

August 13, 2015

FLOW STRATEGY &amp; SOLUTIONS

## CDX IG & HY Swaption Volatility Monitor

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### HIGHLIGHTS OF THE WEEK & SUGGESTED TRADE IMPLEMENTATIONS:

- ❑ **Implied Volatility (IV) & Realized Volatility (RV):** 1M to 3M CDX IG & HY Implied Volatility (IV) moved slightly lower over the last 2 weeks. The 3M spread between IV & RV remains at high levels for the CDX HY and elevated for IG.
- ❑ **Upside/Downside skew:** 1M to 2M (Sep-15) downside skew dropped for CDX IG payers and HY puts as lift-off for the Fed may be delayed with the recent economic data and China devaluation.
- ❑ **Forward Term Structure:** Forward terms structure did parallel shift higher across maturities for both CDX IG and HY, after the news from China, indicating elevated forward levels.
- ❑ **CDX TRADE IMPLEMENTATIONS:** With the recent China CNY devaluation, we highlight a CDX IGH payer and CDX HY put strategy.
  - **5Y CDX IG:** Issues with IG maybe pushed out longer-term if the Fed delays lift-off past September, so we like buying medium term calls: **Buy CDX IG Nov-15 100 strike call for 20.5 cents (CDX IG ref. 77).**
  - **5Y CDX HY:** We recommend buying the CDX HY Nov-15 1 by 2 put spread. **Short CDX HY Nov-15 103 strike put & long 2x Nov-15 100 strikes puts for a cost of 31 cents (CDX HY ref. 105.125).** Contagion from US HY debt issues combined with a possible rate hike, make HY a better underlying for the 1 by 2 put spread.

### CDX IG HEDGING STRATEGY COMPARISON: PAYERS

#### CDX IG HEDGING STRATEGY COMPARISON

CDX IG Hedging Strategy Comparison										
CDX IG 8/13/15 (bps)	Spot	76.1	Sep-15	76.6	Oct-15	78.8	Nov-15	81.1		
5Y CDX IG Ref. Level:	77	Mat1	Mat2	Strikes	Initial Premium (Cents)	1M Est. Carry Cost* (Cents)	Initial Delta	Initial Cost per \$1 Mill (000s)	Max PnL per \$1 Mill (000s)**	Max PnL / Initial Prem
Long Payer Spread		Oct-15		80/100	21.50	6.00	31%	\$2.15	\$9.22	4.3
Long CDX IG Payer Fly		Oct-15		80/90/110	5.00	0.20	-1%	\$0.50	\$4.63	9.3
Long Payer Calendar		Oct-15	Nov-15	80/100	15.00	7.00	25%	\$1.50	\$9.22	6.1
Long Calendar Payer Strangle		Oct-15	Nov-15	R70/C90	38.00	13.00	24%	\$3.80	\$13.67	3.6
Short 1x2 Payer Spread		Nov-15		85/100	9.00	6.50	12%	\$0.90	\$11.25	12.5
Short Straddle(strangle) & long 2x Payer		Nov-15		75/85/2xP100	(11.00)	(3.00)	33%	(\$1.10)	\$11.25	-
Long Medium Payer		Nov-15		100	20.50	7.50	31%	\$2.05	\$9.22	4.5

Source: SG Trading, SG Flow Strategy & Engineering

#### NOTES:

\* Est. 1M cost/(credit) is estimated with current CDX IG term structure and implied volatility (IV) surface

Hold until 1M prior to expiry except for Call Fly (hold to expiry) and Calendar strangle (unwind 1-2 wks before expiry)

\*\* Max PnL for outright payers or receivers is capped at 120 bps (calculated intrinsic spread PnL)

### CDX HY HEDGING STRATEGY COMPARISON: PUTS

#### CDX HY HEDGING STRATEGY COMPARISON

CDX HY 8/13/15 (bps)	Spot	380.2	Sep-15	382.6	Oct-15	394.1	Nov-15	406.5		
5Y CDX HY Ref. Level:	105.125/378bps									
	Mat1	Mat2	Strikes (\$ Price)	Strikes (Sprd bps)	Initial Premium (Cents)	1M Est. Carry Cost* (Cents)	Initial Delta	Initial Cost per \$1 Mill (000s)	Max PnL per \$1 Mill (000s)**	Max PnL / Initial Prem
Long Put Spread	Oct-15		105/102	376/450	101.00	20.50	31%	\$10.10	\$29.70	2.9
Long CDX HY Put Fly	Oct-15		105/102/99	376/450/526	72.50	2.70	15%	\$7.25	\$29.70	4.1
Long Put Calendar	Oct-15	Nov-15	105/102	376/449	57.00	21.50	23%	\$5.70	\$29.70	5.2
Long Calendar Put Strangle	Oct-15	Nov-15	C106/P104	353/399	236.00	74.00	36%	\$23.60	\$69.29	2.9
Short 1x2 Put Spread	Nov-15		103/2xP100	424/2xP500	31.00	20.00	9%	\$3.10	\$29.69	9.6
Short Straddle(strangle) & long 2x Put	Nov-15		105/103/2xP100	375/449/2xP500	(47.50)	(103.50)	40%	(\$4.75)	\$29.69	-
Long Medium Put	Nov-15		102		127.00	46.00	41%	\$12.70	\$49.49	3.9

Source: SG Trading, SG Flow Strategy & Engineering

#### NOTES:

\* Est. 1M cost/(credit) is estimated with current CDX IG term structure and implied volatility (IV) surface

Hold until 1M prior to expiry except for Call Fly (hold to expiry) and Calendar strangle (unwind 1-2 wks before expiry)

\*\* Max PnL for outright payers or receivers is capped at 75 bps from highest spread (level of 97 on bond & then calculated intrinsic spread PnL)

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**SOCIÉTÉ GÉNÉRALE**  
Corporate & Investment Banking

SG Flow Strategy &amp; Solutions

Ramon Verastegui

(1) 212 278 7548

ramon.verastegui@sgcib.com

SG Flow Strategy &amp; Solutions

James Hosker

(1) 212 278 6291

james.hosker@sgcib.com

SG Flow Strategy &amp; Solutions

Shuwen Zhao

(1) 212 278 7268

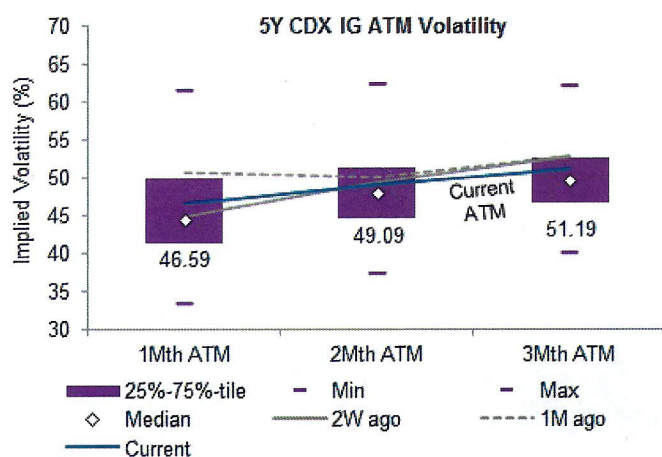
shuwen.zhao@sgcib.com



## CDX IG HEDGING STRATEGY COMPARISON: RECEIVERS

## CDX HY HEDGING STRATEGY COMPARISON: CALLS

## 5Y CDX IG SWAPTION IV &amp; RV STATS

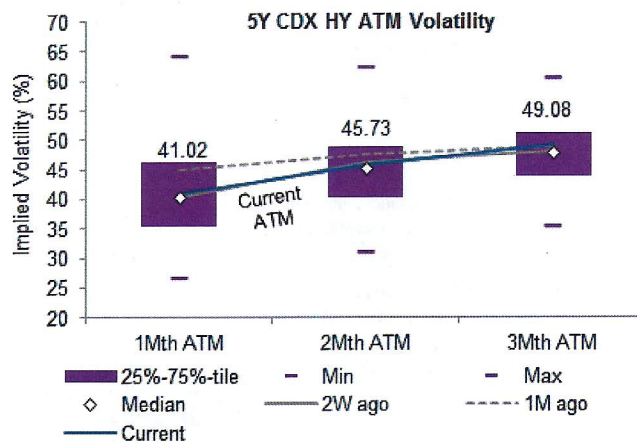


Source: SG Trading, SG Flow Strategy &amp; Solutions

## CDX IG Implied Volatility (IV) &amp; Index Spread Stats

Field	5Y CDX IG Spot (bps)	1M ATM	2M ATM	3M ATM
Current	76.1	46.59	49.09	51.19
%-tile	98.9%	62.3%	58.6%	63.3%
2W Chg	5.9	1.6	-0.4	-1.5
1M Chg	8.8	-4.2	-1.0	-1.7

## 5Y CDX HY SWAPTION IV &amp; RV STATS



Source: SG Trading, SG Flow Strategy &amp; Solutions

## CDX HY Implied Volatility (IV) &amp; Index Spread Stats

Field	5Y CDX HY Spot (bps)	1M ATM	2M ATM	3M ATM
Current	380.2	41.02	45.73	49.08
%-tile	94.0%	55.4%	52.2%	59.0%
2W Chg	27.0	0.6	-0.5	0.9
1M Chg	36.9	-3.9	-2.0	0.2

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**SOCIETE GENERALE**  
 Corporate & Investment Banking

SG Flow Strategy &amp; Solutions

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ramon.verastegui@sgcib.com

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(1) 212 278 6291

james.hosker@sgcib.com

SG Flow Strategy &amp; Solutions

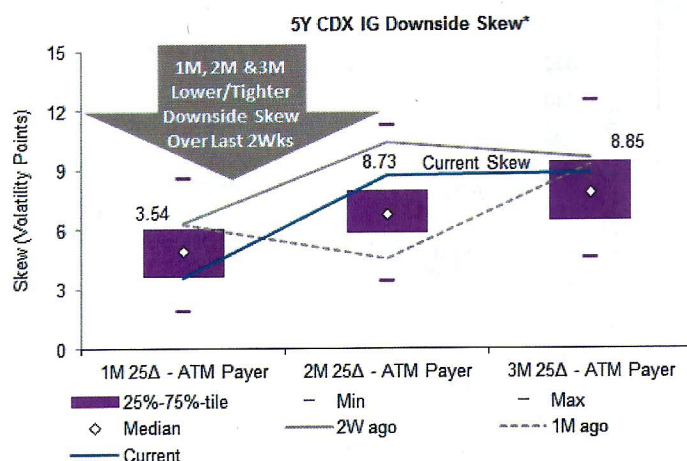
Shuwen Zhao

(1) 212 278 7268

shuwen.zhao@sgcib.com



## 5Y CDX IG SWAPTION IV &amp; RV STATS

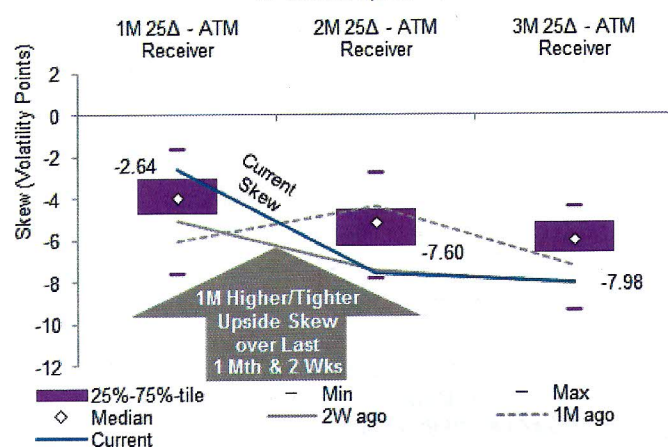


\* Skew is measured as downside 25 Δ IV - ATM IV, where strike corresponds to an delta  
Source: SG Source: SG Trading, SG Flow Strategy & Solutions

CDX IG Downside Skew Stats

Field	5Y CDX IG Spot (bps)	1M 25Δ - ATM Payer	2M 25Δ - ATM Payer	3M 25Δ - ATM Payer
Current	76.1	3.5	8.7	8.9
%-tile	98.9%	20.4%	87.4%	62.8%
2W Chg	5.9	-2.8	-1.6	-0.8
1M Chg	8.8	-2.7	4.2	-0.5

## 5Y CDX IG Upside Skew\*

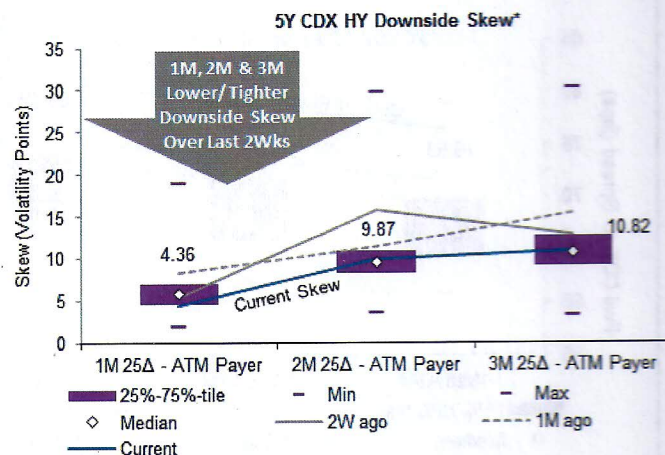


\* Skew is measured as upside ATM IV - 25 Δ IV, where strike corresponds to an delta  
Source: SG Source: SG Trading, SG Flow Strategy & Solutions

CDX IG Upside Skew Stats

Field	5Y CDX IG Spot (bps)	1M 25Δ - ATM Receiver	2M 25Δ - ATM Receiver	3M 25Δ - ATM Receiver
Current	76.1	-2.6	-7.6	-8.0
%-tile	98.9%	88.4%	1.5%	3.6%
2W Chg	5.9	2.4	-0.1	0.1
1M Chg	8.8	3.4	-3.2	-0.7

## 5Y CDX HY SWAPTION IV &amp; RV STATS

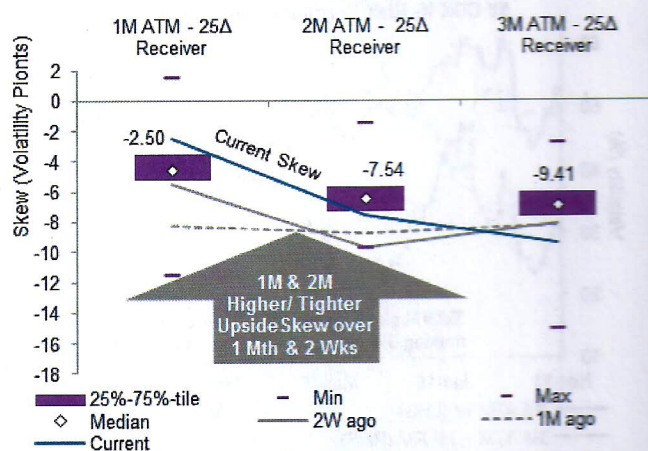


\* Skew is measured as downside 25 Δ IV - ATM IV, where strike corresponds to an delta  
Source: SG Source: SG Trading, SG Flow Strategy & Solutions

CDX HY Downside Skew Stats

Field	5Y CDX HY Spot (bps)	1M 25Δ - ATM Payer	2M 25Δ - ATM Payer	3M 25Δ - ATM Payer
Current	380.2	4.4	9.9	10.8
%-tile	94.0%	21.3%	55.9%	52.2%
2W Chg	27.0	-1.0	-5.8	-1.9
1M Chg	36.9	-4.0	-1.5	-4.6

## 5Y CDX HY Upside Skew\*



\* Skew is measured as upside ATM IV - 25 Δ IV, where strike corresponds to an delta  
Source: SG Source: SG Trading, SG Flow Strategy & Solutions

CDX HY Upside Skew Stats

Field	5Y CDX HY Spot (bps)	1M ATM - 25Δ Receiver	2M ATM - 25Δ Receiver	3M ATM - 25Δ Receiver
Current	380.2	-2.5	-7.5	-9.4
%-tile	94.0%	92.7%	19.0%	0.9%
2W Chg	27.0	3.0	2.2	-1.3
1M Chg	36.9	5.7	1.2	-1.19

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ramon.verastegui@sgcib.com

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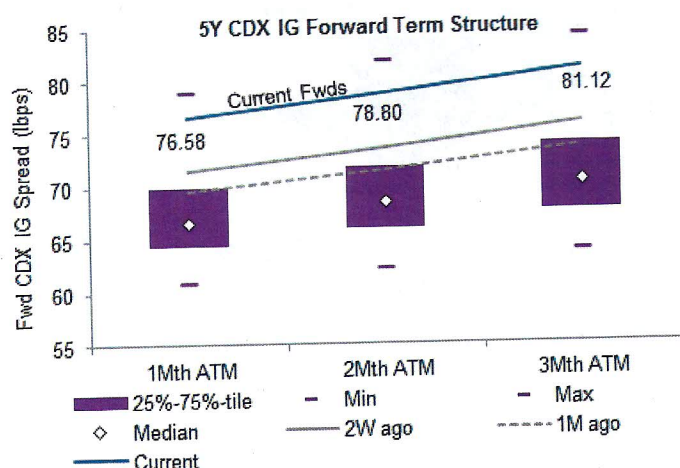
Shuwen Zhao

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shuwen.zhao@sgcib.com



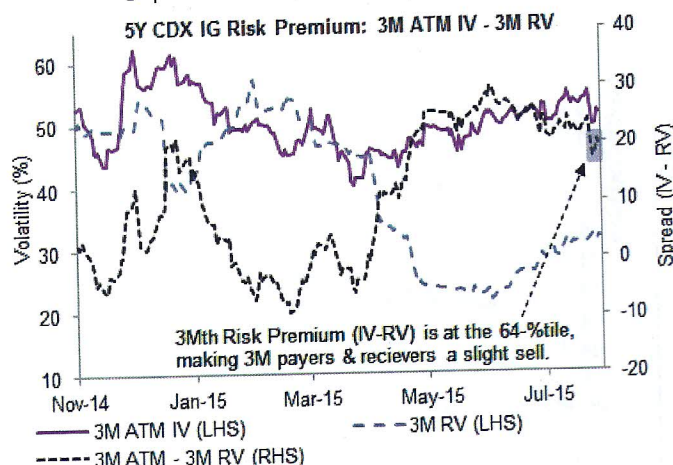
### 5Y CDX IG SWAPTION IV & RV STATS



Source: SG Trading, SG Flow Strategy & Solutions

#### CDX IG Forward Term Structure

Field	5Y CDX IG Spot (bps)	1M ATM Fwd	2M ATM Fwd	3M ATM Fwd
Current	76.1	76.6	78.8	81.1
%-tile	98.9%	98.4%	98.4%	98.9%
2W Chg	5.9	5.1	5.2	5.2
1M Chg	8.8	6.9	7.3	7.4

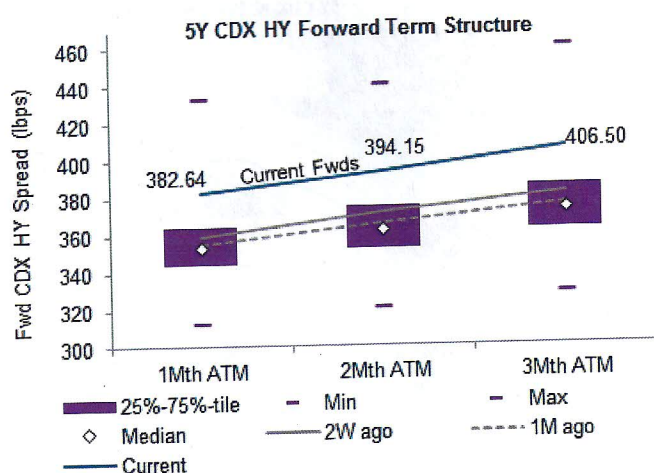


Source: SG Source: SG Trading, SG Flow Strategy & Solutions

#### CDX IG ATM IV - RV

Field	1M	2M	3M
Current IV	46.6	49.1	51.2
Current RV	32.1	35.9	31.5
IV - RV	14.5	13.2	19.6
%-tile	56.5%	43.9%	63.8%
2W Chg	5.5	-1.2	-2.2
1M Chg	2.3	-5.2	-4.8

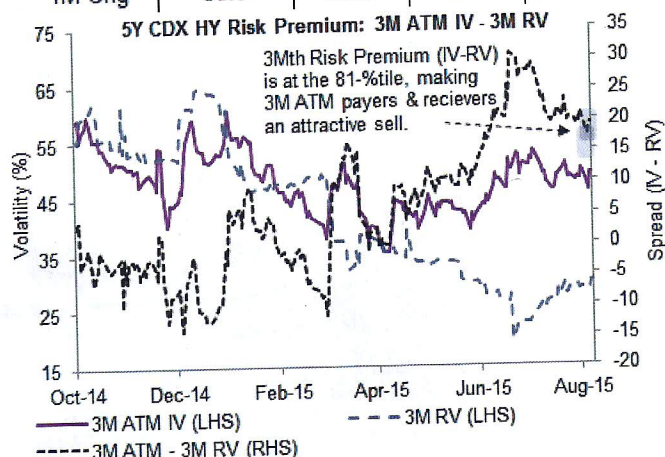
### 5Y CDX HY SWAPTION IV & RV STATS



Source: SG Trading, SG Flow Strategy & Solutions

#### CDX HY Term Structure of Forward Spreads

Field	5Y CDX HY Spot (bps)	1M ATM Fwd	2M ATM Fwd	3M ATM Fwd
Current	380.2	382.6	394.1	406.5
%-tile	94.0%	90.9%	90.9%	90.9%
2W Chg	27.0	22.8	22.4	24.3
1M Chg	36.9	27.7	28.3	30.3



Source: SG Source: SG Trading, SG Flow Strategy & Solutions

#### CDX HY ATM IV - RV

Field	1M	2M	3M
Current IV	41.0	45.7	49.1
Current RV	32.4	35.3	29.9
IV - RV	8.6	10.4	19.1
%-tile	58.6%	65.9%	81.3%
2W Chg	2.3	-3.0	-0.6
1M Chg	1.3	-8.2	-3.9

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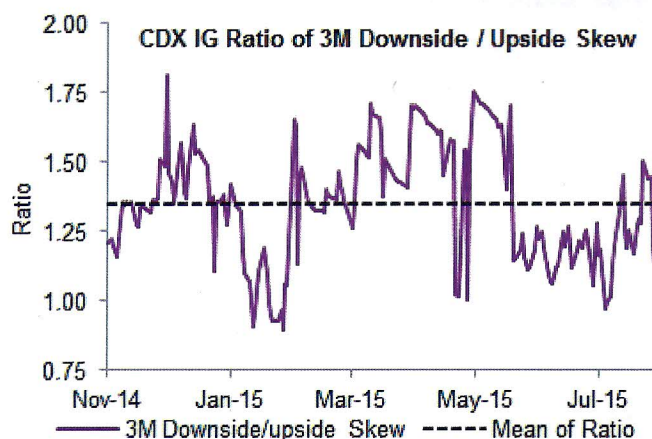
james.hosker@sgcib.com

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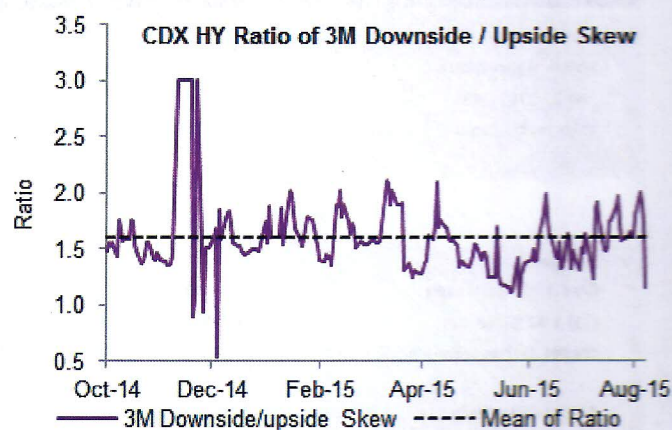
Shuwen Zhao

(1) 212 278 7268

shuwen.zhao@sgcib.com

**5Y CDX IG SWAPTION IV & RV STATS**

Source: SG Source: SG Trading, SG Flow Strategy &amp; Solutions

**5Y CDX HY SWAPTION IV & RV STATS**

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