

# iTraxx Tranches Views & Trades

## Mezz may be back next year ... though nowhere near 2004-7

- **Too tempting, again? – Mezzanine tranches are essentially running out of competitors given the broad-based tightening.** Investing in 2014 looks set to be tough: with iTraxx Main spreads below 90, we think it takes courage (or peer pressure) to add risk given the much lower upside. Levering up investment grade returns should be, once again, seen by real money investors as an attractive (or the only?) way to add risk with high enough spread; in particular if it doesn't generate exposure to first losses (i.e. mezzanine tranches in investment grade portfolios). We're not forecasting anything close to 2004-7 in terms of volumes, just a growing interest in (and trading of) mezzanine tranches – after a few years on the bench for past excesses. High spreads in a world of low spreads can be a powerful formula to forget trades that didn't work out.
- **Equity – Still outperforming and still a good trade into year end.** However, going into next year, we would move equity longs to the mezzanine space; we do not feel very comfortable staying long risk in equity for much longer at these levels.
- **Mezz – 2014's wildcard.** We start by going long risk mezz against a direct competitor: Crossover.
- **Senior – Very promising pricing-wise, but completely forgotten by the market.** Good for long term carry trades, but don't expect a quick performance.
- How would we position?
  - Long risk: Equity into year end, mezz for 2014.
  - Short risk: Tight spread instruments which look overbought; i.e. nothing in tranches – at least outright.
  - New relative value trades:
    - **Sell S9 Jun-18 6-9% protection vs. Xover 5y S20** – We see mezzanine as a good long to pair against a Crossover short to play one of our favourite trading themes in the synthetic space: Main-Crossover decompression.
    - **Sell S9 Jun-18 22-100% protection vs. light delta** – Considering how high correlations are, we believe there is little downside from entering trades which profit from any potential single name surprise going forward - provided one doesn't bleed time value all the way.
- **iTraxx Tranche Daily Analytics at Citi Velocity:** [Series 9](#) and [Series 19](#).

---

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.

**2014: The beginning of the beginning?****2014 may be very different from what we've been used to recently.**

Our medium term view remains constructive. The tight spread and low volatility environment where we have spent the last few weeks will, in our view, become even more pronounced before being disrupted. If that proves to be the case, 2014 will be a very different year from 2010-13 regarding market opportunities and trading rationale. In our view, the investment dynamics and relative value relationships going forward will likely be much closer to those seen back in 2005-2008 than the ones over the past three years.

Since 2009 there has been ample opportunity to pick up high spread and distressed opportunities, both in investment grade and high yield, thanks to a steady series of sell-offs. Investing just required waiting for the next sell-off and fading it, anticipating a central bank reaction pushing investors to continue adding longs and ignoring the risks.

We doubt that investing in 2014 will be that easy. With iTraxx Main and Crossover spreads below 100 and 400bp respectively, it takes a lot of courage (or peer pressure) to add risk. Going long risk very tight products requires a strong belief that volatility will remain low (otherwise, it's hard to justify adding risk at these levels).

**What does this all mean for the tranche market anyway?****It is about time we face the fact that mezz may come back at some point.**

Levering up investment grade returns "may" be, once again, seen by real money investors as an attractive (or the only?) way to add risk with high enough spread. It is likely to look particularly attractive if it doesn't generate exposure to first losses (i.e. mezzanine tranches in investment grade portfolios).

We realise how much pushback we are likely to receive by forecasting anything close to the return of the synthetic tranche market as we saw it in 2004-5. We are not doing that at all in terms of trading notionals. However, we believe 2014 can see a lot more interest in mezzanine tranches than what we have seen over the past few years. The volume, if it picks up (which we think it will), should be much lower, and the focus will likely initially be on the standard tranche market.

The tranche investor base over the past 4 years has been a very "sophisticated" one, happy to sell equity tranche protection and manage the default risk. The new potential investor who could be looking at tranches going forward will not want to take default risk, in our view, and is more likely to look into mezzanine tranches paying a multiple of the spread which indices pay. Jun-18 3-6% / 6-9% / 9-12% tranches in S9 and S19 indices pay spreads between 150 and 500bp. Faced with the choice of a 80bp unlevered index type investment and a 300bp tranche with 6% loss subordination in an investment grade portfolio, the chances of a real money investor going for the tranche will be much higher next year vs. what they have been so far. Mezzanine tranches are essentially running out of competitors given the broad-based tightening.

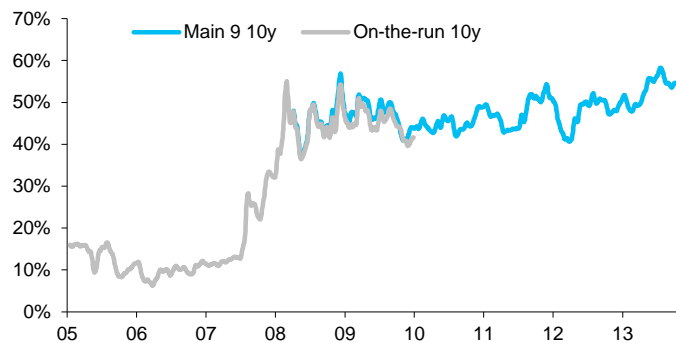
How much real money interest will mezzanine tranches be able to attract? More than most people think, in our view; high spreads in a world of low spreads can be a powerful formula to forget trades that didn't work out.

### Still like equity short term.

We think the current equity tranche investor base will remain active on the tranche market, trying to make up for recent spread tightening by extending maturities and looking at portfolios with wider names, e.g. S9 (vs. S19) or bespoke portfolios. That is the reason why we are still positive on equity tranches in the near term. Yes, valuations seem very stretched (judging from the levels of implied correlations – see Figure 1) but the absence of defaults is still the highest conviction out there, in our view, and the roll down of equity tranches, in absolute terms, looks hard to beat.

Figure 1. iTraxx Equity Correlations

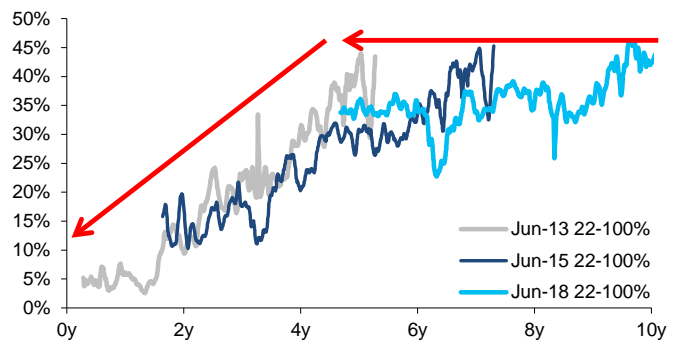
10d moving average.



Source: Citi Research, Markit.

Figure 2. Ratio of super senior to index spread vs. tranche maturity

iTraxx Series 9, 10d moving average.



Source: Citi Research, Markit.

### However, going into next year, we would progressively move equity longs to the mezzanine space.

Even if our expectation of a higher real money interest in mezzanine does not materialise (or at least not in sufficient volume to be relevant pricing-wise), we do not feel very comfortable staying long risk in equity for much longer at these levels. Here, we are opening a long risk S9 6-9% Jun-18 vs. short risk 5y S20 Crossover to continue positioning for mezzanine tranches to outperform their high spread “competitors”.

### What about senior tranches?

Any historical analysis would suggest that we should be going long risk X-100% tranches. However, any analysis of the current and near term potential tranche investor base suggests the outperformance of senior tranches may take a bit of time. We still like X-100% tranches as a long-term carry trade with potentially little downside given current valuations. In this report, we are recommending a long risk S9 22-100% position vs. a “light” index delta (~30% vs. the current ~50% delta), in order to remove the negative time value of a delta-hedged trade. As Figure 2 shows, the ratio of super senior to index spread is fairly stable for maturities higher than 4-5 years but starts decreasing for shorter maturities. The Jun-18 maturity is at the 4-5y inflection point and we expect the ratio of super senior to index spreads to fall going forward.

## Tranche performance review

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

**Equity tranches have continued performing strongly**, with investors still reaching out for high spread and roll down instruments, and starting to favour equity tranches over other alternatives (e.g. high yield) given that the way to pay for this exposure in equity tranches is by taking default risk in investment grade portfolios, probably the risk that investors feel most comfortable with nowadays. Long-dated equity tranches, especially in Series 9, were the best performers, showing that investors are getting more comfortable (some could argue complacent?) extending maturities and taking periphery risk in order to meet their target returns.

**Senior tranches are still underperforming their delta**; without a natural investor base, the news regarding MAV potential unwinds has not helped at all and senior tranches continue being shunned by investors. Banks haven't been, so far, very successful marketing their leveraged super senior trades, which highlights the little appetite for senior risk in the current market. This might change next year, but we doubt it will before year end.

**Long-dated junior mezz in Series 9 is starting to outperform and attract investors' attention, a trend which we think should continue in 2014** – probably at the expense of equity. As we highlighted before, if spreads stabilise at these levels and start drifting tighter in 2014, the new marginal investor in the tranche market will be looking for wide spread instruments with some default subordination.

Figure 3. S9 – Tranche levels

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

Series 9	Jun-15	Jun-18
0-3%	5%	30%
3-6%	98	508
6-9%	51	300
9-12%	30	191
12-22%	14	93
22-100%	5	31
Ref	33	94

Source: Citi Research, Markit. COB yesterday.

Figure 4. S9 – 3m performance delta-hedged \*

From a protection seller's point of view.

Series 9	Jun-15	Jun-18
0-3%	1.56%	3.68%
3-6%	0.84%	1.24%
6-9%	0.21%	0.70%
9-12%	0.00%	-0.30%
12-22%	-0.03%	-0.50%
22-100%	-0.09%	-0.27%
Ref **	0.47%	1.59%

\* As % of notional. \*\* Outright performance for the index.

Assuming daily delta rebalancing for the tranches.

Source: Citi Research, Markit.

Figure 5. S9 – Correlations

Equity tranche implied correlations.



Source: Citi Research, Markit.

Figure 6. S19 – Tranche levels

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

Series 19	Jun-16	Jun-18
0-3%	6%	19%
3-6%	148	361
6-9%	83	218
9-12%	48	138
12-22%	27	72
22-100%	9	26
Ref	39	74

Source: Citi Research, Markit. COB yesterday.

Figure 7. S19 – 3m performance delta-hedged \*

From a protection seller's point of view.

Series 19	Jun-16	Jun-18
0-3%	0.80%	3.79%
3-6%	0.85%	0.02%
6-9%	0.43%	-0.08%
9-12%	0.20%	-0.25%
12-22%	-0.08%	-0.21%
22-100%	-0.09%	-0.18%
Ref **	0.55%	1.17%

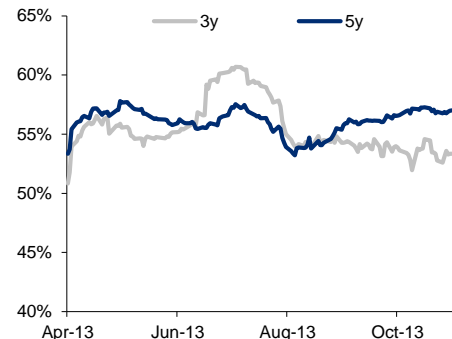
\* As % of notional. \*\* Outright performance for the index.

Assuming daily delta rebalancing for the tranches.

Source: Citi Research, Markit.

Figure 8. S19 – Correlations

Equity tranche implied correlations.

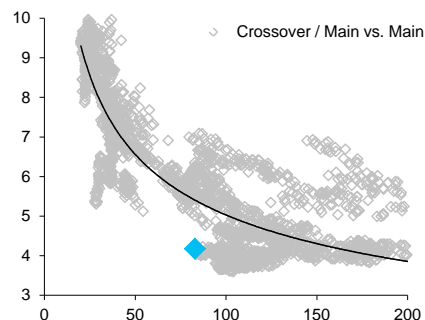


Source: Citi Research, Markit.

## Trade Ideas

### No. 1 – Sell S9 Jun-18 6-9% protection vs. Xover 5y S20

Figure 9. Xover to Main spread ratio vs. Main spread



Source: Citi Research, Markit. 5y on-the-run. Daily data since 2004.

- **Crossover vs. Main decompression** – As we wrote on our recent [Senior Fins. vs. Main trade idea](#), stabilising or even tightening from current levels represents a game changer to us, in terms of the investment dynamics which will drive markets going forward. At current or tighter levels, we think the investment dynamics and relative value relationships will be much closer to the ones back in 2005-2008 than the ones over the past three years. There are three relative value trades which have upside in this new trading environment: long risk Senior Financials vs. Main, long risk Main vs. Crossover (beta-adjusted) and [curve flatteners](#). With the index spread ratio failing to stay below 4x, for a very long every time we've tested that level; we believe there is little downside, and plenty of upside, on a decompression trade – see Figure 9.
- **We prefer to trade the long risk Main leg of the trade via a mezzanine tranche** (S9 6-9% Jun-18 in particular) in order to position for mezzanine tranches attracting investors attention going forward, as we have argued earlier in this report.
- The S9 6-9% 10y tranche trades at 294bp with a Jun-18 maturity vs. 344bp spread for 5y Crossover S20 with a Dec-18 maturity – see Figure 11. **We size the trade on a spread ratio basis (i.e. we trade 1.17x more notional on the tranche), which leaves us positive time value** (due to the higher roll down of the tranche) **and MtM flat if spreads in 5y Xover move 3.5x more than spreads in 10y Main S9** (their current spread delta as well as the tranche delta to Main S9).

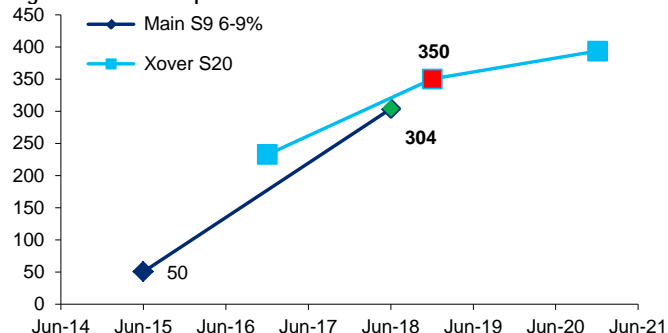
Figure 10 shows the trade details and Figure 13 the trade spread sensitivity assuming Crossover spreads move 3.5x more than Main S9 spreads. As Figure 12 shows, the Xover to 6-9% spread ratio has been increasing since mid-September; we expect this trend to continue.

Figure 10. Trade details – Sell S9 Jun-18 6-9% protection vs. Crossover 5y S20

Index	Tranche	Maturity	Upfront	Coupon (bp)	Spread (bp)	Protection	Notional (€m)	Upfront (€m)	Coupon (€m)	12 m time value (€m)
ITXEUR S9	6-9%	Jun-18	-0.25%	300	294	Sell	117	-0.29	3.51	8.43
ITXCRO S20	Index	Dec-18	-7.07%	500	344	Buy	100	7.07	-5.00	-5.50
<b>Total</b>								<b>6.78</b>	<b>-1.49</b>	<b>2.93</b>

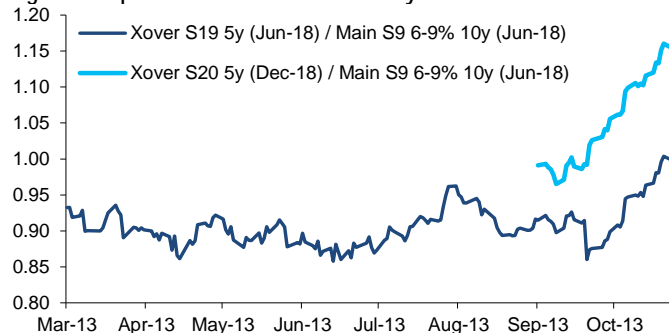
Source: Citi Research, Markit. Indicative spreads, open today.

Figure 11. Current spread curves: Main S9 6-9% vs. Xover S20



Source: Citi Research, Markit. COB yesterday.

Figure 12. Spread ratio: Xover S19 & S20 5y to Main S9 6-9% Jun-18



Source: Citi Research, Markit.

Figure 13. Trade exposure to spread changes – assuming Crossover S20 spreads move 3.5x more than Main S9 spreads

P&L in % of index notional.

	-15 bp	-10 bp	-5 bp	0 bp	5 bp	10 bp	15 bp
Change in Main 9							
Tranche P&L	2.58%	1.72%	0.86%	0.00%	-0.86%	-1.71%	-2.56%
Change in Xover 20							
Index P&L	-2.54%	-1.69%	-0.85%	-0.02%	0.79%	1.60%	2.39%
Total P&L	0.05%	0.04%	0.01%	-0.02%	-0.06%	-0.11%	-0.17%

Source: Citi Research, Markit.

## No. 2 – Sell S9 Jun-18 22-100% protection vs. light delta

- **Value-wise, we continue to see super senior tranches as attractive, but we acknowledge it may take some time to play out.** We do not envisage the trend we've seen this year (equities outperforming, seniors underperforming) changing in the very near term; however, we believe the stretched levels at which correlations are trading offer a good entry point to sell super senior protection with a medium term horizon.
- **Considering how high correlations are, we believe there is little downside on entering trades which profit from any potential single name surprise going forward** – provided one doesn't bleed time value all the way.
- **We prefer to sell super senior protection against a light delta (33% vs. current 47% delta) in order for the trade to be slightly long risk** (in-line with our strategy view) **and remove the negative time value that a delta-hedged position would generate.**

Figure 14. Trade details – Sell S9 Jun-18 super senior protection vs. light delta

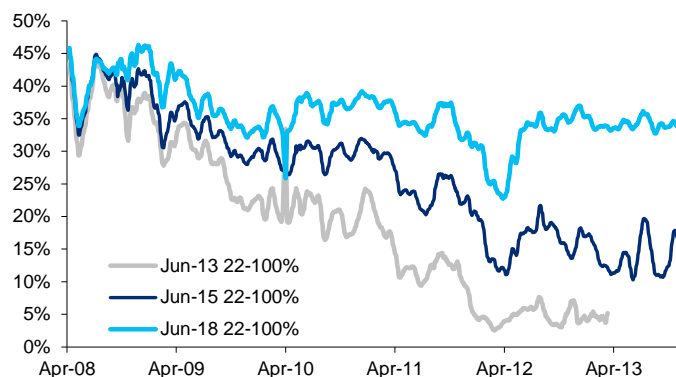
Index	Tranche	Maturity	Upfront	Coupon (bp)	Spread (bp)	Protection	Notional (€m)	Upfront (€m)	Coupon (€m)	12 m time value (€m)
ITXEUR S9	22-100%	Jun-18	0.18%	25	30	Sell	100	0.18	0.25	0.63
ITXEUR S9	Index	Jun-18	-3.65%	175	93	Buy	33.2	1.21	-0.58	-0.59
Total								1.39	-0.33	0.04

Source: Citi Research, Markit. Indicative spreads shown.

We use the current spread ratio of the super senior to the index spread (~33%) in order to size the trade. As a consequence, the trade is marginally positive time value – see Figure 19 – at the expense of being slightly long risk – see Figure 18 – and its P&L should track movements in the spread ratio between tranche and index. As Figure 16 and Figure 17 show, the ratio of super senior to index spread has historically been fairly stable for maturities higher than 4-5 years but starts decreasing for shorter maturities. The Jun-18 maturity is at the 4-5y inflection point and we expect the ratio of super senior to index spreads to fall going forward. Finally, as Figure 20 shows, the trade has a short correlation exposure.

Figure 15. Ratio of super senior to index spread - historical

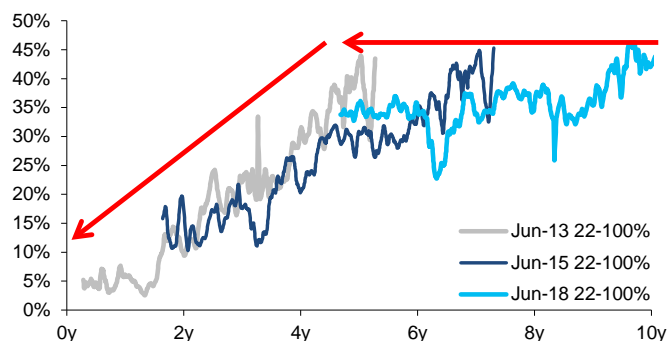
iTraxx Series 9, 10d moving average.



Source: Citi Research, Markit.

Figure 16. Ratio of super senior to index spread vs. tranche maturity

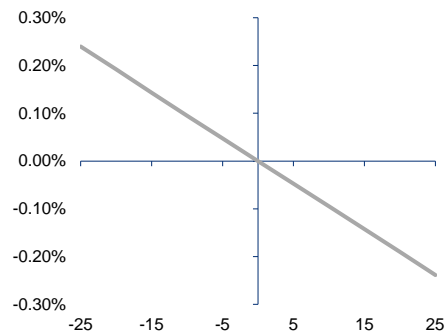
iTraxx Series 9, 10d moving average.



Source: Citi Research, Markit.

**Figure 17. Spread exposure – bp shocks**

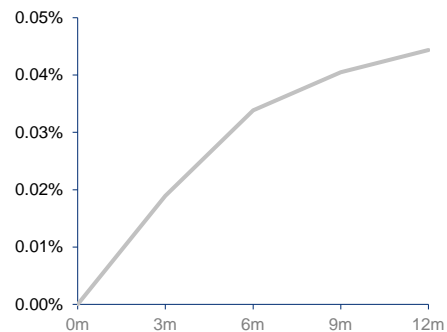
X-axis: spread shock, in bp, to all the maturities of all the credits in the index. Y-axis: trade MtM as % of tranche notional.



Source: Citi Research, Markit.

**Figure 18. Trade time value**

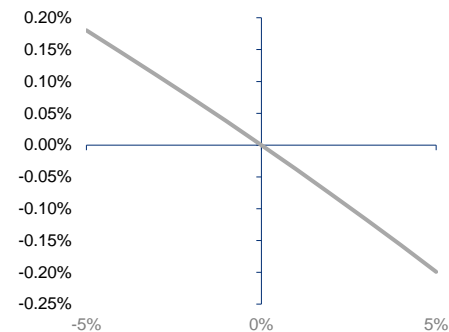
Including roll-down and carry, as % of tranche notional.



Source: Citi Research, Markit.

**Figure 19. Correlation exposure - % shocks**

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



Source: Citi Research, Markit.



## Trade Recommendations Summary

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

We are opening the two trades recommended in this report and taking profits in the Senior Financials vs. Crossover straddle and in the Crossover receiver ladder.

Figure 20. 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**
iTraxx Main Eq. Notional Flatteners 05-Sep-13	Main S19 3y	Prot.	Buy	1.00	-0.97%	65	100	-1.55%	40	-0.77%	-0.16%
	Main S19 5y	Prot.	Sell	1.00	0.24%	105	100	-1.09%	76	1.52%	0.43%
									<b>Total</b>	<b>0.74%</b>	<b>0.26%</b>
S19 Jun-16 0-3% vs. 3-6% 26-Sep-13	Main S19 0-3% Jun-16	Prot.	Sell	1.00	8.00%	839	500	5.25%	733	3.43%	2.58%
	Main S19 3-6% Jun-16	Prot.	Buy	2.00	-7.00%	234	500	-9.25%	148	-5.86%	-3.37%
									<b>Total</b>	<b>-2.43%</b>	<b>-0.79%</b>
CDX IG vs. Main Receivers 15-Oct-13	CDX IG S21 Nov 85 Receiver	Price	Buy	1.00	0.47%			0.64%		0.17%	
	Main S20 Nov 100 Receiver	Price	Sell	1.00	0.52%			0.82%		-0.30%	
									<b>Total</b>	<b>-0.14%</b>	
SenFin vs. Main 05-Nov-13	Senior Fin. 5y S20	Prot.	Sell	1.00	0.60%	112.3	100	0.45%	109	0.17%	
	Main 5y S20	Prot.	Buy	1.35	-0.79%	83.9	100	-0.77%	84	-0.01%	
									<b>Total</b>	<b>0.16%</b>	
S9 6-9% vs. S20 Crossover 15-Nov-13	Main S9 6-9% Jun-18	Prot.	Sell	1.17	-0.25%	294.0	300				
	Crossover S20 Dec-18	Prot.	Buy	1.00	-7.07%	344.0	500				
									<b>Total</b>		
S9 super senior vs. light delta 15-Nov-13	Main S9 22-100% Jun-18	Prot.	Sell	1.00	0.18%	30.0	25				
	Main S9 index Jun-18	Prot.	Buy	0.33	-3.65%	93.0	175				
									<b>Total</b>		

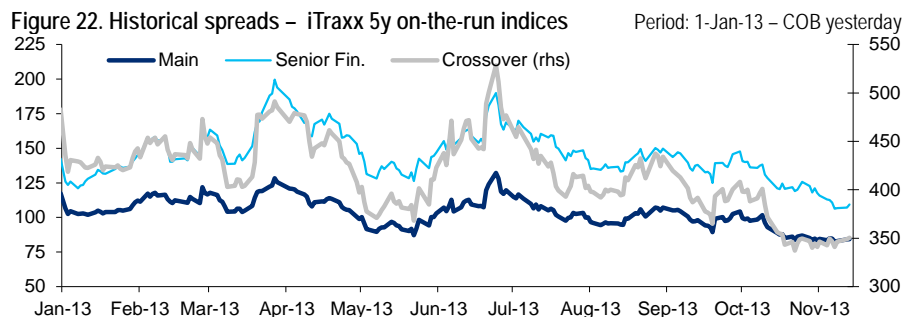
Source: Citi Research. Spreads and coupons in bp. \* P&L expressed as % of the leg with notional equal to 1. \*\* Over the last month. Prices as of COB yesterday.

Figure 21. Open and closed trades summary statistics

Number	Open	Closed*	Percentage	Open	Closed*
In profit	2	10	In profit	50%	91%
In loss	2	1	In loss	50%	9%
	4	11			

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

### Representative Market Conditions



Source: Citi Research, Markit. In bp.

Figure 23. 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	1.00	0.25%			0.23%		-0.01%
Opened: 18-Jun-13	90bp Receiver	Price	Sell	2.00	0.04%			0.00%		0.07%
Closed: Expiry	75bp Receiver	Price	Buy	1.00	0.00%			0.00%		0.00%
									<b>Total</b>	<b>0.06%</b>
Senior Fin vs. CDX IG Receivers	SenFin October 140bp receiver	Price	Buy	1.00	0.53%			0.69%		0.17%
Opened: 26-Jul-13	CDX IG October 75bp receiver	Price	Sell	2.00	0.19%			0.18%		0.02%
Closed: 13-Aug-13									<b>Total</b>	<b>0.19%</b>
Series 9 vs. Series 19 equity	iTraxx Main S9 0-3% Jun-18 (10y)	Prot.	Buy	1.00	46.25%	1,720	500	39.82%	1,703	-7.98%
Opened: 5-Jun-13	iTraxx Main S9 Index Jun-18 (10y)	Prot.	Sell	5.00	-2.05%	132	175	-2.73%	114	6.12%
Closed: 25-Sep-13	iTraxx Main S19 0-3% Jun-18 (5y)	Prot.	Sell	1.00	31.75%	1,227	500	25.15%	1,188	8.15%
	iTraxx Main S19 Index Jun-18 (5y)	Prot.	Buy	6.20	0.39%	108	100	-0.53%	88	-7.63%
									<b>Total</b>	<b>-1.34%</b>
S19 Jun-16 3-6% vs. S9 Jun-18 Index	iTraxx Main S19 3-6% Jun-16 (3y)	Prot.	Sell	1.00	-3.59%	375	500	-7.23%	229	4.72%
Opened: 9-Jul-13	iTraxx Main S9 Index Jun-18 (10y)	Prot.	Buy	2.50	-1.58%	138	175	-2.73%	114	-3.83%
Closed: 25-Sep-13									<b>Total</b>	<b>0.89%</b>
Commerzbank sub/senior compr.	Sub CDS	Prot.	Sell	1.00	-5.65%	375	500	-8.03%	327	3.24%
Opened: 13-Aug-13	Senior CDS	Prot.	Buy	2.51	2.37%	150	100	1.95%	140	-1.49%
Closed: 14-Sep-13									<b>Total</b>	<b>1.75%</b>
RBS sub/senior compr.	Sub CDS	Prot.	Sell	1.00	-7.71%	339	500	-11.10%	254	4.25%
Opened: 13-Aug-13	Senior CDS	Prot.	Buy	2.02	2.80%	168	100	1.77%	139	-2.43%
Closed: 14-Sep-13									<b>Total</b>	<b>1.82%</b>
BNP sub/senior compr.	Sub CDS	Prot.	Sell	1.00	-14.42%	198	500	-16.21%	168	2.65%
Opened: 13-Aug-13	Senior CDS	Prot.	Buy	1.68	0.86%	118	100	0.26%	105	-1.30%
Closed: 14-Sep-13									<b>Total</b>	<b>1.36%</b>
S19 3-6% vs. S20 Crossover	Main S19 3-6% Jun-18	Prot.	Sell	1.00	-3.25%	422	500	-5.70%	366	2.99%
Opened: 26-Sep-13	Crossover S20 Dec-18	Prot.	Buy	1.00	-5.18%	386	500	-6.96%	343	-2.32%
Closed: 4-Nov-13									<b>Total</b>	<b>0.67%</b>
iTraxx vs. CDX IG super senior	Main S9 22-100% Jun-18	Prot.	Sell	1.00	0.60%	37	25	0.34%	32	0.29%
Opened: 26-Sep-13	CDX IG S9 30-100% Dec-17	Prot.	Buy	1.00	-3.54%	13	100	-3.43%	16	0.00%
Closed: 4-Nov-13									<b>Total</b>	<b>0.29%</b>
Senior Fin vs. Xover straddle	Xover Dec-13 400bp straddle	Price	Sell	1.00	2.64%			2.63%		0.00%
Opened: 9-Oct-13	SenFin Dec-13 140bp straddle	Price	Buy	2.05	1.29%			1.48%		0.40%
Closed: 15-Nov-13									<b>Total</b>	<b>0.40%</b>
325-350-375 Nov. Xover Rec. Ladder	325 Xover Nov Rec	Price	Sell	2.00	0.18%			0.02%		0.32%
23-Oct-13	350 Xover Nov Rec	Price	Sell	1.00	0.61%			0.47%		0.14%
	375 Xover Nov Rec	Price	Buy	1.00	1.45%			1.46%		0.01%
									<b>Total</b>	<b>0.47%</b>

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 24. Analytics – Available at Citi Velocity

Options	<a href="#">iTraxx Volatility Report</a> <a href="#">CDX Volatility Report</a>	Tranches	<a href="#">iTraxx Series 9 Tranche Report</a> <a href="#">iTraxx Series 19 Tranche Report</a>
Indices	<a href="#">CDS Indices Positioning Report</a> <a href="#">CDS Indices Trading Volumes Report</a>	Curves	<a href="#">iTraxx Curve P&amp;L Report</a>

Source: Citi Research.

Figure 25. Recent Trade Ideas

<a href="#">Long risk Senior Fins. vs. short risk Main</a>	5 Nov 2013
<a href="#">Crossover receiver ladders</a>	23 Oct 2013
<a href="#">Long risk CDX IG vs. Main via Receivers</a>	15 Oct 2013
<a href="#">Buy Senior Financials straddles vs. sell Crossover straddles</a>	9 Oct 2013
<a href="#">Long risk equity vs. short risk 3-6% in S19 Jun-16 (3y)</a>	26 Sep 2013
<a href="#">Long risk S19 Jun-18 (5y) 3-6% vs. 5y S20 Crossover</a>	26 Sep 2013
<a href="#">Long risk iTraxx S9 Jun-18 (10y) super senior vs. short risk CDX IG S9 Dec-17 (10y) super senior</a>	26 Sep 2013
<a href="#">Equal Notional 3s5s Flatteners: Adding cautious longs by selling forward protection</a>	5 Sep 2013
<a href="#">Sub/Senior compression trades in European banks</a>	13 Aug 2013
<a href="#">iTraxx Senior Financials vs. CDX IG via Receivers</a>	7 Aug 2013
<a href="#">Sell Jun-16 3-6% Series 19 protection vs. Buy Jun-18 Series 9 index protection</a>	9 Jul 2013
<a href="#">Option trades ahead of the FOMC</a>	18 Jun 2013
<a href="#">iTraxx Series 9 vs. Series 19 Jun-18 equity tranches</a>	5 Jun 2013
<a href="#">Hedging via Crossover Bearish Ladders</a>	16 May 2013
<a href="#">Buy Main straddles: sell CDX IG straddles</a>	1 May 2013
<a href="#">Views &amp; Trades on iTraxx Series 9 Tranches</a>	18 April 2013
<a href="#">Beware of retail and food releveraging – short risk retailers &amp; food vs. Main Non-Financials</a>	18 April 2013
<a href="#">Receiver 1x2s – Mind the tail if going long</a>	2 Apr 2013
<a href="#">Hedging menu: payer spreads, 3s5s flatteners and Jun 15/18 equity tranche flatteners</a>	28 Mar 2013
<a href="#">Long insurers vs. short premium autos</a>	19 Mar 2013
<a href="#">Flatteners in iTraxx Equity Tranches</a>	6 Mar 2013
<a href="#">Long risk 3-6% vs. short risk 0-3% - Jun-15 iTraxx Series 9 tranches</a>	12 Feb 2013
<a href="#">Long risk Main vs. Crossover via indices and receiver options</a>	12 Feb 2013

Source: Citi Research.

Figure 26. Other publications

<a href="#">Financial CDS to get a re-vamp</a>	7 Aug 2013
<a href="#">What bail-in means for CDS</a>	11 Feb 2013

Source: Citi Research.

## 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

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.

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](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

### 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 Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 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 Citigroup/Citigroup Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigroup/Citigroup 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, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere 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](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. Citi Research generally disseminates its research to the Firm's global institutional and retail clients via both proprietary (e.g., Citi Velocity and Citi Personal Wealth Management) and non-proprietary electronic distribution platforms. Certain research may be disseminated only via Citi's proprietary distribution platforms; however such research will not contain changes to earnings forecasts, target price, investment or risk rating or investment thesis or be otherwise inconsistent with the author's previously published research. Certain research is made available only to institutional investors to satisfy regulatory requirements. Individual Citi Research analysts may also opt to circulate published research to one or more clients by email; such email distribution is discretionary and is done only after the research has been disseminated.

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

---