- How would we position?
 - Long risk: Series 19 Jun-16 equity tranches & Series 9 Jun-18 9-12/12-22/22-100%.
 - Short risk: we prefer index shorts and 3s5s flatteners. Equity tranche shorts are extremely hard to run over the long term.
 - New relative value trades:
 - **Long risk equity vs. short risk 3-6% in S19 Jun-16 (3y)** – Short dated default risk is still everyone's highest conviction trade – we expect investors to come back into short dated equity tranches after the summer pause. The trade provides spread convexity and time value in a clean IG portfolio; all paid for by a negative jump-to-default exposure.
 - **Long risk S19 Jun-18 (5y) 3-6% vs. 5y S20 Crossover** – Crossover vs. Main decompression [has been](#), and still remains, one of our favorite RV trades. Trade the Main leg via S19 3-6% 5y tranches in order to position for investors continue favoring junior tranche longs as a way to lever IG returns.
 - **Long risk iTraxx S9 Jun-18 (10y) super senior vs. short risk CDX IG S9 Dec-17 (10y) super senior.** iTraxx S9 Jun-18 senior tranches are one of our long term preferred trades given (i) how wide they still trade and (ii) that central banks have recently reinforced their commitment to avoid tail-events (in the short term at least). Investors who are not comfortable taking tail risk exposure outright can either hedge the tranche exposure via 3s5s flatteners or shorts in CDX IG Series 9 super senior tranches.
- **iTraxx Tranche Daily Analytics at Citi Velocity:** [Series 9](#) and [Series 19](#).
- See our **Trade Recommendations Summary** at the end of this publication.

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

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

Citi Research is a division of Citigroup Global Markets Inc. (the "Firm"), which does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Equities look attractive short term ...

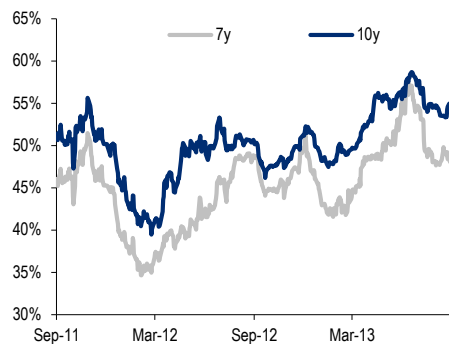
The reduction in implied correlations during July and August (Figure 1 and Figure 2) has made the performance of equity tranches over the past 3 months not as good as we have been used to; although it has still been positive on a delta-hedged basis.

Even though we are cautious on equity tranche risk (especially in Series 9) in the medium to long term, we recognize that, over the short term, correlations can easily retrace all their recent fall. As we argued in our latest [iTraxx Tranches Views & Trades](#) (9-Jul), the main reasons which have pushed investors to chase equity tranches are unlikely to go away, namely (i) how difficult it is to beat any benchmark or make any “alpha” in an environment where spreads are very volatile within a range and where relative value metrics hardly move, and (ii) that the conditions which have kept default rates very low look set to continue (i.e. ample liquidity by central banks).

As a consequence, **we favor equity tranche risk for short term trades, in particular in Series 19 Jun-16** (see first trade idea) and **Series 9 Jun-16**, where correlations have fallen the most. If correlations were to get close to the record high levels reached in July, we would exit all equity longs.

Figure 1. S9 – Correlations

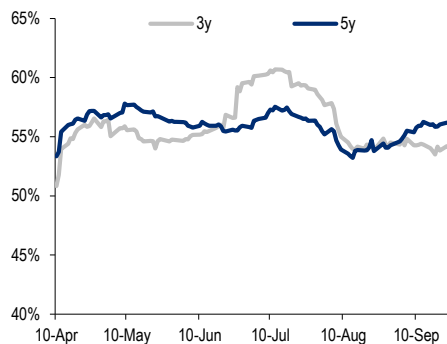
Equity tranche implied correlations.



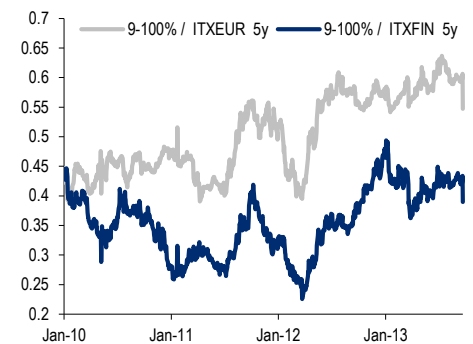
Source: Citi Research, Markit.

Figure 2. S19 – Correlations

Equity tranche implied correlations.



Source: Citi Research, Markit.

Figure 3. Ratio of Main S9 9-100% to on-the-run index spread – 5y maturity*

Source: Citi Research, Markit. * Interpolated spread for S9 tranches to obtain a 5y constant maturity spread.

... But seniors still look a better long term long

In general, senior tranches were not able to outperform their deltas even in an environment where investors' faith in equity tranche longs was put to the test over the summer – it was junior mezzanine tranches which ended up offloading risk into the equity tranches.

Besides that, **we still maintain our thesis that investors should progressively build a long risk position in senior tranches, in particular Series 9 senior tranches** (9-12% / 12-22% and 22-100%). Pricing-wise, senior tranches remain extremely wide, both to historical levels as well as compared to on-the-run indices (Figure 3). Positioning-wise, we get the feeling that the dealer community is losing the appetite to continue adding a lot more senior risk (as a consequence of buying junior tranche protection from investors and delta-hedging it). **The summer has seen, for the first time in years, a number of banks marketing leveraged super senior trades** (with varying degrees of bespoke characteristics). We expect such a trend to continue and believe it reinforces our thesis that holders of senior tranche risk who step forward now will be well compensated. We prefer senior risk in iTraxx Series 9 and, in our third relative value trade idea, we look at a relative value trade between iTraxx and CDX IG Series 9 super senior tranches.

Tranche performance review

Visit our [iTraxx tranche daily analytics](#) for more details on tranche pricing and performance: [Series 9](#) and [Series 19](#).

Despite the fall in correlations during July and August (Figure 6 and Figure 9), equity tranches have posted a positive 3m delta hedged return (Figure 5 and Figure 8). Fast money investors were the main drivers of the underperformance of equity tranches during July and August, with real money investors mostly holding to their positions and recently adding new equity risk after the drop in correlations made equity tranches more attractive.

- **Jun-18 junior mezzanine tranches (3-6% & 6-9%) have been the best performing tranches over the past 3 months**, especially in Series 9.
- **Among equity tranches, S19 Jun-18 has been the clearest outperformer**, as we discussed in our last publication.¹
- On the other hand, super senior tranches continued their underperforming trend.

The summer has brought the first real money sellers of super senior protection for a while, a trend we expect to continue given that dealers are probably getting closer to the point where their appetite to continue buying equity protection diminishes.

Figure 4. S9 – Tranche levels

Upfront for 0-3%, flat spreads for the rest (bp).

Series 9	Jun-15	Jun-18
0-3%	10%	40%
3-6%	185	635
6-9%	100	395
9-12%	46	245
12-22%	21	112
22-100%	6	38
Ref	47	114

Source: Citi Research, Markit. COB 25-Sep.

Figure 5. S9 – 3m performance delta-hedged *

From a protection seller's point of view.

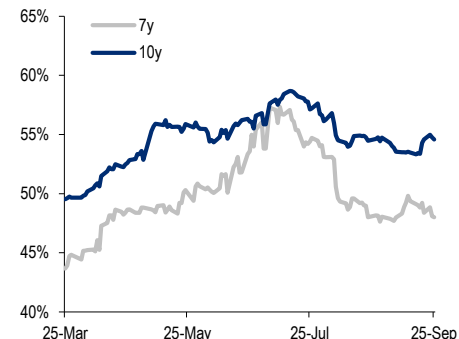
Series 9	Jun-15	Jun-18
0-3%	-0.13%	0.39%
3-6%	0.87%	2.24%
6-9%	0.12%	1.34%
9-12%	-0.10%	0.30%
12-22%	-0.04%	-0.02%
22-100%	-0.03%	-0.19%
Ref **	0.90%	2.24%

* As % of notional. ** Outright performance for the index. Assuming daily delta rebalancing for the tranches.

Source: Citi Research, Markit.

Figure 6. S9 – Correlations

Equity tranche implied correlations.



Source: Citi Research, Markit.

Figure 7. S19 – Tranche levels

Upfront for 0-3%, flat spreads for the rest (bp).

Series 19	Jun-16	Jun-18
0-3%	9%	25%
3-6%	229	437
6-9%	130	266
9-12%	72	170
12-22%	36	87
22-100%	10	33
Ref	48	88

Source: Citi Research, Markit. COB 25-Sep.

Figure 8. S19 – 3m performance delta-hedged *

From a protection seller's point of view.

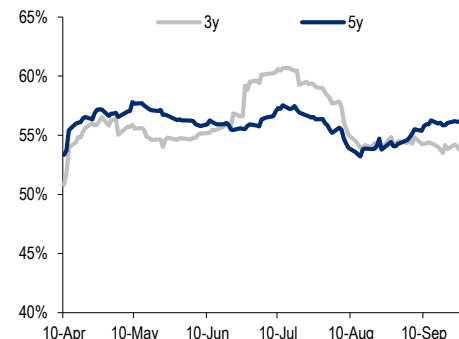
Series 19	Jun-16	Jun-18
0-3%	0.24%	2.01%
3-6%	0.93%	0.75%
6-9%	0.32%	1.22%
9-12%	-0.02%	0.58%
12-22%	-0.18%	0.24%
22-100%	-0.06%	-0.24%
Ref **	1.30%	2.11%

* As % of notional. ** Outright performance for the index. Assuming daily delta rebalancing for the tranches.

Source: Citi Research, Markit.

Figure 9. S19 – Correlations

Equity tranche implied correlations.



Source: Citi Research, Markit.

¹ See [iTraxx Tranches Views & Trades](#), A. Elizalde, 9-Jul.

How would we position?

Our long term periphery concerns remain, which make us refrain from recommending equity risk in Series 9 tranches. However, we reckon investors will continue turning to equity tranches to look for an attractive way to earn time value at the expense of default, not spread, risk. We think it makes more sense to take exposure to equity tranche risk in S19 Jun-16 – e.g. paired against a short in the 3-6% tranche. Figure 10, Figure 11 and Figure 12 show our preferred longs, shorts and relative value trades.

Figure 10. S9 – Views

Green – long risk; Red – short risk.

Series 9	Jun-15	Jun-18
0-3%		
3-6%		
6-9%		
9-12%		
12-22%		
22-100%		

Source: Citi Research.

Figure 11. S19 – Views

Green – long risk; Red – short risk.

Series 19	Jun-16	Jun-18
0-3%		
3-6%		
6-9%		
9-12%		
12-22%		
22-100%		

Source: Citi Research.

Figure 12. Relative value views

S19 3y 0-3% vs. 3-6%
S19 5y 3-6% vs. Xover S20 5y
S9 10y super senior: iTraxx vs. CDX IG

Source: Citi Research, Markit.

Long risk Trades

- Short term: **Series 19 Jun-16 equity tranches.**
- Medium/long term: **Jun-18 9-12/12-22/22-100% Series 9 tranches.** We would pair longs in these tranches with 3s5s duration weighted flatteners in on-the-run iTraxx Main,² which we expect to perform well in a tail-event.

Short risk Trades

- As we've highlighted in the past, the medium term shorts we like are in equity tranches, but it is extremely hard to run a short in these tranches given the very negative time value and convexity – one needs to perfectly time the drop in correlation to make money in equity tranche shorts. Thus, we would look at index shorts or 3s5s flatteners to source our shorts against our preferred tranche longs.

RV Trades

- Short term: **Long risk equity vs. short risk 3-6% in S19 Jun-16.**
- Medium/long term:
 - Long risk S19 5y 3-6% vs. 5y S20 Crossover.
 - Long risk iTraxx S9 10y super senior vs. short risk CDX IG S9 10y super senior.

We would size all of the RV trades above to be slightly long risk, in line with our [strategy view](#), in order to capture as much time value as possible from here to year end. We provide more details of those three trades next.

We are opening all these three RV trades in our **model portfolio**, and closing the two tranche relative value trades which we were holding ([S19 vs. S9 Jun-18 equity tranches](#) and [S19 3-6% Jun-16 vs. S9 Jun-18 index](#)).

² See [Equal Notional 3s5s Flatteners](#), A. Elizalde, 5-Sep, and [A hedge for all seasons](#), A. Elizalde & M. King, 28-Mar.

Trade Ideas

No. 1 – Sell S19 3y 0-3% protection vs. 3-6%

- **Short dated default risk is still everyone's highest conviction trade** – we expect investors to come back into short dated equity tranches after the summer pause.
- **The trade provides spread convexity and time value in a clean IG portfolio; all paid for by a negative (~15%) jump-to-default exposure.** We are comfortable with the long correlation exposure of the trade until correlation revisits the levels of early July (~60% vs. the current 54%).
- **We size the trade to be slightly long risk spreads; but maintaining the positive convexity of the trade.** We buy 2x protection on the 3-6% tranche vs. the protection sold in the 0-3% tranche – the ratio of the deltas is 2.2x.

Figure 13. Trade details – Sell S19 3y 0-3% protection vs. 3-6%

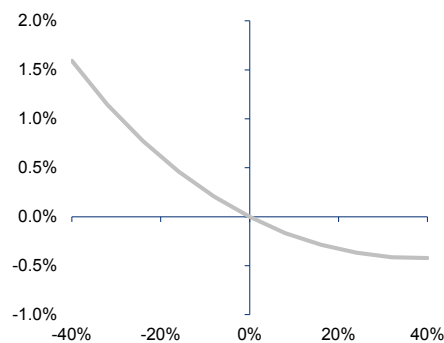
Index	Tranche	Maturity	Upfront	Coupon (bp)	Spread (bp)	Protection	Notional (€m)	Upfront (€m)	Coupon (€m)	12m time val. (€m)
ITXEUR S19	0-3%	Jun-16	8.00%	500	829	Sell	10	0.80	0.50	1.16
ITXEUR S19	3-6%	Jun-16	-7.00%	500	234	Buy	20	1.40	-1.00	-1.73
Total								2.20	-0.50	-0.57

Source: Citi Research, Markit. Indicative spreads as of 26th Sept. open.

Figure 14, Figure 15 and Figure 16 show the trade spread exposure, correlation exposure and time value.

Figure 14. Spread exposure – % shocks

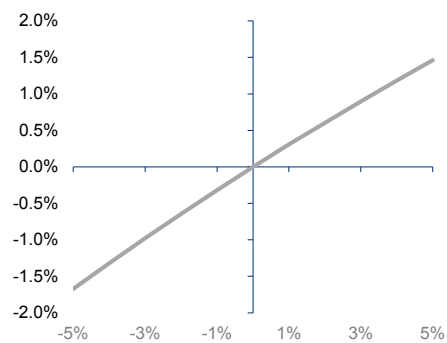
X-axis: spread shock, in %, to all the maturities of all the credits in the index. Y-axis: trade MtM as % of equity tranche notional.



Source: Citi Research, Markit.

Figure 15. Correlation exposure – % shocks

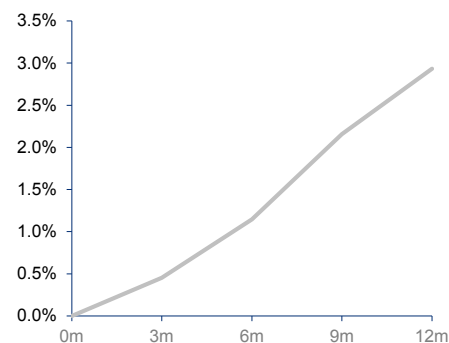
X-axis: correlation shock, % additive. Y-axis: trade MtM as % of equity tranche notional.



Source: Citi Research, Markit.

Figure 16. Trade “time value”

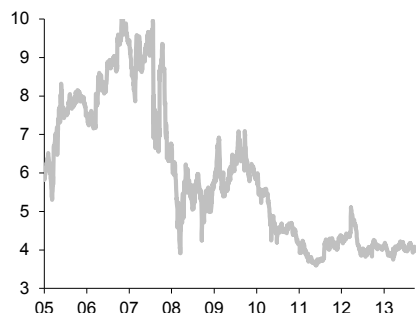
Including roll-down and carry, in % of equity tranche notional.



Source: Citi Research, Markit.

No. 2 – Sell S19 5y 3-6% protection vs. Crossover 5y S20

Figure 17. Xover to Main spread ratio



Source: Citi Research, Markit. 5y on-the-run spreads.

- **Crossover vs. Main decompression** [has been](#), and still remains, one of our favorite RV trades. With the index spread ratio failing to stay below 4x for very long every time we've tested that level, we believe there is little downside, and plenty of upside, on a decompression trade.
- **Trade the Main leg via S19 3-6% 5y tranches** in order to position for investors continue favoring junior tranche longs as a way to lever IG returns.
- **We size the trade on an equal notional basis, which leaves us slightly long risk and ~36bp positive carry (422 vs. 386bp).** The tranche delta is 4.8x, vs. a ~4x realized beta between the two indices.

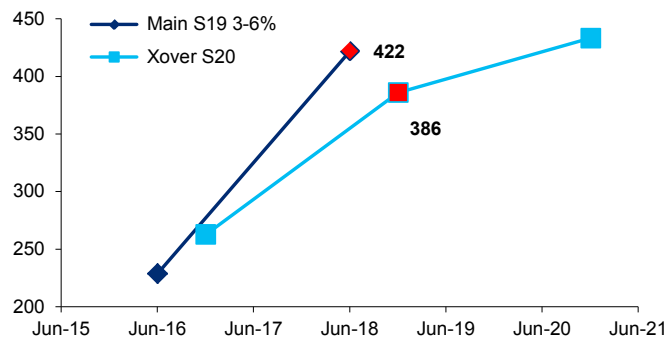
Figure 18 shows the trade details and Figure 21 the trade spread sensitivity assuming Crossover spreads move 4x more than Main spreads.

Figure 18. Trade details – Sell S19 5y 3-6% protection vs. Crossover 5y S20

Index	Tranche	Maturity	Upfront	Coupon (bp)	Spread (bp)	Protection	Notional (€m)	Upfront (€m)	Coupon (€m)	12m time val. (€m)
ITXEUR S19	3-6%	Jun-18	-3.25%	500	422	Sell	100	-3.25	5.00	8.52
ITXCRO S20	Index	Dec-18	-5.18%	500	386	Buy	100	5.18	-5.00	-5.94
Total								1.93	0.00	2.58

Source: Citi Research, Markit. Indicative spreads as of 26th Sept. open.

Figure 19. Current spread curves: Main S19 3-6% vs. Xover S20



Source: Citi Research, Markit. Indicative spreads as of 26th Sept. open.

Figure 20. Spread difference: Main S19 3-6% 5y minus Xover S19 5y
In bp.



Source: Citi Research, Markit.

Figure 21. Trade spreads exposure – assuming Crossover S20 spreads move 4x more than Main S19 spreads

P&L in % of notional.

Change in Main 19	-15 bp	-10 bp	-5 bp	0 bp	5 bp	10 bp	15 bp
Tranche P&L	3.2%	2.1%	1.1%	0.0%	-1.0%	-2.1%	-3.1%
Change in Xover 20	-60 bp	-40 bp	-20 bp	0 bp	20 bp	40 bp	60 bp
Index P&L	-2.9%	-1.9%	-0.9%	0.0%	0.9%	1.8%	2.7%
Total P&L	0.3%	0.2%	0.1%	0.0%	-0.2%	-0.3%	-0.4%

Source: Citi Research.

No. 3 – Long European vs. short US super senior tranche

- **iTraxx S9 Jun-18 senior tranches are one of our long term preferred trades given (i) how wide they still trade and (ii) that central banks have recently reinforced their commitment to avoid tail-events.** Investors who are not comfortable taking tail risk exposure outright can either hedge the tranche exposure via 3s5s flatteners or shorts in CDX IG Series 9 super senior tranches.
- **Trade: Long risk iTraxx S9 10y (Jun-18) 22-100% vs. short risk CDX IG S9 10y (Dec-17) 30-100%.** See Figure 22 for the trade details, Figure 23 for the historical spread of both tranches, and Figure 24 for their current spread curves.

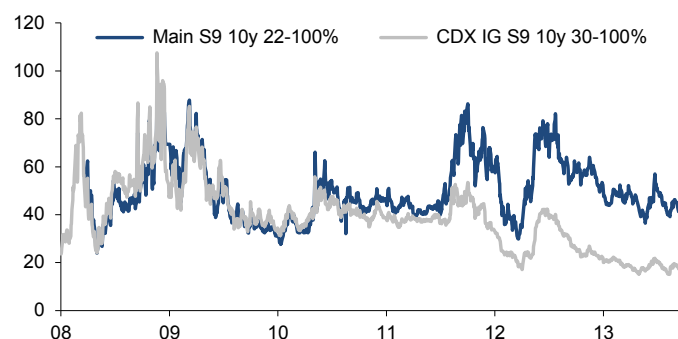
Figure 22. Trade details – Long European vs. short US super senior tranche

Index	Tranche	Maturity	Prot.	Spread (bp)	Upfront	Coupon (bp)	Delta
Main S9	22-100%	Jun-18	Sell	37	0.60%	25	0.45
CDX IG S9	30-100%	Dec-17	Buy	13	-3.54%	100	0.25

Source: Citi Research, Markit. Indicative spreads as of 26th Sept. open.

Figure 23. iTraxx vs. CDX IG super senior spreads

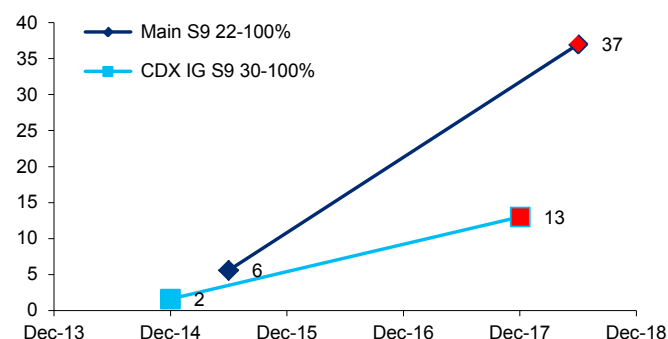
In bp.



Source: Citi Research, Markit

Figure 24. iTraxx vs. CDX IG S9 – super senior current spread curve

In bp.



Source: Citi Research, Markit. Indicative spreads as of 26th Sept. open.

■ Rationale:

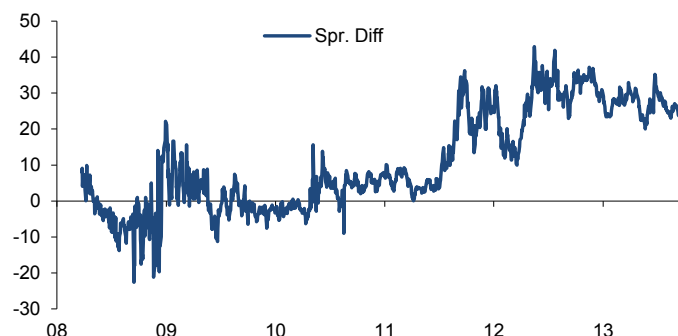
- A tail-event which makes iTraxx super senior to underperform (from its current wide levels) will certainly impact CDX IG super senior in our view, which is trading much tighter (13bp vs. 37bp).
- We initially recommended this trade back in April when the spread differential was close to ~30bp (vs. 24bp currently).³ With the ECB and the Fed clearly signalling their commitment to support the market, concerns about tail events should diminish, causing the spread differential to continue compressing.

- **Sizing:** An **equal notional** trades leaves us net long risk (the spread beta between the two tranches has been around 2.5x for the past 6m – see Figure 30). The trade has a positive time value, a long Europe vs. US spread exposure and a short Europe vs. US correlation exposure.

Figure 25 and Figure 26 show the spread difference between the two super senior tranches for the 10y and 7y tenor respectively. As Figure 26 shows, the 7y spread difference reached levels close to 30bp in 2011 and 2012, but tightened substantially from mid-2012 onwards.

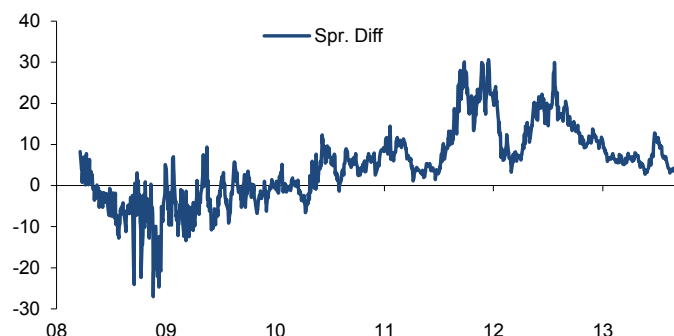
³ See [Mind the Gap: investing in repressed markets](#), M. King, Apr-13 – slide 28.

Figure 25. 10y iTraxx vs. CDX IG super senior spread difference
In bp. Series 9.



Source: Citi Research, Markit.

Figure 26. 7y iTraxx vs. CDX IG super senior spread difference
In bp. Series 9.



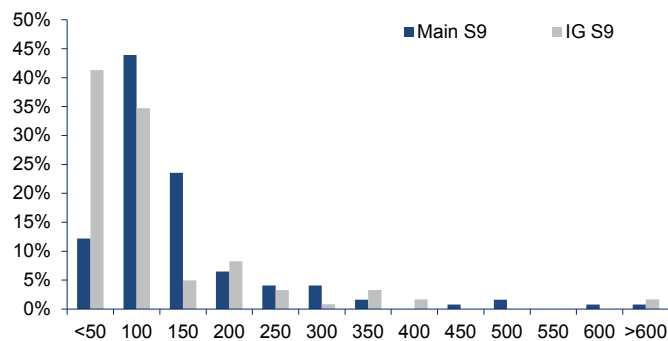
Source: Citi Research, Markit.

Why is iTraxx super senior wider?

First and foremost, because the underlying index is wider, as Figure 27 and Figure 28 show. Investors are taking a long risk Europe vs. short risk US exposure with this trade. As time goes by and maturity approaches, the delta on both tranches will converge to zero, reducing the Europe vs. US directionality of the trade.

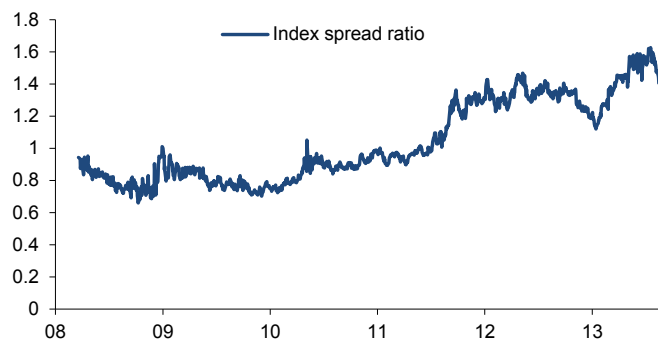
Figure 27. Portfolio 5y spread distribution

X-axis: 5y spread bucket, in bp. Y-axis: % of credits in each spread bucket.



Source: Citi Research, Markit.

Figure 28. 10y S9 iTraxx to CDX IG index spread ratio

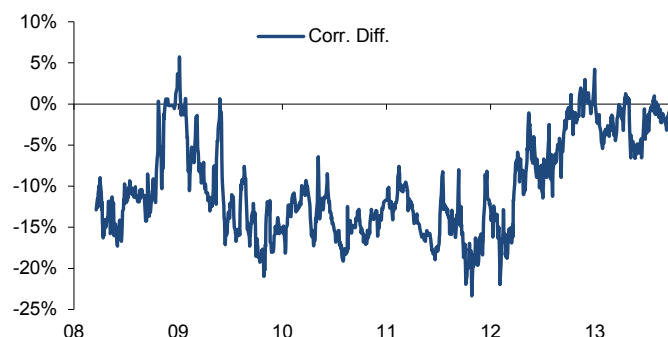


Source: Citi Research, Markit.

Second, because the correlation difference between both tranches is close to its highest levels, as Figure 29 shows. Investors are taking a short iTraxx correlation vs. long CDX IG correlation exposure with this trade.

Figure 29. iTraxx vs. CDX IG implied correlation difference

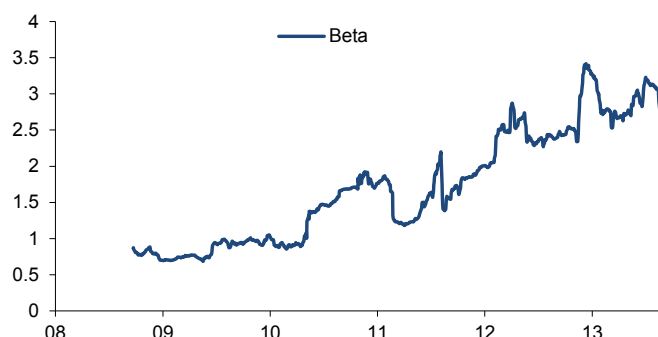
In %, 22% attachment for iTraxx, 30% attachment for CDX. 10y Series 9.



Source: Citi Research, Markit.

Figure 30. Beta of iTraxx vs. CDX IG Super Senior spreads

6m beta of weekly spread changes. S9 10y.



Source: Citi Research, Markit.

Trade Recommendations Summary

This section provides details of the trade ideas recommended in our published research.

We are opening the three RV trades above and closing the two existing tranche RV trades (S19 vs. S9 Jun-18 equity tranches and S19 3-6% Jun-16 vs. S9 Jun-18 index).

Figure 31. Open trades – Summary and P&L

Trade Description	Leg	Format	Direct.	Notnl.	Entry Upfront	Entry Spread	Entry Coupon	Current Upf.	Current Spread	P&L* Total	P&L* Month**
Commerzbank sub/senior compr. 13-Aug-13	Sub CDS	Prot.	Sell	1	-5.65%	375	500	-6.46%	361	1.40%	1.32%
	Senior CDS	Prot.	Buy	2.51	2.37%	150	100	2.4%	149	-0.30%	-1.51%
										Total	-0.19%
RBS sub/senior compr. 13-Aug-13	Sub CDS	Prot.	Sell	1	-7.71%	339	500	-10.22%	273	3.11%	2.62%
	Senior CDS	Prot.	Buy	2.02	2.80%	168	100	2.3%	151	-1.28%	-1.09%
										Total	1.53%
BNP sub/senior compr. 13-Aug-13	Sub CDS	Prot.	Sell	1	-14.42%	198	500	-15.73%	179	1.91%	1.23%
	Senior CDS	Prot.	Buy	1.68	0.86%	118	100	1.0%	119	-0.03%	-0.04%
										Total	1.19%
iTraxx Main Eq. Notional Flatteners 05-Sep-13	Main S19 3y	Prot.	Buy	1	-0.97%	65	100	-1.42%	48	-0.50%	
	Main S19 5y	Prot.	Sell	1.00	0.24%	105	100	-0.5%	88	0.83%	
										Total	0.32%
S19 Jun-16 0-3% vs. 3-6% 26-Sep-13	Main S19 0-3% Jun-16	Prot.	Sell	1	8.00%	839	500	9.13%	874	-1.14%	
	Main S19 3-6% Jun-16	Prot.	Buy	2.00	-7.00%	234	500	-7.2%	229	-0.43%	
										Total	
S19 3-6% vs. S20 Crossover 26-Sep-13	Main S19 3-6% Jun-18	Prot.	Sell	1	-3.25%	422	500	-2.67%	437	-0.60%	
	Crossover S20 Dec-18	Prot.	Buy	1.00	-5.18%	386	500	-4.9%	389	0.31%	
										Total	
iTraxx vs. CDX IG super senior 26-Sep-13	Main S9 22-100% Jun-18	Prot.	Sell	1	0.60%	37	25	0.61%	38	-0.01%	
	CDX IG S9 30-100% Dec-17	Prot.	Buy	1.00	-3.54%	13	100	-3.6%	15	-0.04%	
										Total	

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.

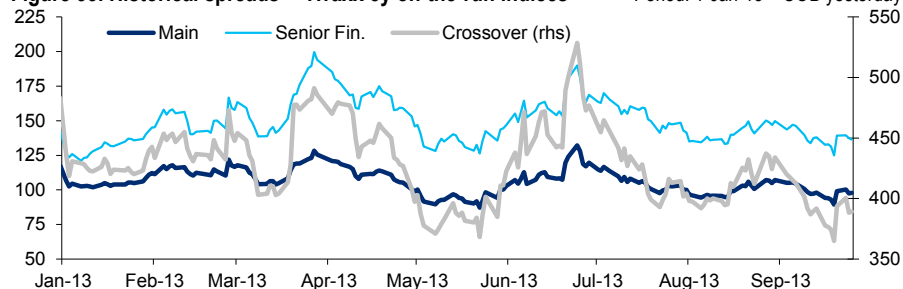
Figure 32. Open and closed trades summary statistics

Number	Open	Closed*	Percentage	Open	Closed*
In profit	3	3	In profit	100%	75%
In loss	0	1	In loss	0%	25%
	3	4			

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

Representative Market Conditions

Figure 33. Historical spreads – iTraxx 5y on-the-run indices



Source: Citi Research, Markit. In bp.

Figure 34. Closed trades since Jun-13 – Summary and P&L

Trade Description	Leg	Format	Direct.	Notnl.	Entry Upfront	Entry Spread	Entry Coupon	Current Upfront	Current Spread	P&L* Total
Main July Receiver Fly	105bp Receiver	Price	Buy	1	0.25%			0.23%		-0.01%
Opened: 18-Jun-13	90bp Receiver	Price	Sell	2	0.0%			0.0%		0.07%
Closed: Expiry	75bp Receiver	Price	Buy	1	0.00%			0.0%		0.00%
									Total	0.06%
Senior Fin vs. CDX IG Receivers	SenFin October 140bp receiver	Price	Buy	1	0.53%			0.69%		0.17%
Opened: 26-Jul-13	CDX IG October 75bp receiver	Price	Sell	2	0.19%			0.2%		0.02%
Closed: 13-Aug-13									Total	0.19%
Series 9 vs. Series 19 equity	iTraxx Main S9 0-3% Jun-18 (10y)	Prot.	Buy	1	46.25%	1,720	500	39.82%	1,703	-7.98%
Opened: 5-Jun-13	iTraxx Main S9 Index Jun-18 (10y)	Prot.	Sell	5	-2.05%	132	175	-2.73%	114	6.12%
Closed: 25-Sep-13	iTraxx Main S19 0-3% Jun-18 (5y)	Prot.	Sell	1	31.75%	1,227	500	25.15%	1,188	8.15%
	iTraxx Main S19 Index Jun-18 (5y)	Prot.	Buy	6.2	0.39%	108	100	-0.53%	88	-7.63%
									Total	-1.34%
S19 Jun-16 3-6% vs. S9 Jun-18 Index	iTraxx Main S19 3-6% Jun-16 (3y)	Prot.	Sell	1	-3.59%	375	500	-7.23%	229	4.72%
Opened: 9-Jul-13	iTraxx Main S9 Index Jun-18 (10y)	Prot.	Buy	2.5	-1.58%	138	175	-2.7%	114	-3.83%
Closed: 25-Sep-13									Total	0.89%

Source: Citi Research. Spreads and coupons in bp. * P&L expressed as % of the leg with notional equal to 1.

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. 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.

Analytics, Recent Trade Ideas & Publications

Figure 35. Analytics – Available at Citi Velocity

Options	iTraxx Volatility Report CDX Volatility Report	Tranches	iTraxx Series 9 Tranche Report iTraxx Series 19 Tranche Report
Positioning	CDS Indices Positioning Report		

Source: Citi Research.

Figure 36. Recent Trade Ideas

Equal Notional 3s5s Flatteners: Adding cautious longs by selling forward protection	5 Sep 2013
Sub/Senior compression trades in European banks	13 Aug 2013
iTraxx Senior Financials vs. CDX IG via Receivers	7 Aug 2013
Sell Jun-16 3-6% Series 19 protection vs. Buy Jun-18 Series 9 index protection	9 Jul 2013
Option trades ahead of the FOMC	18 Jun 2013
iTraxx Series 9 vs. Series 19 Jun-18 equity tranches	5 Jun 2013
Hedging via Crossover Bearish Ladders	16 May 2013
Buy Main straddles; sell CDX IG straddles	1 May 2013
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.

Figure 37. Other publications

Financial CDS to get a re-vamp	7 Aug 2013
What bail-in means for CDS	11 Feb 2013

Source: Citi Research.

Options Risk Disclosure - Please Read Carefully

This section discusses possible options strategies that you may choose to employ in conjunction with the company securities discussed herein. If you choose to engage in the options transactions discussed within this document, you must have an approved options account and will be subject to certain criteria which may ultimately prevent you from engaging in certain option strategies. It is important for you as an investor to know and understand that Options do involve risk and sometimes, significant risk, therefore may not be appropriate for all investors. If you buy options, the maximum loss is the premium. If you sell put options, the risk is the entire notional below the strike. If you sell call options, the risk is unlimited. The actual profit or loss from any trade will depend on the price at which the trades are executed. The prices used herein are historical and may not be available when you order is entered. Commissions and other transaction costs are not considered in these examples.

Please speak to your Financial Advisor to ensure you have a full understanding of the risk and reward of the strategy you are considering. Strategies that are opened or closed differently than what is discussed in this document could have a significantly different outcome from what is described. It should be noted that certain Index options might have special settlement dates or settlement requirements that are different from traditional equity options. Commissions, taxes, and margin costs have not been included but will affect the outcome of any option transaction and should be considered. However, they can have a significant impact on the profitability of options transactions and should be considered carefully before entering into any option strategy. Because of the importance of tax considerations to all option transactions, the investor considering options should consult with his/her tax advisor as to how their tax situation is affected by the outcome of contemplated options transactions. Certain options trades/strategies must be executed in a margin account. Transactions executed in a margin account can require the investor to periodically deposit additional collateral into the account in order to maintain the positions. The preceding language is not a full description of all possible risks associated with options trading.

For a more complete description on the uses and risks of options, please see the document titled Characteristics and Risks of Standardized Options. If you would like an additional copy of this document please contact Citigroup Global Markets Inc., Options Department, 390 Greenwich Street, New York, NY 10013. Options are not suitable for all investors. Before entering into any transaction using listed options, investors should read and understand the current Options Clearing Corp. Disclosure Document (Characteristics and Risks of Standardized Options) at <http://www.theocc.com/about/publications/character-risks.jsp>, http://www.theocc.com/components/docs/May_2010_ODD_Definitive_Supplement.pdf and http://www.theocc.com/components/docs/January_2011_ODD_Definitive_Supplement.pdf. Investing in options other than Standardized Options may entail additional risks. Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Citigroup Global Markets Inc. owns a position of 1 million USD or more in the debt securities of Royal Bank of Scotland Plc

Within the past 12 months, Citigroup Global Markets Inc. or its affiliates has acted as manager or co-manager of an offering of securities of Commerzbank, Royal Bank of Scotland Plc.

Citigroup Global Markets Inc. or its affiliates has received compensation for investment banking services provided within the past 12 months from Commerzbank, Royal Bank of Scotland Plc.

Citigroup Global Markets Inc. or its affiliates expects to receive or intends to seek, within the next three months, compensation for investment banking services from Royal Bank of Scotland Plc.

Citigroup Global Markets Inc. or an affiliate received compensation for products and services other than investment banking services from Commerzbank, Royal Bank of Scotland Plc in the past 12 months.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as investment banking client(s): Commerzbank, Royal Bank of Scotland Plc.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, securities-related: Commerzbank, Royal Bank of Scotland Plc.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, non-securities-related: Commerzbank, Royal Bank of Scotland Plc.

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

The Firm is a market maker in the publicly traded equity securities of Commerzbank, Royal Bank of Scotland Plc.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Research product ("the Product"), please contact Citi Research, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

NON-US RESEARCH ANALYST DISCLOSURES

Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Ltd

Abel Elizalde; Matt King

OTHER DISCLOSURES

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Research does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of Citi Research to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net

dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in **Australia** through Citi Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A., Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 100-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. <http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02>. The Product is made available in Korea by Citibank Korea Inc., which is regulated by the Financial Services Commission and the Financial Supervisory Service. Address is Citibank Building, 39 Da-dong, Jung-gu, Seoul 100-180, Korea. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) ("CGMM") to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comisión Nacional Bancaria y de Valores. Reforma 398, Col. Juárez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to 'wholesale clients' only as defined by s5C(1) of the Financial Advisers Act 2008 ("FAA") through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July

1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. ("CGMSPL"), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold/Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gasset, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangkok, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Büyükdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E.**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different Citi Research ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority. Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to Citi Research's Products can be found at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product. With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs) and other product that is made available through other distribution channels only to certain categories of clients to satisfy legal or regulatory requirements, Citi Research concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual Citi Research analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. Citi Research simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by Citi Research analysts to clients may vary depending on various factors such as the client's individual preferences as to the frequency and manner of receiving communications from analysts, the client's risk profile and investment focus and perspective (e.g. market-wide, sector specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.

Citi Research product may source data from dataCentral. dataCentral is a Citi Research proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.

© 2013 Citigroup Global Markets Inc. Citi Research is a division of Citigroup Global Markets Inc. Citi and Citi with Arc Design are trademarks and service marks of Citigroup Inc. and its affiliates and are used and registered throughout the world. All rights reserved. Any unauthorized use, duplication, redistribution or disclosure of this report (the "Product"), including, but not limited to, redistribution of the Product by electronic mail, posting of the Product on a website or page, and/or providing to a third party a link to the Product, is prohibited by law and will result in prosecution. The information contained in the Product is intended solely for the recipient and may not be further distributed by the recipient to any third party. Where included in this report, MSCI sourced information is the exclusive property of Morgan Stanley Capital International Inc. (MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, disseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI, Morgan Stanley Capital International and the MSCI indexes are services marks of MSCI and its affiliates. The Firm accepts no liability whatsoever for the actions of third parties. The Product may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the Product refers to website material of the Firm, the Firm has not reviewed the linked site. Equally, except to the extent to which the Product refers to website material of the Firm, the Firm takes no responsibility for, and makes no representations or warranties whatsoever as to, the data and information contained therein. Such address or hyperlink (including addresses or hyperlinks to website material of the Firm) is provided solely for your convenience and information and the content of the linked site does not in anyway form part of this document. Accessing such website or following such link through the Product or the website of the Firm shall be at your own risk and the Firm shall have no liability arising out of, or in connection with, any such referenced website.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST
