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Hedging Macro Risks in HY

Bank of America Merrill Lynch

Oleg Melentyev, CFA +1 646 855 6986
Credit Strategist
MLPF&S
oleg.melentyev@baml.com

Chintan Kotecha +1 646 855 5478
Equity-Linked Analyst
MLPF&S
chintan.kotecha@baml.com

Ioannis Angelakis +44 20 7996 0059
Credit Derivatives Strategist
MLI (UK)
ioannis.angelakis@baml.com

Christopher Hays +1 646 855 9709
Credit Strategist
MLPF&S
christopher.hays@baml.com

Neha Khoda +1 646 855 9656
Credit Strategist
MLPF&S
neha.khoda@baml.com

Sharply lower volatility offers cheap hedging options

Following the recent run-up in risk asset prices, measures of volatility have dropped sharply, with the mostly widely watched benchmark – VIX index on S&P 500 – currently trading at 15pts, its lowest level since June 2007. HY has run up quite dramatically in recent weeks as well, reaching 580bp spread, or just a stone's throw away from our 2012 target of 550bp. Improvement in secondary market's liquidity conditions in recent months has resulted in HY trading volumes returning back to their historical average as volatility declined and expectations were reset on the Volcker Rule implementation. Recall that extremely poor liquidity conditions were a factor in our judgment to adjust historical risk premiums in HY higher going forward. Absence of this negative factor, in turn, implies lower fair-value spreads, all else being equal.

Three hedging strategies: puts on CDX HY, IG, and S&P500

Having said that, macro risks continue to lurk in the background, even as the market is trying to look past them and push for higher levels. We remain concerned about possible restructuring in Portugal, following a "successful" Greek PSI, and further escalation in tensions with Iran and subsequent shock to oil prices. With these risks in mind, we believe current extremely low levels of volatility provide a good opportunity to hedge HY exposures at relatively low expense, without having to actually sell cash bonds. In this report we are looking at three hedging options in order to determine the cheapest and most efficient way to execute this strategy: out-of-the-money (OTM) put options on S&P500 equity index, CDX HY and CDX IG indexes.

HY puts offer most optimal hedge; SPX - deepest liquidity

All in all, we arrive at the conclusion that CDX IG options provide the cheapest way of the three to hedge HY cash bond portfolios, although with some incremental basis risk related to lower correlation between HY cash vs CDX IG. CDX HY puts offer the second-cheapest way to hedge HY cash bond portfolios, in our view. These options are the most optimal way to hedge, in our opinion, given that CDX HY has the highest correlation to underlying HY cash bonds, implying lower basis risk at marginally higher price (102bp vs 92bp). Finally, S&P500 equity puts are somewhat more expensive at 191bp, although they provide a significantly deeper market to execute this hedging strategy in volume.

Hedged long CCC trade idea

We offer a trade idea to go long CCC cash bond risk hedged with CDX HY options. Our calculations suggest that investors could eliminate most of the downside from their CCC holding by paying 150bp to protect against losses.

Our previous HY Strategy publications are accessible on HYDL page in Bloomberg (option 28) or our Mercury web page: https://markets.ml.com/credit-strategy-high-yield

Refer to important disclosures on page 8 to 10. Analyst Certification on Page 7. Link to Definitions on page 7.
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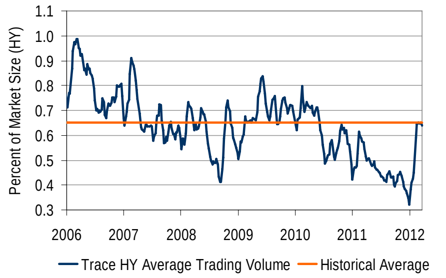
Hedging Macro Risks in HY

Figure 1: HY trading volumes recovered to historical average

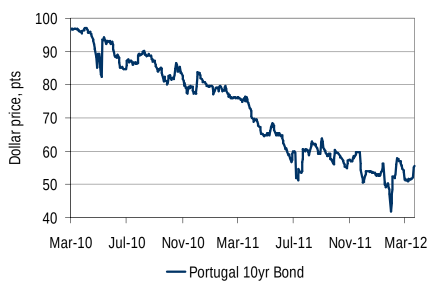


Source: BofA Merrill Lynch Global Research

Following the recent run-up in risk asset prices, measures of volatility have dropped sharply, with the mostly widely watched benchmark – VIX index on S&P 500 – currently trading at 15pts, its lowest level since June 2007. HY has run up quite dramatically in recent weeks as well, reaching 580bp spread, or just a stone's throw away from our 2012 target of 550bp. This, aside from the whole discussion on hedging strategies below, provides a good datapoint to put the current HY valuations into perspective – HY spreads stood at their historical lows of 250bp at the time when VIX was at these levels in 2007. Currently, our spreads are still north of historical average, let alone historical tights, primarily as a result of very low Treasury yields, even following last week's selloff in rates. In addition, improvement in secondary market's liquidity conditions in recent months has resulted in HY trading volumes returning back to their historical average as volatility declined and expectations were reset on the Volcker Rule implementation. At this point the implementation has already been delayed and we expect it to get fine-tuned to allow for reasonable functioning of credit market making activities by dealers. Recall that extremely poor liquidity conditions were a factor in our judgment to adjust historical risk premiums in HY higher going forward. Absence of this negative factor, in turn, implies lower fair-value spreads, all else being equal.

Something's gotta give

Figure 2: This chart suggests another PSI may be coming



Source: BofA Merrill Lynch Global Research

Having said that, macro risks continue to lurk in the background, even as the market is trying to look past them and push for higher levels. We think Greece's restructuring is likely to be viewed as a success in European political circles, having achieved a meaningful debt reduction (if not long-term sustainability) without material systemic impact. Once the time comes to review Portugal's situation later this year, there may be more political pressure to push for a similar restructuring there before the bail-out gets extended/increased. Investors should keep two simple facts in mind: the current program is built on the assumption that Portugal regains market access in 2013, and yet its bonds are currently trading at 55 cents on the dollar. Something's gotta give here.

In the geopolitical arena, we think the situation around Iran is more likely than not to see further escalation in tensions, even if the military conflict is eventually avoided. The Iranian regime is showing few signs of willingness to cooperate, and in fact, an argument could be made, that it benefits from negative spillover effects on oil prices. As long as the risk of further price shock to oil exists, this regime maintains a certain lever in its maneuvering. We are not in a particularly strong position to make judgment about further developments in this very complex geopolitical situation, and yet we believe it is sufficient to acknowledge its presence and what we believe is a real potential for escalation going forward.

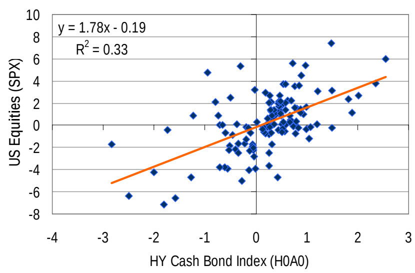
Three hedging strategies

With these risks in mind, we believe current extremely low levels of volatility provide a good opportunity to hedge HY exposures at relatively low expense, without having to actually sell cash bonds. In this report we are looking at three hedging options in order to determine the cheapest and most efficient way to execute this strategy: out-of-the-money (OTM) put options on S&P500 equity index, CDX HY and CDX IG indexes. In our quest for an optimal hedge, we are aiming to keep most factors differentiating these instruments equal, including maturities (June[1] 2012, three months from now) and strikes that correspond to an equivalent of a 5% selloff in HY cash bonds from current levels.

Determining the right betas in our hedges

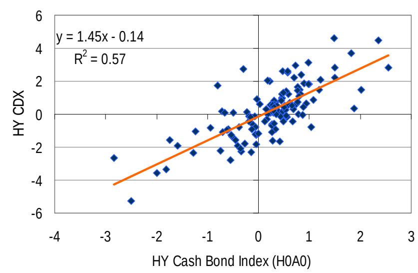
In order to find the right strike price, we are looking at historical relationship between HY cash bonds and the three underlying instruments shown in Figure 3-Figure 5 below. The charts plot weekly percentage changes in total return indexes of HY cash bonds (H0A0, horizontal axis in each case) versus the three other benchmarks. Results show that equities have a 1.78x beta against HY bonds (1.78% expected change for each 1% change in HY cash); CDX HY has a 1.45x beta and CDX IG is 0.25x. Therefore, we assume that if HY cash sells off by 5%, equities would be down by 9%, CDX HY by 7.25%, and CDX IG by 1.25%. Accordingly, we are choosing the strikes on our June put options at 1,275pts on S&P500, 92pts on CDX HY, and 110bp on CDX IG to approximate expected levels on these benchmarks following such drops. In the latter case we chose the spread level on CDX IG to match where it was at the time when CDX HY was trading at 92pts for the last time (mid-December).

Figure 3: S&P 500 vs HY cash bonds
Weekly total returns since Oct 2009, pct change



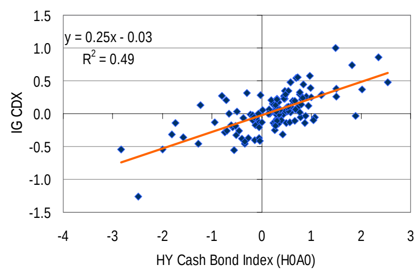
Source: BofA Merrill Lynch Global Research

Figure 4: CDX HY vs HY cash bonds
Weekly total returns since Oct 2009, pct change



Source: BofA Merrill Lynch Global Research

Figure 5: CDX IG vs HY cash bonds
Weekly total returns since Oct 2009, pct change



Source: BofA Merrill Lynch Global Research

Figure 6 below shows initial characteristics and simulated performance of these three hedging strategies. We start with current levels on each underlying benchmark, their assumed negative performance given a 5% drop in HY cash bonds, and strikes/prices on June 2012 puts.

Figure 6: HY hedging strategies and their performance

	Current	Assumed	June 2012 Puts		Assumed values in 1mo				
	Price	Drop, %	Strike	Price	Price	Δ Price	Notional	P&L	Cost
HY Cash		-5.0					100.0	-5.0	
SPX (index points)	1405.0	-9.0	1,275.0	15.8	57.1	2.9	169.9	5.0	1.91
CDX HY ($ price)	99.1	-7.3	92.0	53.0	314.0	2.6	191.6	5.0	1.02
CDX IG (spread, bps)	80.0	-1.3	110.0	9.8	62.7	0.5	944.3	5.0	0.92

Source: BofA Merrill Lynch Global Research

[1] To be exact, CDX options mature on June 20th, and SPX options on June 16th.

Index option pricing conventions

S&P 500 options are European style (exercised at maturity) and priced in dollars per contract ($15.80) with a contract size of 100 shares. To buy protection on $100mn notional equity exposure, an investor would pay $100mn/(index value)*price = $100mn/1,405*$15.8 = $1.12mn.

CDX options are also European style and priced in basis points per contract notional (no annualizing required). The current 53bp price implies a $530k premium paid to buy a put option with the right to deliver $100mn notional[2] of CDX HY index at a 92pt strike maturing on June 20th.

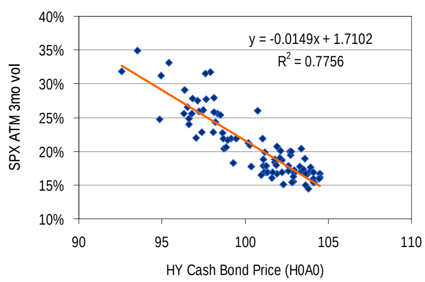
In case of CDX IG, investor similarly buys the right to deliver $100mn notional of CDX index at 110bp strike in June for $98k premium given the current option price of 9.8bps.

Assumptions about changes in option volatilities

In the next step, we determine expected performance of our option positions given the assumed drop in HY cash bonds of 5% over the course of one month. To do so, we need to know the changes in volatility given such a drop in underlying indexes as well as adjust for the time decay on these options.

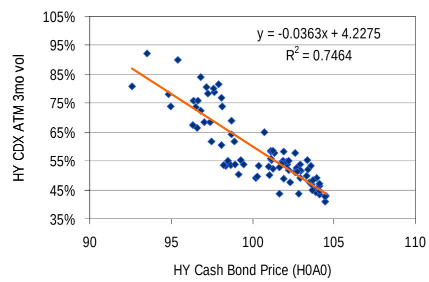
The relationships between HY cash bond prices (horizontal axes) and implied 3-months at-the-money (ATM) volatility levels in all three hedging instruments are shown in Figure 7-Figure 9 below. Given the strong 70%-plus r-squared in each chart, we feel reasonably comfortable making a near-term volatility call based on our assumption of HY bond price declining from 101.5pts at the moment to 96.4pts hedging threshold. Regressions are implying 27% volatility in SPX puts, 72% in CDX HY and 71% in CDX IG puts. These figures compare to current ATM volatility levels of 16% in SPX, 42% in CDX HY, 41% in CDX IG.

Figure 7: S&P 500 vol vs HY cash price
At-the-money 3-month options



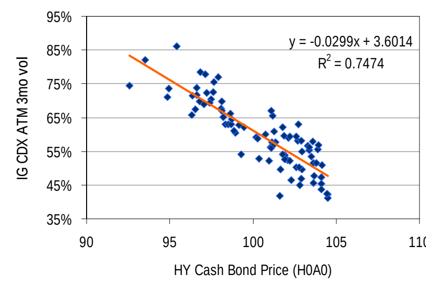
Source: BofA Merrill Lynch Global Research

Figure 8: CDX HY vol vs HY cash price
At-the-money 3-month options



Source: BofA Merrill Lynch Global Research

Figure 9: CDX IG vol vs HY cash price
At-the-money 3-month options



Source: BofA Merrill Lynch Global Research

In estimating future option values, we are also assuming one month passes between their purchase and hedging event (-5% decline in HY cash price) to account for the time decay. In other words, we value these options as if only two months are left to maturity at the valuation point.

[2] To be precise, investor will be buying protection on $97mn notional for 0.97x premium to properly adjust for the current version of HY17 index with three defaulted names. This adjustment makes no impact on overall calculations as notional would have to be scaled higher to achieve necessary hedge ratio.

Hedge performance measurements

Having established the new theoretical option prices, we are now ready to turn to the final step and estimate overall performance and costs associated with each hedging strategy. This discussion refers back to data points shown in Figure 6 on the previous page.

In the case of SPX puts, the price rises from $15.8 to $57.1, resulting in a $2.9mn gain on a $100mn SPX notional ($100/(SPX index value of 1,405)*(57.1-15.8) = $2.9). Given that we need to offset a $5mn loss on our $100mn HY exposure, we are scaling our SPX exposure to $170mn (= 5.0/2.9*$100mn). Buying June 1,275 puts on SPX would cost us $1.91mn (= $170mn/1,405*$15.8). Thus, SPX puts would cost HY PMs 190bp to protect their cash bond portfolios over the course of three months.

Puts on CDX HY, currently trading at 53bp and rising in price to 314bp under our assumed scenario, results in a 2.6% gain (3.14-0.53) on a $100mn CDX exposure. Scaling this figure to offset our 5% HY cash bond decline, we are arriving at $191mn in CDX HY puts notional required to fully hedge $100mn HY cash bond exposure (= 5.0/2.6*$100mn). It would cost investors $1.02mn to purchase puts on $191mn notional (= $191mn*53bps). This implies 102bp cost to protect HY cash bond portfolio over three months with CDX HY put options.

Similar calculations related to CDX IG puts result in $944mn notional in options required to protect $100mn HY exposure, which would cost $920k, implying 92bp cost over the course of three months.

Conclusions

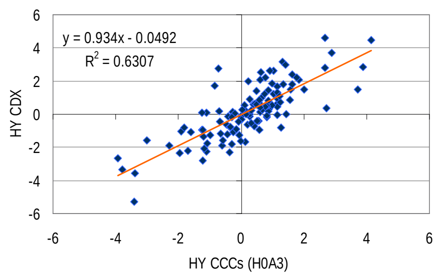
All in all, we arrive at the conclusion that CDX IG options provide the cheapest way to hedge HY cash bond portfolios, although with some incremental basis risk related to lower R-squared of HY cash vs CDX IG at 49% compared to 57% vs CDX HY 57%.

CDX HY puts offer second-cheapest way to hedge HY cash bond portfolios. These options are the most optimal way to hedge, in our opinion, given that CDX HY has the highest correlation to underlying HY cash bonds, implying lower basis risk at marginally higher price (102bp vs 92bp).

Finally, S&P500 equity puts are somewhat more expensive at 191bp, although they provide a significantly deeper market to execute this hedging strategy in volume. For reference, average daily trading volume in SPX options runs at about $90bn, compared to $6-7bn in CDX IG and $1-2bn in CDX HY options.

For more detailed information on CDX index options described here, we refer our readers to the primer published by Ioannis Angelakis last August.

Figure 10: CCCs vs CDX HY beta estimate
Weekly total returns since Oct 2009, pct change



Source: BofA-Merrill Lynch Global Research

Hedged long CCC trade idea

At an all-in cost of 100bps, the decision whether to hedge HY portfolio is open to differences in opinion about the future path of macro risks. We are not necessarily advocating major risk reduction at these levels – we are merely highlighting what the hedging options are and how much they cost, so that readers who believe this rally has taken us “too far, too fast” have a better understanding of different tools they can use to reduce risk.

One idea that comes to our mind as being quite attractive, however, is going long CCC risk with simultaneous hedging using CDX HY index options. As a reminder, we maintain our view, that while CCCs have some potential for further near-term upside, we believe those gains will eventually prove to be elusive, as our call for persistent default pressures of around 4% would eventually eat into performance of this particular bucket, more than any other.

Having said that, a 1,100bp spread and 11.8% yield on our CCC index (H0A3) is difficult to resist, especially at the time when other rating categories, particularly BBs, are flirting with record low yields and high premium dollar prices. Thus, we have run the numbers alongside our analysis above to assess how much it would cost to properly hedge a CCC portfolio.

HY CCCs have almost 1-to-1 beta against CDX HY (Figure 10), which makes this step of the analysis very straightforward: if we are protecting ourselves against a 7.5% drop in CCCs, we assume a similar magnitude drop in CDX. The rest of the assumptions are exactly the same as described above – in Figure 11 we are using the same June put at 92pt strike, which trades at 53bps. The notional we need to buy is somewhat higher because we are looking to offset a larger drop in the underlying cash portfolio (7.5% vs 5% previously), coming at $287mn. On our assumptions, it would cost $1.52mn to protect $100mn of CCC exposure.

Figure 11: Hedging CCC cash bond portfolio with CDX HY put options

	Current	Assumed	June 2012 Puts		Assumed values in 1mo				
	Price	Drop, %	Strike	Price	Price	Δ Price	Notional	P&L	Cost
HY CCCs		-7.5					100.0	-7.5	
HY CDX ($ price)	99.1	-7.5	92.0	53.0	314.0	2.6	287.4	7.5	1.52

Source: BofA -Merrill Lynch Global Research

For reference purposes, Figure 12 provides a list of credits in our cash HY CCC index with relatively good secondary market liquidity and whose characteristics closely resemble those of overall index. From the standpoint of exercising this strategy this list provides a good starting point, although more names would certainly go a long way in reducing idiosyncratic risk of this trade.

Figure 12: US HY CCC issuers closely resembling overall CCC index characteristics

Ticker	Cusip	Sector	Cpn	Maturity	Rating	Outlook	Watch	Face	Price	OAS	YTW
CCMO	184502AS	Media	4.9	2015	C/Ca/CCC-	//-		250	83.0	1,077	11.5
BZH	07556QAV	Real Estate	9.1	2018	CCC/Caa3/CCC	//-		300	87.8	1,052	12.0
CLE	179584AL	Specialty Retail	8.88	2019	/Caa3/CCC			450	88.0	981	11.4
GTIV	37247AAB	Health Care	11.5	2018	/Caa2/CCC	//	//	325	93.0	1,168	13.1
TSG	785905AB	Commercial Services	6.3	2016	/Caa1/CCC+			400	90.8	1,039	11.3
CZR	12768RAA	Gaming	12.8	2018	C/Caa3/CCC		/+/	750	86.8	1,492	16.3
CPII	12618MAC	Technology	8.0	2018	/B3/CCC+			215	87.3	959	11.0
VISANT	92834UAB	Household Products	10.0	2017	/Caa1/B-			750	92.5	1,061	11.9
CEN	156779AC	Technology	11.3	2015	/Caa2/CCC			825	94.3	1,246	13.3
HOV	442488BH	Real Estate	10.6	2016	B-/B3/CCC-	/-/		797	91.5	1,212	13.2
Average			**9.3**						**89.5**	**1,129**	**12.5**

Source: BofA Merrill Lynch Global Research

Net-net, we believe this idea offers an interesting risk-reward to go long CCCs at 1,100bps spread and pay 150bp (non-annualized) to protect against extended downside in this position. We would continue to roll these options into newer maturities every month to maintain this position for an extended period of time until the risk-reward becomes less attractive.

Options Risk Statement

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Macro

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Recommendation	Investor Action Points (Cash and/or CDS)	Primary Investment Return Driver
Overweight-100%	Up to 100% Overweight of investor's guidelines	Compelling spread tightening potential
Overweight-70%	Up to 70% Overweight of investor's guidelines	Carry, plus some spread tightening expected
Overweight-30%	Up to 30% Overweight of investor's guidelines	Good carry, but little spread tightening expected
Underweight-30%	Down to 30% Underweight of investor's guidelines	Unattractive carry, but spreads unlikely to widen
Underweight-70%	Down to 70% Underweight of investor's guidelines	Expected spread underperformance
Underweight-100%	Down to 100% Underweight of investor's guidelines	Material spread widening expected

Time horizon – our recommendations have a 3 month trade horizon

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Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

* Ratings dispersions may vary from time to time where BofA Merrill Lynch Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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