Credit Analysis

Relative Value Strategy | Global
23 September 2014

Let's talk defaults

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The next default wave: slow and low

While HY balance sheets continue to remain relatively strong thanks to record low interest costs, we do expect the default rate to start picking up next year. We envision a scenario where current distressed firms cause the default rate to rise in 2015 which, when coupled with a rise in treasury yields, leads to a retail driven downturn in high yield bonds and a further unwillingness to lend to stretched corporates in 2016. This combination of events does not freeze capital markets, but rather creates a slow drain of liquidity from corporate issuers that were able to get financing from 2010-2014. The ensuing default cycle is likely to be prolonged, with a lower rate than in the last cycle and perhaps similar to the late '90s and early 2000s.

Flatteners, long senior tranches, delta-hedged equity shorts

HY curves are still quite steep and we like front-end flatteners that can benefit from near-term defaults or credit deterioration. In tranches, HY senior tranches offer relatively good payoffs under most default scenarios, while equity tranches are priced too optimistically, in our view. As an outright long, HY21 5y 25-35% is the best performer in our default scenario analysis and our preferred long. Given our view for a 'flat' default cycle this time, HY19 5y 15-25% also looks compelling. Outright equity shorts may be difficult to envision due to high carry costs. Our analysis shows that under our expected of pattern of defaults over the next few years, a carry-neutral trade with short HY21 5y 0-15% and a long in the index can still have an attractive payoff from defaults.

The brief history of CDX

It's been over ten years since the CDS indices started trading. As this period has coincided with just one credit cycle and a rather special one at that, it's perhaps too simplistic to extrapolate from this experience alone. Nevertheless, we present some facts from the last ten years of default data for CDX HY and CDX IG names, some perhaps more interesting than others.

RV at a glance

Spreads this week have tightened as CDX IG and iTraxx Main tightened 4bp and 3bps respectively this week. Similarly, CDX HY tightened 13bp and iTraxx Crossover tightened 15bp. Our measure of cash-CDS basis for CDX IG issuers was -9bp, while for HY, the basis became more negative over the same period, shifting from -34bp to -38bp. In all three of our COAS universes, credit appears to be fairly valued relative to equity, though it is starting to trend towards rich.

Single-name COAS dislocations

Within our US COAS universe, Sysco Corp screens as the richest name in credit relative to its equity, while Transocean Inc screens as the cheapest compared to its stock. In our European universe, Syngenta AG's credit appears as the richest relative to equity while Kingfisher PLC registers as the cheapest.

Recent Publications

08 Sep 2014: Get the fall rolling
28 Aug 2014: What goes up, can stay there
05 Aug 2014: This too shall pass

Debt-equity RV framework

Our COAS model factors in company leverage, equity volatility and current credit spreads to evaluate a forward-looking measure of Credit Risk. COAS is defined as the difference between market Credit Spread and model implied Credit Risk. For a more complete discussion on our COAS model, please see:

A debt-equity RV framework, 26 March 2013

For model data on a number of issuers, visit: www.baml.com/coas

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Let's talk defaults

It's not exactly been a widely discussed topic over the last couple of years. The extraordinary measures undertaken by the Fed in the aftermath of the financial crisis managed to bring an abrupt end to the last default wave. Since then, default rates have hit all-time lows particularly as the reach for yield was not very discriminating; every borrower managed to find a willing lender. However, now that QE is almost done and rate hikes are on the horizon, change is afoot. Credit quality is becoming a focus for HY investors once again we think.

The frequency of client queries regarding historical default cycles and fundamental metrics of HY companies has picked up markedly in recent months. In addition, HY has surprised most by the extent of its underperformance relative to HG, a phenomenon that is a direct consequence of the end of QE we think and a 'normalization' of the relationship between the two. Finally, retail fund flows have been quite discerning this summer. Last year, when the fear of tapering roiled markets, about $12.5bn left US HY funds between late May and June. Over the subsequent five weeks the funds recovered almost 47% of that outflow. This year, about $12.8bn was withdrawn from retail HY funds over July and early August. Since then less than $3bn or 22.7% has found its way back. This is notable, because unlike 2013, the outflows this summer were a direct consequence of concerns about 'bubbles' in HY and in effect, credit quality. And the fact that retail has been slower to dip its toe back in implies that such concerns continue to linger.

Slow and low

The HY Wire: The next default wave: Slow and low 23 Sep 2014

While HY balance sheets continue to remain relatively strong thanks to record low interest costs, we do expect the default rate to start picking up next year. In the accompanying HY Wire, we discuss how we think the next default cycle plays out. We envision a scenario where current distressed firms cause the default rate to rise in 2015 which, when coupled with a rise in treasury yields, leads to a retail driven downturn in high yield bonds and a further unwillingness to lend to stretched corporates in 2016. This combination of events does not freeze capital markets, but rather creates a slow drain of liquidity from corporate issuers that were able to get financing from 2010-2014. Additionally, with stringent rules around bank lending standards, significant existing covenant-lite issuance, and what we believe will be an increase in the size and scope of non-regulated lenders, this cycle is likely to be characterized by a lower default rate than the last one but a rise in what we call 'zombie companies' (firms trading around recovery, but not technically in default).

Flatteners, long senior tranches, short delta-hedged equity

In this piece, we look at ways to position for the next wave of defaults, in line with our default outlook for the next few years. HY curves are still quite steep and we like front-end flatteners that can benefit from a few near-term defaults (see *HY flatteners*). In tranches, HY senior tranches offer relatively good payoffs under most default scenarios, while equity tranches are priced too optimistically, in our view (see *Default payoffs: scenario analysis*). As an outright long, HY21 5y 25-35% is the best performer in our default scenario analysis and our preferred long. Given our view for a 'flat' default cycle this time, HY19 5y 15-25% also looks compelling. Outright equity shorts may be difficult to envision due to high carry costs. Our analysis shows that under our expected pattern of defaults over the next few years, a carry-neutral trade with short HY21 5y 0-15% and a long in the underlying index can still have an attractive payoff from defaults.

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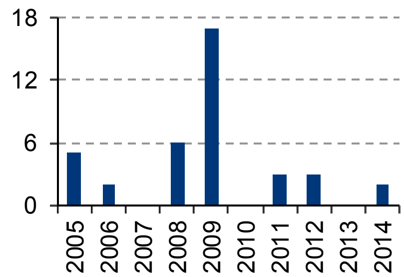
Chart 1: Number of CDX name defaults by year



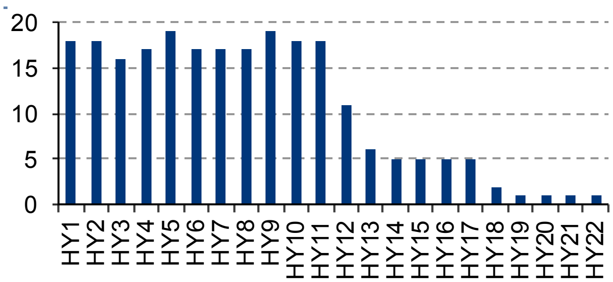
Source: BofA Merrill Lynch Global Research

The brief history of CDX

It's been over ten years since the CDS indices started trading. As this period has coincided with just one credit cycle and a rather special one at that, it's perhaps too simplistic to extrapolate from this experience alone. Nevertheless, here are some facts from the last ten years of default data for CDX HY and CDX IG names, some more interesting than others.

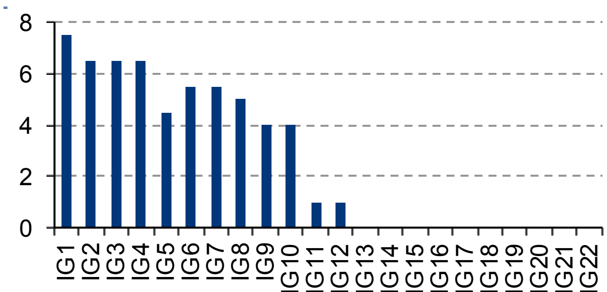
- Since 2003, 35 issuers among all the names that have ever been included in the CDX HY indices have defaulted. 23 of these names were part of the then OnTheRun series. Over the same period, 11 names among IG constituents (across all series) have defaulted, with 3 OnTheRun defaults in 2008.
- Among the 35 HY defaults the median number of HY indices a given name was in is 6.
- The HY9 and HY5 portfolios experienced the most number of defaults among HY indices; each had 19. In contrast, the S1 portfolio was the worst hit IG index in terms of number of defaults, with 8 names defaulting over its life. (Among the 8 names was Idearc, which had half the weight compared to other names in IG due to a succession event.) Note that this includes all defaults since 2003, some of which may have occurred after the maturity of the liquidly traded index tenors.

Chart 2: Number of defaults in each series of CDX HY*



Source: BofA Merrill Lynch Global Research, *from series start date to present

Chart 3: Number of defaults in each series of CDX IG*



Source: BofA Merrill Lynch Global Research, *from series start date to present

- In terms of realized losses (Number of defaults X Loss given default), HY9 was the worst faring index, with 14.7% of the portfolio notional being wiped out. It is closely followed by its immediate successors, S10 and S11, which started trading in 2008. Among the IG indices, IG1 experienced 2.8% losses from the time it started trading to the maturity of its 10y tenor. In effect, HY indices that launched in the midst of the crisis/default-wave fared worse than earlier series, while for IG newer portfolios generally held up better.
- That IG portfolios took longer to experience losses is to be expected. What is interesting is that even over the 10y period, the worst case loss was only 2.8%. As mentioned above, the total number of defaults among IG names is only a third of that observed in HY. This would suggest that fallen angels (those that migrate from IG to HY over time) tend to default at a lower rate than traditional HY names. As a matter of fact, of the 35 HY names that have defaulted since 2003, only 8 or about 23% were also part of one of the IG portfolios.

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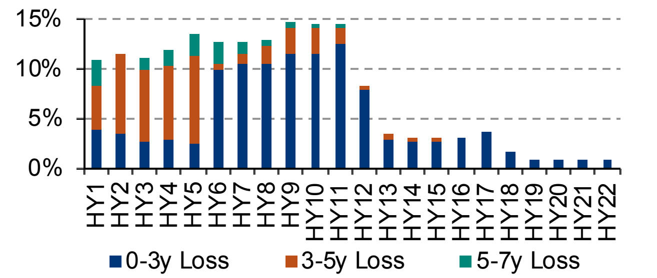
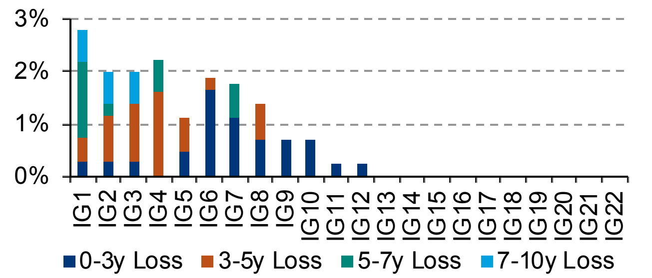
Chart 4: Realized losses in CDX HY portfolios, % of notional



Source: BofA Merrill Lynch Global Research

Chart 5: Realized losses in CDX IG portfolios, % of notional

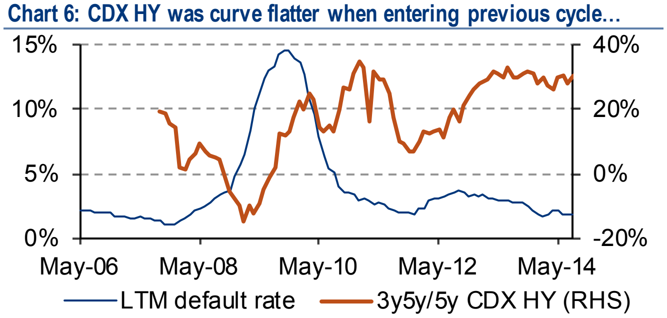


Source: BofA Merrill Lynch Global Research

HY flatteners

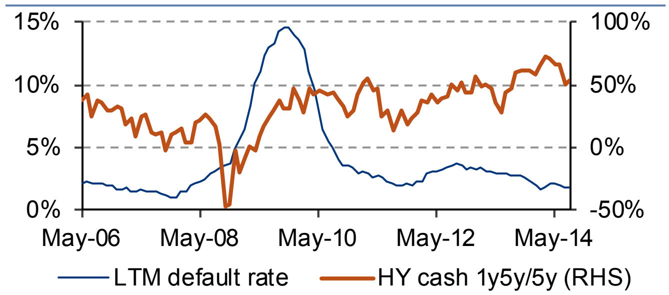
We've been proponents of spread curve flatteners for a while now. As we have discussed in these pages in the past, we think the front-end of the curve should flatten because (i) as spreads tighten, the short maturities should be more and more limited in the amount they can tighten and (ii) as monetary policy normalizes the front-end of the curve needs to become more cautious about pricing defaults. Interestingly, both CDX and cash curves were much flatter in 2006/07 than they are today and continued to head lower as defaults picked up (Chart 6 and Chart 7). Our expectations for a steadily higher default rate over the next few years entails flatter HY curves.

Chart 6: CDX HY was curve flatter when entering previous cycle...



Source: BofA Merrill Lynch Global Research, Moody's

Chart 7: ...as were HY cash curves



Source: BofA Merrill Lynch Global Research, Moody's

Chart 8 shows the realized losses and the expected loss based on current pricing for 5y HY13 to HY22. The horizontal lines show the highest, lowest and average loss realized by the 5y HY1-12 portfolios over their life. Of course, the orange part of the graph (the expected loss going forward) is a function of the time remaining in the swap contract and the pricing for the older series reflect the low default expectations over the next couple of years. Also, it is not entirely fair to compare current pricing to scenarios realized over the financial crisis. Be that as it may, Chart 8 shows just how little default risk is priced in for indices maturing over the next 2-3 years. At 30% recovery, the expected loss for HY14, 15 and 16 implies 2, 3 and 4.5 defaults respectively. Each of these portfolios has at least 4 names trading above 25 points upfront. That leaves very little room to deal with any further credit deterioration from the rest of the portfolio.

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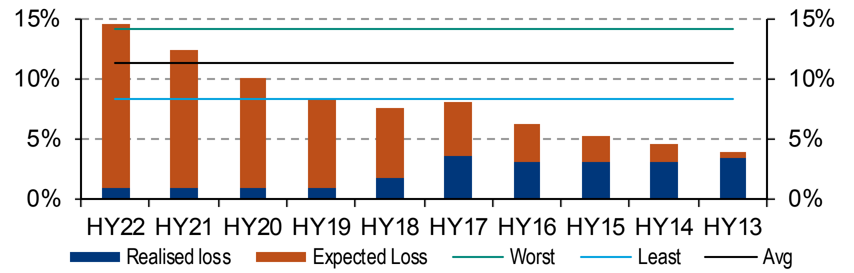
Chart 8: Realized + current expected loss versus historical best, worst and average over 5y



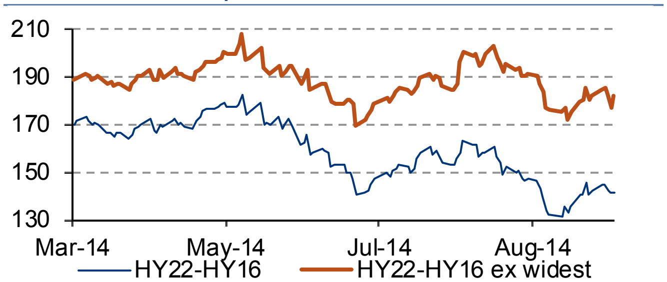
Source: BofA Merrill Lynch Global Research

Long HY22, short HY16, DVO1-hedged flattener

A DVO1-hedged flattener is jump-to-default positive because it involves buying more notional protection in the front-end of the curve than is sold in the longer end. We can construct such a flattener by trading different series of CDX HY against each other. A DVO1-hedged long HY22 (Jun-19 maturity), short HY16 (Jun-16 maturity) trade will benefit from defaults occurring between now and the HY16 maturity. Note that the roll trade is positive jump for names that are common to HY22 and HY16 and also for names in HY16, but not in HY22. A default in HY22 that isn't mirrored in HY16 will hurt the trade.

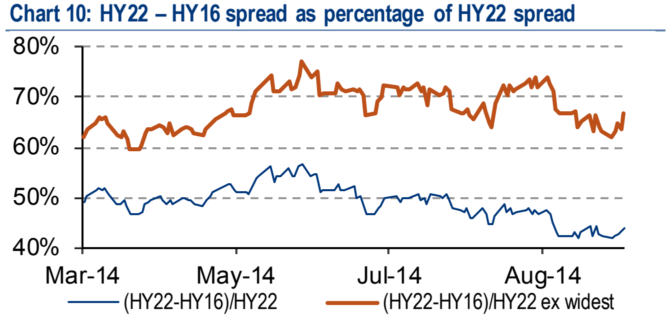
Chart 9 shows that the spread differential between HY22 and HY16 has already been shrinking i.e. flattening since May. However, the extent of the flattening has been exaggerated by some of the distressed names common to both portfolios that tend to have very flat curves. To assess the impact, we calculated the roll between the two indices by excluding the 4 widest names from each index (CZR, RSH, TOY, CCU and TXU for the dates before it defaulted). These names are common to both portfolios. The curve without these distressed issuers is much steeper and this is particularly stark when we normalize the curve by the HY22 index spread (Chart 10).

Chart 9: HY22 – HY16 spread roll



Source: BofA Merrill Lynch Global Research, ex widest excludes TXU, CZR, RSH, TOY, CCU

Chart 10: HY22 – HY16 spread as percentage of HY22 spread



Source: BofA Merrill Lynch Global Research, ex widest excludes TXU, CZR, RSH, TOY, CCU

As defaults materialize and expectations for future defaults also go up relative to where they are today, we'd expect HY16 to underperform HY22 as the market begins pricing in more jump risk i.e. the curve should flatten further. On a DVO1-hedged basis (long 1x HY22, short 1.46x HY16) the trade carry is -123bp. This can be reduced by selling protection (0.46x) on the four widest names to make the trade default-neutral to them. This would reduce the trade carry to -32bp. The position would benefit if an issuer in HY16, other than these four, defaults over the next two years. In effect, it buys protection against an unexpected default or credit deterioration over the next two years.

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Default payoffs: scenario analysis

The payoff on CDS index and tranche trades depends on both the scale and timing of defaults. A large wave of defaults is less detrimental to a long risk position if it occurs towards the end of the swap contract than at the beginning because it allows the investor to earn more coupon payments that soften the blow. In this section we analyse index and tranche payoffs under different default scenarios based on historical cycles.

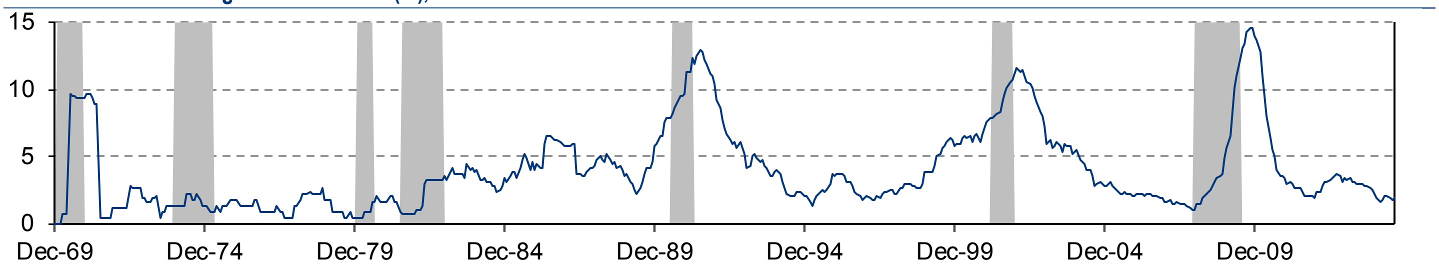
Looking for patterns

The high-yield market is nascent compared to the stock market or even the market for high grade debt. While we do have default data going back to the to the early part of the 20th century, it's only the last three cycles, staring in the late 80s, that the market was large enough for us to draw some meaningful conclusions that would be relevant today. The credit market seems to get jolted by a wave of defaults every ten years or so, closely following the economic cycle (Chart 11). The initial pick-up in defaults isn't always coincident with a recession, but the rate itself tends to peak and begin petering off soon after one.

In the 2006-2008 cycle and also to some extent in the late '80s–early '90s, the number of defaults managed to decline rapidly once the recession officially ended. The default wave in the late-'90s, in contrast, was more prolonged; it took 5 years for the default rate to peak from the lows of 1996 and then another 4 years to subside. In the late-'80s and in 2006-09, defaults began materializing very quickly and the rate peaked in just 2 years. Interestingly, both cycles were followed by a mini wave soon after hitting initial lows.

We think that the upcoming cycle is going to resemble the late '90s more than the other two cycles. Defaults are likely to pick up slowly from 2015 and take a while to peak. The overall rate is likely to be lower than in the past cycle.

Chart 11: US HY Trailing 12m default rate (%), shaded areas indicate US recession



Source: Moody's, NBER

Setting the scene

To construct our scenarios, we identify years from past cycles that could resemble the current state of the world in terms of where we are in the credit cycle. We picked 1988, 1997 and 2006. This was a subjective choice based on the plausible default rate paths that could be constructed from historical data. Using Moody's data for global speculative grade default rates, we can track how a HY portfolio that began in each of these years behaved over time.

Chart 12 shows the cumulative default rate for each cohort over the next 7 years. Of the three, the 1988 cohort had the worst time; defaults continued to accelerate over the next four years and the cumulative figure at the end of 7 years was higher than for the other two. The 2006 type scenario is comparatively mild over the first 2-3 years with a sharp pick up over years 3 and 4. The 1997 case, which

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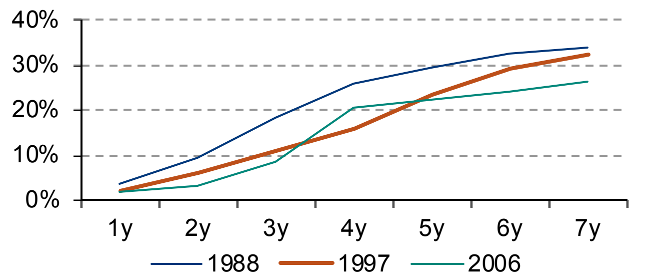
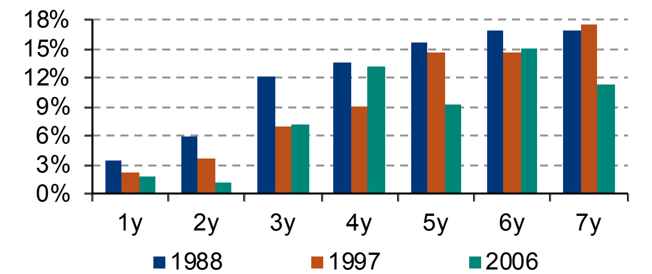
is perhaps the closest to our expectations for this cycle, stands out for the steady pace at which defaults kept accumulating. Over time, this cohort almost caught up to the 1988 one and was overall more damaging than the 2006 scenario over a 7y period.

Chart 12: Cumulative default rate for HY cohorts starting each year



Source: BofA Merrill Lynch Global Research, Moody's, for global HY issuers

Chart 13: Default rate by year for different HY cohorts



Source: BofA Merrill Lynch Global Research, Moody's, for global HY issuers

Evaluating payoffs

To evaluate the payoff of various HY indices and tranches under these scenarios, we assume that a long risk position (sell protection) in each swap is held from now to its maturity. At trade inception, there is an upfront payment, either made by or to the protection seller depending on whether the swap is trading at a spread below or above its fixed coupon rate. Over the life of the swap, the protection seller receives the fixed coupon rate multiplied by the trade notional, with the latter reducing as defaults accumulate. Each default event triggers a payment from the protection seller to make up for the loss to the protection buyer. For this, we assume issuers default with a recovery of 30%, which means a single-default would result in a loss of (1-30%)* IssuerNotional for the protection seller.

The PnL for each swap is the sum of all cashflows to the protection seller i.e. the upfront payment at trade inception compared to the discounted value of the coupon and loss-given-default cashflows over the life of the swap. (The latter is labelled RiskyDCF in the tables below.)

In this piece, we restrict our analysis to the 5y tenor of each index series. For each scenario we follow the default pattern detailed in Chart 13, from now to June 2019 (which is the maturity of the longest swap referencing HY22). As an example, for the 1988 scenario, we assume that about 3.5% of issuers default within the first year, 5.9% in the second year and so on. By evaluating all index series in the same manner, we are making an implicit assumption that the defaulting issuers are common to all portfolios. This is a simplistic assumption but not an outrageous one; the median number of indices that a defaulted name was in among the 35 HY defaults, was 6. Also, portfolio turnover has been relatively low in recent years, so the newest series in fact do have a fair number of names in common. Almost 80% of all the names currently in HY16 to HY22 are in 4 series or more.

Results for each scenario are in Table 1, Table 2 and Table 3. The '#Names' columns indicates the number of constituents left in the portfolio. The Upfront is based on pricing as of 18th Sep 2014. 'RiskyDCF' is the discounted value of cashflows over the life of the swap, including coupons and payment on defaults. The 0-100% tranche refers to the index. Numbers are presented from the view of

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a long risk position or protection seller; positive indicates cash inflow and negative is a cash outflow. Below we discuss the trades we like based on this analysis.

Long 5y HY21 25-35%

Across all scenarios, HY21 25-35% stands out as the best long. Credit returns are going to be hard to come by over the next few years. As defaults trickle in and portfolios start accumulating losses, subordination will become highly valuable. Our scenario analysis indicates that even at a current spread equivalent of 173bp, the HY21 25-35% tranche pays out well compared to other indices/tranches. It should do particularly well if our expectation for a prolonged cycle with a steadily increasing default rate materializes. The tranche has enough subordination to remain untouched by losses over the next 4 years under that scenario.

Long 5y HY19 15-25%

This trade would work under our base case expectation for the default cycle. As Table 2 shows it was the second best performing tranche under the 1997-like scenario. It also looks more compelling than its 25-35% counterpart we think. In the worst case (1988 scenario) the tranche returns -1%. The default assumptions for this scenario however are much more severe than what is likely to unfold over the next few years. We think 1997 is a better comparison and in this case the tranche PnL is about 7%.

Short HY 0-15%, long HY index

It may seem like a no-brainer, shorting equity to benefit from a pick-up in defaults. But it is interesting that even under the most benign of our three scenarios a short HY21 0-15% position could return 44%. In the past, we've compared 5y IG equity tranche pricing in 2004-06 to current levels in order to illustrate how little default risk is priced in now. A similar argument can be made for HY equity – in early 2006 when the 5y index was at similar levels, the 0-15% tranche priced about 15points higher in upfront than HY21 0-15% today.

That HY equity is not a good long is an easy argument to make. That it is a good short is more difficult. Investors balk at the trade because it is expensive to carry or because of its negative convexity. In recent years, long equity was an easy way to get levered exposure to a well-performing HY market with very little default risk. The outlook for the next few years is different though and defaults will start trickling in and the tranche is priced only for the most benign scenario. At current levels, the HY21 5y 0-15% tranche implied 11 defaults. The lowest number of defaults witness in a 5y CDX HY portfolio, from series 1 to 12, was in S12 which had 11 defaults.

A 'carry-neutral' trade today would involve going long 6x HY21 index for every 1x short in 0-15%. Consider the second scenario with base year 1997 (Table 2). Such a position would net over 25% if held to maturity under that very particular scenario. Short 0-15%, paired with a long index position offers an attractive way to position for the upcoming default cycle we think.

A note on the indices

We included the index positions in our analysis for illustrative purposes. As such they present a rather blunt instrument to express nuanced views on the default rate. What is worth highlighting though is that we aren't yet priced for a pick-up in credit losses. This isn't surprising or even necessarily wrong. But it explains in part the underperformance of HY in recent months relative to HG and stocks. Credit quality concerns are coming to the fore and the end of QE should mean a greater focus on actual credit (read default) risk.

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Table 1: Scenario #1: Base year 1988

Index	Maturity	#Names	Tranche	Coupon	Upfront	RiskyDCF	PnL
HY21	20-Dec-18	99	25-35%	5%	-14%	18%	5%
HY19	20-Dec-17	99	25-35%	5%	-13%	16%	3%
HY17	20-Dec-16	95	15-25%	5%	-8%	11%	3%
HY21	20-Dec-18	99	35-100%	5%	-18%	20%	2%
HY17	20-Dec-16	95	25-35%	5%	-11%	11%	1%
HY19	20-Dec-17	99	35-100%	5%	-15%	16%	1%
HY17	20-Dec-16	95	35-100%	5%	-11%	11%	0%
HY16	20-Jun-16	95	0-100%	5%	-5%	4%	-1%
HY19	20-Dec-17	99	15-25%	5%	-9%	8%	-1%
HY17	20-Dec-16	95	0-100%	5%	-6%	4%	-2%
HY18	20-Jun-17	98	0-100%	5%	-7%	2%	-5%
HY19	20-Dec-17	99	0-100%	5%	-8%	0%	-8%
HY20	20-Jun-18	99	0-100%	5%	-8%	-3%	-11%
HY21	20-Dec-18	99	0-100%	5%	-8%	-6%	-14%
HY22	20-Jun-19	99	0-100%	5%	-7%	-9%	-17%
HY17	20-Dec-16	95	0-15%	5%	23%	-46%	-23%
HY21	20-Dec-18	99	0-15%	5%	41%	-89%	-48%
HY19	20-Dec-17	99	0-15%	5%	28%	-89%	-60%
HY21	20-Dec-18	99	15-25%	5%	-5%	-77%	-82%

Source: BofA Merrill Lynch Global Research

Table 2: Scenario #2: Base year 1997

Index	Maturity	#Names	Tranche	Coupon	Upfront	RiskyDCF	PnL
HY21	20-Dec-18	99	25-35%	5%	-14%	21%	7%
HY19	20-Dec-17	99	15-25%	5%	-9%	16%	7%
HY21	20-Dec-18	99	15-25%	5%	-5%	10%	6%
HY19	20-Dec-17	99	25-35%	5%	-13%	16%	3%
HY17	20-Dec-16	95	15-25%	5%	-8%	11%	3%
HY21	20-Dec-18	99	35-100%	5%	-18%	20%	2%
HY19	20-Dec-17	99	35-100%	5%	-15%	16%	1%
HY17	20-Dec-16	95	25-35%	5%	-11%	11%	1%
HY17	20-Dec-16	95	35-100%	5%	-11%	11%	1%
HY17	20-Dec-16	95	0-100%	5%	-6%	7%	1%
HY16	20-Jun-16	95	0-100%	5%	-5%	6%	0%
HY18	20-Jun-17	98	0-100%	5%	-7%	7%	-1%
HY17	20-Dec-16	95	0-15%	5%	23%	-25%	-1%
HY19	20-Dec-17	99	0-100%	5%	-8%	7%	-1%
HY20	20-Jun-18	99	0-100%	5%	-8%	6%	-3%
HY21	20-Dec-18	99	0-100%	5%	-8%	4%	-3%
HY22	20-Jun-19	99	0-100%	5%	-7%	1%	-6%
HY19	20-Dec-17	99	0-15%	5%	28%	-50%	-22%
HY21	20-Dec-18	99	0-15%	5%	41%	-84%	-44%

Source: BofA Merrill Lynch Global Research

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Table 3: Scenario #3: Base year 2006

Index	Maturity	#Names	Tranche	Coupon	Upfront	RiskyDCF	PnL
HY21	20-Dec-18	99	25-35%	5%	-14%	21%	7%
HY19	20-Dec-17	99	15-25%	5%	-9%	16%	7%
HY17	20-Dec-16	95	0-15%	5%	23%	-20%	4%
HY19	20-Dec-17	99	25-35%	5%	-13%	16%	3%
HY17	20-Dec-16	95	15-25%	5%	-8%	11%	3%
HY21	20-Dec-18	99	35-100%	5%	-18%	20%	2%
HY17	20-Dec-16	95	0-100%	5%	-6%	8%	1%
HY19	20-Dec-17	99	35-100%	5%	-15%	16%	1%
HY17	20-Dec-16	95	25-35%	5%	-11%	11%	1%
HY17	20-Dec-16	95	35-100%	5%	-11%	11%	1%
HY16	20-Jun-16	95	0-100%	5%	-5%	6%	0%
HY18	20-Jun-17	98	0-100%	5%	-7%	7%	0%
HY19	20-Dec-17	99	0-100%	5%	-8%	7%	-1%
HY20	20-Jun-18	99	0-100%	5%	-8%	5%	-4%
HY21	20-Dec-18	99	0-100%	5%	-8%	2%	-6%
HY22	20-Jun-19	99	0-100%	5%	-7%	1%	-6%
HY21	20-Dec-18	99	15-25%	5%	-5%	-12%	-17%
HY19	20-Dec-17	99	0-15%	5%	28%	-46%	-18%
HY21	20-Dec-18	99	0-15%	5%	41%	-84%	-44%

Source: BofA Merrill Lynch Global Research

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RV at a glance – CDS Indices

Spreads last week have tightened as CDX IG and iTraxx Main tightened 4bp and 3bp respectively. Similarly, CDX HY tightened 13bp and iTraxx Crossover tightened 15bp. Single name spread performance versus index performance were more mixed however as skews declined for CDX IG and Crossover while they increased for CDX HY and Main (Table 4).

Table 4: CDS Indices - spread, intrinsic and skew

Index	5y Spread	1W-Chng	1M-Chng	3M-Chng	5y Intrinsic	1W-Chng	1M-Chng	3M-Chng	Skew	1W-Chng	1M-Chng	3M-Chng
CDX IG	56	-4	-2	0	60	-1	0	4	-3	-3	-1	-4
CDX HY	323	-13	8	27	311	-1	10	31	12	-13	-2	-5
iTraxx Main	57	-3	-4	-2	55	-1	-5	0	1	-2	2	-2
iTraxx XO	229	-15	-22	3	232	-5	-16	17	-3	-10	-7	-14
iTraxx FinSen	57	-2	-7	-3	53	-3	-9	-4	4	1	2	1
iTraxx FinSub	81	1	-6	-8	83	-1	-8	-5	-3	1	2	-3
iTraxx HiVol	67	-1	-6	-2	65	-1	-6	2	2	0	0	-4

Source: BofA Merrill Lynch Global Research, Spreads for the On The Run series. Until there sufficient data points for the On The Run series, the 1W/1M/3M changes reflect spreads changes for the previous series.

The ratio between HY and IG increased from 5.61 to 5.75 during the last week. The ratio has been on an uptrend for most of the year (Chart 14). In Europe, the ratio between Crossover and Main has decreased since last week and now stands at 4.05 (Chart 15), and the Sub/Senior ratio increased and now stands at 1.41 (Chart 16).

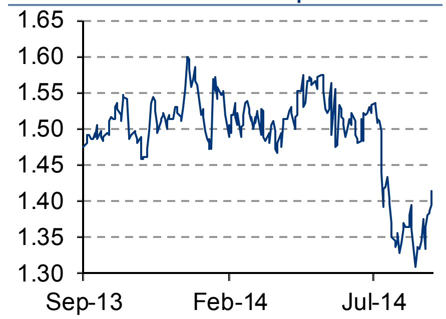
Chart 14: HY/IG spread ratio

Source: BofA Merrill Lynch Global Research

Chart 15: XO/Main spread ratio

Source: BofA Merrill Lynch Global Research

Chart 16: iTraxx Fin Sub/Sen spread ratio



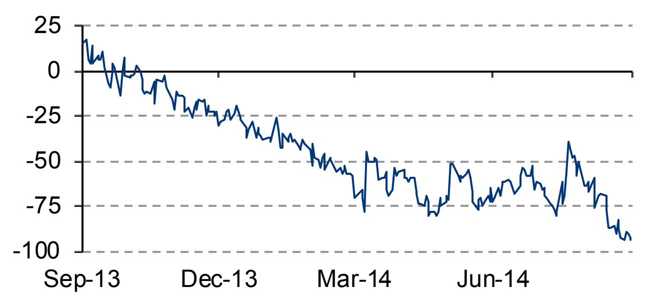
Source: BofA Merrill Lynch Global Research

The Main-IG spread difference increased from -1bp to 0bp during the past week while the XO-HY spread difference declined from -93bp to -94bp (Chart 17 and Chart 18).

Chart 17: iTraxx Main- CDX IG

Source: BofA Merrill Lynch Global Research

Chart 18: iTraxx XO – CDX HY



Source: BofA Merrill Lynch Global Research

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RV at a glance – Cash versus CDS

CDS indices outperformed cash indices this week in both IG and HY (Table 5). While our US HG cash index tightened 1bp, CDX IG tightened 4bp. We see a similar trend in HY, where cash tightened 6bp relative to 13bp for CDX HY. CDX IG generally saw the same tightening across the curve this week, though the 5 year bucket slightly outperformed. For the HG cash curve, the 3-5 year and 5-7 year buckets marginally outperformed this week with 1bp of tightening versus flat for 1-3 year and 7-10 year (Table 6).

Table 5: CDX vs. ML Cash Indices

Index	Spread	1W-Chng	1M-Chng	3M-Chng
CDX IG	56	-4	-2	0
HG Cash	113	-1	0	5
CDX HY	323	-13	8	27
HY Cash	397	-6	12	58

Source: BofAML Global Research, 5y spreads for CDX, OAS for cash.

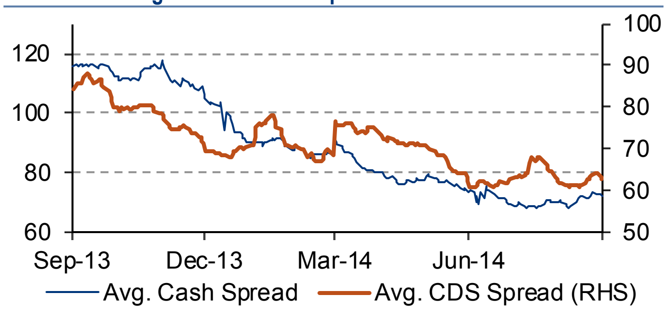
Table 6: High Grade Cash and CDX curves

Index	Spread	1W-Chng	1M-Chng	3M-Chng	Index	OAS	1W-Chng	1M-Chng	3M-Chng
CDX IG 3Y	30	-3	-1	0	US HG 1-3yr	63	0	4	6
CDX IG 5Y	56	-4	-2	0	US HG 3-5yr	83	-1	3	5
CDX IG 7Y	79	-3	0	-1	US HG 5-7yr	115	-1	-3	-1
CDX IG 10Y	99	-3	0	2	US HG 7-10yr	131	0	-1	6

Source: BofA Merrill Lynch Global Research, Tables shows option adjusted spreads (OAS) for the ML cash indices.

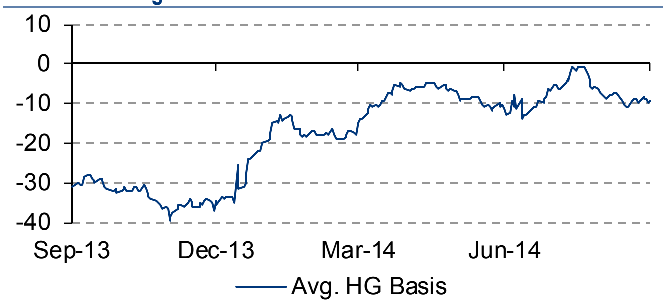
Our measure of cash-CDS basis for CDX IG issuers was -9bp, slightly higher than the previous week's level of -10bp (Chart 20). For HY, the basis became slightly more negative over the same period as it shifted from -34bp to -38bp (Chart 22).

Chart 19: Average cash and CDS spreads for CDX IG issuers



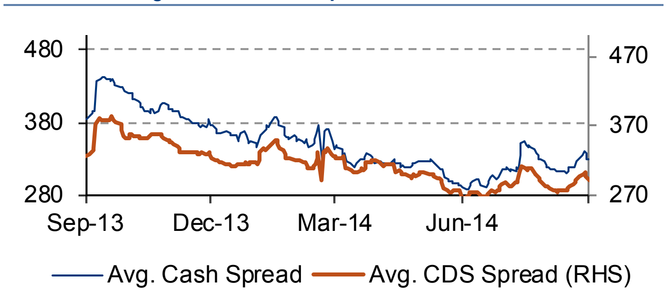
Source: BofA Merrill Lynch Global Research, Average spreads for a selection of issuers in the On The Run CDX IG index. Currently includes 121 IG21 constituents.

Chart 20: Average cash-CDS basis for CDX IG issuers



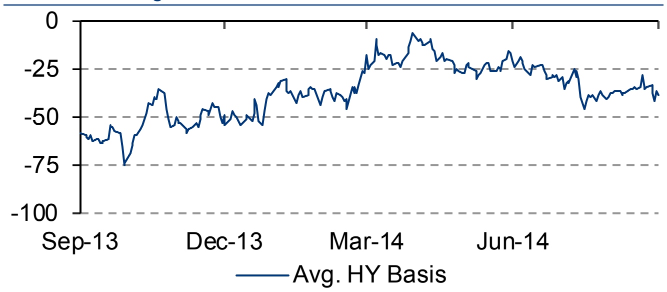
Source: BofA Merrill Lynch Global Research, Average cash-CDS for a selection of issuers in the On The Run CDX IG index. Currently includes 121 IG21 constituents.

Chart 21: Average cash and CDS spreads for CDX HY issuers



Source: BofA Merrill Lynch Global Research, Average spreads for a selection of issuers in the On The Run CDX HY index. Currently includes 89 HY21 constituents.

Chart 22: Average cash-CDS basis for CDX HY issuers



Source: BofA Merrill Lynch Global Research, Average basis for a selection of issuers in the On The Run CDX HY index. Currently includes 89 HY21 constituents.

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RV at a glance – Credit vs. Equity

US equities slightly outperformed European equities while volatility declined in both markets (Table 7). Though US equities outperformed Europe this week, in the past month European equities have gained more than their US counterparts, 5.9% versus 1.5%.

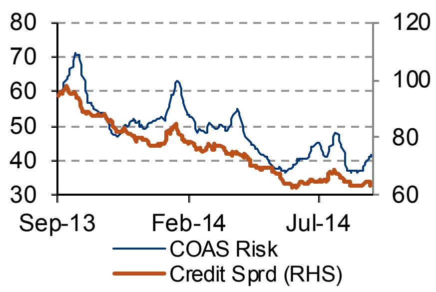
Table 7: CDS Indices vs. Equity Benchmarks and Equity Volatility

Index	5y Spread	1W-Chng	1M-Chng	3M-Chng	Index	Level	1W-Chng	1M-Chng	3M-Chng
CDX IG	56	-4	-2	0	S&P 500	2010	1.3%	1.5%	2.6%
CDX HY	323	-13	8	27	VIX	12.1	-1.2	-0.1	1.5
iTraxx Main	57	-3	-4	-2	Eurostoxx 50	3273	1.2%	5.9%	-1.3%
iTraxx XO	229	-15	-22	3	VSTOXX	15.1	-0.9	-1.2	2.3

Source: BofA Merrill Lynch Global Research, Bloomberg

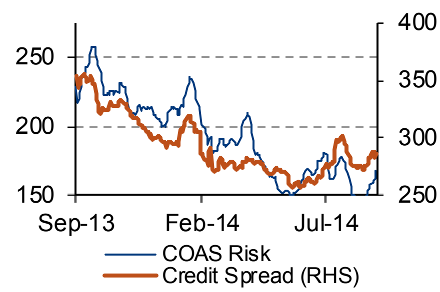
For our HG COAS universe, we saw average spreads remain unchanged while equity-implied credit risk increased by 2bp (Chart 23). In Europe, HG spreads were 1bp lower while COAS risk dropped 2bp (Chart 25). US HY saw its average spread widen 2bp during the week while its COAS risk declined 8bp (Chart 24). In all three of our COAS universes, credit appears to be fairly valued relative to equities. However, z-scores have been declining, suggesting a richening trend. Z-scores now stand at -0.57, +0.42, and +0.47 for US HG, US HY, and EU HG respectively (Chart 26, Chart 27, and Chart 28).

Chart 23: US HG COAS Risk vs. Spread



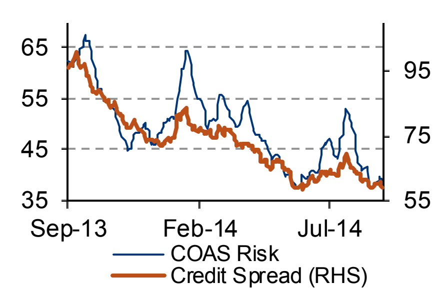
Source: BofA Merrill Lynch Global Research, Avg. across 366 listed high grade USD issuers.

Chart 24: US HY COAS Risk vs. Spread



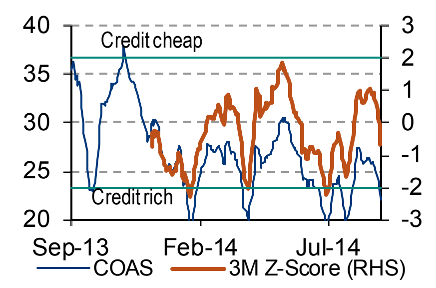
Source: BofA Merrill Lynch Global Research, Avg. across 102 listed high yield USD issuers.

Chart 25: EU HG COAS Risk vs. Spread



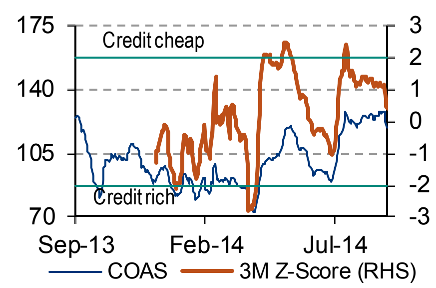
Source: BofA Merrill Lynch Global Research, Avg. across 200 listed high grade EUR issuers.

Chart 26: US HG COAS & Z-Score



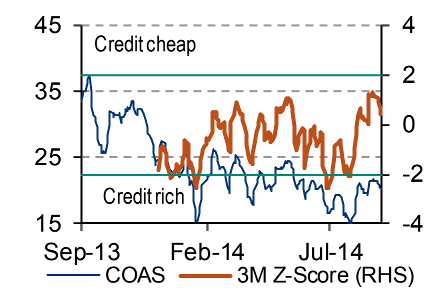
Source: BofA Merrill Lynch Global Research, COAS = Spread – COAS Risk, A positive (negative) z-score indicates that credit is trending cheap (rich) relative to equity. Z-scores above (below) +2 (-2) can be considered indicative a significant debt-equity dislocation.

Chart 27: US HY COAS & Z-Score



Source: BofA Merrill Lynch Global Research, COAS = Spread – COAS Risk, A positive (negative) z-score indicates that credit is trending cheap (rich) relative to equity. Z-scores above (below) +2 (-2) can be considered indicative a significant debt-equity dislocation.

Chart 28: EU HG COAS & Z-Score



Source: BofA Merrill Lynch Global Research, COAS = Spread – COAS Risk, A positive (negative) z-score indicates that credit is trending cheap (rich) relative to equity. Z-scores above (below) +2 (-2) can be considered indicative a significant debt-equity dislocation.

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US COAS Dislocations

Rich to Equities

According to our COAS model, this week's richest US name is Sysco Corp. Sysco has a 3-month z-score of -3.5, its CDS spread is 0.2 standard deviations tight to its 3-month average, and its credit risk is 3.5 standard deviations above its 3-month average. Sysco's equity gained 0.4% this week while its vol increased 5 vol points. At the end of September, Sysco expects to complete its previously announced $3.5bn acquisition of US Foods.

After Sysco, Nucor Corp screens as the second richest name to its equity. It has a 3-month z-score of -3.1, its CDS spread is 2.6 standard deviations tight to its 3-month average, and its credit risk is 0.4 standard deviations below its 3-month average. Nucor's equity gained 4.9% this week as its vol increased 1 vol point. Last week, Nucor gained after the company issued Q3 guidance that was above consensus expectations. Following Sysco and Nucor, AutoZone Inc, Alcoa Inc, and Carnival Corp each screen as rich to their equity.

Table 8: Top 5 richest to equity according to COAS

Issuer	Equity Px	Wkly Chng	Vol	Wkly Chng	CDS	Wkly Chng	3M Avg	3M Z-Score	Credit Risk	Wkly Chng	3M Avg	3M Z-Score	Credit OAS	Wkly Chng	3M Avg	3M Z-Score
Sysco Corp	38.0	0.4%	27	5	51	0	51	-0.2	43	13	22	3.5	7	-13	28	-3.5
Nucor Corp	57.6	4.9%	19	1	44	-7	51	-2.6	34	1	36	-0.4	9	-8	15	-3.1
AutoZone Inc	526.4	-0.7%	18	0	42	-3	46	-1.7	31	1	27	1.7	11	-4	19	-3.0
Alcoa Inc	16.2	-3.1%	30	1	131	-14	137	-0.8	105	4	88	1.7	26	-18	48	-2.8
Carnival Corp	40.7	3.9%	25	2	61	-5	66	-1.5	57	6	44	2.4	3	-11	22	-2.6

Source: BofA Merrill Lynch Global Research

Cheap to Equities

With a 3-month z-score of 2.6, Transocean Inc screens as the cheapest US name to its equity in our COAS universe. Transocean's CDS spread is 3.2 standard deviations wide to its 3-month average while its equity-implied credit risk is 2.9 standard deviations above its 3-month average. During the past week, Transocean's stock lost 5.0% and its vol increased 4 vol points.

Following Transocean, Owens Illinois ranks second on our list of names that register as cheap to their equity. Owens Illinois has a 3-month z-score of 2.1, its CDS spread is 3.0 standard deviations wide to its 3-month average, and its credit risk is 0.2 standard deviations above its 3-month average. Over the past week, its equity dropped 11.3% while its vol increased 2 vol points. Last week, the company announced Q3 guidance well below expectations. After Transocean and Owens Illinois, Verizon Communications Inc, Campbell Soup Co, and Peabody Energy Corp each screen as cheap to their equity.

Table 9: Top 5 cheapest to equity according to COAS

Issuer	Equity Px	Wkly Chng	Vol	Wkly Chng	CDS	Wkly Chng	3M Avg	3M Z-Score	Credit Risk	Wkly Chng	3M Avg	3M Z-Score	Credit OAS	Wkly Chng	3M Avg	3M Z-Score
Transocean Inc	34.1	-5.0%	28	4	257	52	171	3.2	123	28	86	2.9	135	23	85	2.6
Owens Illinois Inc	28.0	-11.3%	21	2	185	20	161	3.0	72	11	70	0.2	114	9	91	2.1
Verizon Comm Inc	50.4	4.0%	12	0	48	4	43	2.0	21	1	21	-0.1	27	3	22	1.8
Campbell Soup Co	43.1	-0.8%	17	0	72	0	67	0.8	35	1	41	-1.2	37	-1	26	1.6
Peabody Energy Corp	13.3	-8.0%	31	2	470	44	383	2.4	183	25	160	1.8	287	18	223	1.5

Source: BofA Merrill Lynch Global Research

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Europe COAS Dislocations

Rich to Equities

According to our COAS model, this week's richest European name is Syngenta AG. Syngenta has a 3-month z-score of -3.0, its CDS spread is 2.8 standard deviations tight to its 3-month average, and its credit risk is 1.9 standard deviations above its 3-month average. The firm's equity fell 2.6% this week while its vol increased 1 vol point.

After Syngenta, UCB SA screens as the second richest name to its equity. UCB has a 3-month z-score of -2.8, its CDS spread is 2.2 standard deviations tight to its 3-month average, and its credit risk 1.2 standard deviations below its 3-month average. UCB's equity declined 2.3% over the past week and its vol increased 1 vol point. Following Syngenta and UCB, HSBC Holdings PLC, TeliaSonera AB, and Anheuser-Busch InBev NV each screen as rich to their equity.

Table 10: Top 5 richest to equity according to COAS

Issuer	Equity Px	Wkly Chng	Vol	Wkly Chng	CDS	Wkly Chng	3M Avg	3M Z-Score	Credit Risk	Wkly Chng	3M Avg	3M Z-Score	Credit OAS	Wkly Chng	3M Avg	3M Z-Score
Syngenta AG	313	-2.6%	17	1	35	-2	37	-2.8	20	2	16	1.9	15	-4	21	-3.0
UCB SA	68	-2.3%	23	1	84	-5	117	-2.2	51	2	60	-1.2	33	-7	56	-2.8
HSBC Hldgs PLC	7	0.9%	15	0	39	-5	48	-1.9	23	-1	24	-0.4	16	-4	24	-2.7
TeliaSonera AB	50	0.3%	15	0	35	-2	40	-2.5	24	1	22	1.0	11	-3	17	-2.6
Anheuser-Busch InBev NV	89	4.0%	21	6	51	8	44	3.4	43	18	29	3.5	8	-10	15	-2.5

Source: BofA Merrill Lynch Global Research

Cheap to Equities

With a 3-month z-score of 2.8, Kingfisher PLC screens as the cheapest European name to its equity in our COAS universe. Kingfisher's CDS spread is 0.7 standard deviations wide to its 3-month average while its equity-implied credit risk is 1.7 standard deviations below its 3-month average. The company's equity dropped 0.9% over the past week and its vol fell 3 vol points.

Following Kingfisher, Bouygues SA ranks second on our list of names that register as cheap to their equity. Bouygues has a 3-month z-score of 2.3, its CDS spread is 0.5 standard deviations wide to its 3-month average, and its credit risk is 1.9 standard deviations below its 3-month average. The firm's equity fell 3.3% this week as its vol dropped 1 vol point. After Kingfisher and Bouygues, Peugeot SA, Thales SA, and Orange SA each screen as cheap to their equity.

Table 11: Top 5 cheapest to equity according to COAS

Issuer	Equity Px	Wkly Chng	Vol	Wkly Chng	CDS	Wkly Chng	3M Avg	3M Z-Score	Credit Risk	Wkly Chng	3M Avg	3M Z-Score	Credit OAS	Wkly Chng	3M Avg	3M Z-Score
Kingfisher PLC	3	-0.9%	18	-3	61	0	59	0.7	13	-4	18	-1.7	48	4	41	2.8
Bouygues SA	27	-3.3%	25	-1	76	1	73	0.5	68	-3	89	-1.9	9	4	-15	2.3
Peugeot SA	10	-4.9%	31	-1	242	3	257	-1.1	140	-5	180	-1.9	101	8	78	2.2
Thales SA	43	1.5%	19	-1	53	-1	56	-1.7	31	-2	42	-2.0	22	1	14	1.8
Orange SA	12	-0.6%	23	0	63	0	65	-0.7	56	0	66	-1.5	7	0	-1	1.6

Source: BofA Merrill Lynch Global Research

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HG Basis Screen

The Hillshire Brands Co, with a basis of -96bp, tops our list of IG22 names with the most negative basis, along with MDC Holdings. Names with the most positive basis include Safeway Inc (+209bp) and Avon Products (+74bp).

Table 12: CDX IG 22 Basis Report

Sector	Ticker	Issuer	Coupon	Maturity	Price	Cash Sprd	5y CDS	Interp CDS	Hedge Ratio	Basis	1W Ago	1W Chg	1M Avg
Food, Beverage & Tobacco	TSN	Hillshire Brands Co/The	4.1	Sep-20	103.28	131	27	34	1.07	-96	-97	1	-99
Consumer Durables - Non Auto	MDC	MDC Holdings Inc	5.625	Feb-20	104.48	259	153	163	1.10	-96	-84	-12	-67
Food, Beverage & Tobacco	SUNTOR	Beam Suntory Inc	1.75	Jun-18	98.05	71	25	17	0.97	-54	-51	-3	-55
Electric Utilities	FE	FirstEnergy Corp	2.75	Mar-18	100.40	117	101	63	1.02	-54	-55	1	-55
Advertising Dependent Media	OMC	Omnicom Group Inc	4.45	Aug-20	107.12	95	37	46	1.14	-49	-48	-1	-49
P&C Insurance	L	Loews Corp	2.625	May-23	93.75	92	24	43	0.91	-49	-42	-7	-42
Technology	EXPE	Expedia Inc	5.95	Aug-20	111.15	163	97	120	1.21	-42	-14	-29	-26
Food, Beverage & Tobacco	MO	Altria Group Inc	4.75	May-21	108.94	94	36	54	1.17	-40	-39	-1	-31
Technology	ARW	Arrow Electronics Inc	3	Mar-18	102.27	83	80	46	1.05	-37	-39	3	-34
Transportation	NSC	Norfolk Southern Corp	5.9	Jun-19	115.31	56	22	21	1.28	-35	-36	1	-34
Transportation	LUV	Southwest Airlines Co	5.75	Dec-16	109.37	54	56	19	1.18	-34	-32	-2	-33
Electric Utilities	EXC	Exelon Corp	5.15	Dec-20	110.88	95	47	61	1.20	-34	-35	1	-35
Technology	CSC	Computer Sciences Corp	6.5	Mar-18	113.71	87	89	53	1.26	-33	-35	2	-30
Transportation	CSX	CSX Corp	4.25	Jun-21	107.66	67	25	35	1.15	-33	-33	0	-31
Services	CAH	Cardinal Health Inc	1.7	Mar-18	98.94	52	34	21	0.99	-31	-33	2	-30
P&C Insurance	ACE	ACE Ltd	5.9	Jun-19	115.36	55	25	23	1.28	-31	-32	1	-31
Aerospace & Defense	NOC	Northrop Grumman Corp	1.75	Jun-18	98.98	46	23	16	0.99	-30	-32	2	-29
Services	MCK	McKesson Corp	1.4	Mar-18	98.14	46	26	16	0.97	-30	-32	2	-31
Paper and Forest Products	WY	Weyerhaeuser Co	7.375	Oct-19	121.04	87	57	57	1.38	-29	-24	-5	-27
Electric Utilities	D	Dominion Resources Inc/VA	1.4	Sep-17	99.02	46	36	17	0.99	-29	-28	-1	-22
Multi-line Insurance	XL	XLIT Ltd	2.3	Dec-18	99.63	63	42	35	1.00	-29	-23	-6	-20
Advertising Dependent Media	TWX	Time Warner Inc	3.4	Jun-22	99.75	99	45	71	1.01	-29	-31	2	-29
Gaming, Lodging & Leisure	MAR	Marriott International Inc/DE	3	Mar-19	102.48	63	41	34	1.05	-29	-28	-1	-23
Gaming, Lodging & Leisure	HOT	Starwood Hotels & Resorts Worldwide Inc	6.75	May-18	115.77	66	61	39	1.29	-28	-27	0	-25
Aerospace & Defense	RTN	Raytheon Co	2.5	Dec-22	94.92	69	23	42	0.93	-27	-29	2	-26
Technology	PBI	Pitney Bowes Inc	6.25	Mar-19	114.11	102	87	75	1.26	-27	-32	5	-31
Banks	COF	Capital One Bank USA NA	2.25	Feb-19	99.35	60	38	33	1.00	-27	-30	3	-25
P&C Insurance	CB	Chubb Corp/The	5.75	May-18	113.19	43	23	16	1.24	-27	-28	2	-25
Pipelines	SRE	Sempra Energy	2.3	Apr-17	102.07	40	35	15	1.04	-25	-22	-3	-23
Cable/DBS	COXENT	Cox Communications Inc	3.25	Dec-22	96.71	122	57	98	0.96	-24	-28	4	-22
Retail	YUM	Yum! Brands Inc	3.75	Nov-21	102.46	102	51	77	1.06	-24	-24	-1	-22
Other Insurance	MMC	Marsh & McLennan Cos Inc	2.55	Oct-18	101.52	47	31	25	1.04	-23	-23	1	-21
Advertising Dependent Media	FOXA	21st Century Fox America Inc	4.5	Feb-21	108.38	79	45	57	1.16	-23	-25	2	-22
Food, Beverage & Tobacco	CAG	ConAgra Foods Inc	2.1	Mar-18	100.04	59	62	37	1.01	-22	-24	2	-21
Food, Beverage & Tobacco	RAI	Reynolds American Inc	3.25	Nov-22	96.14	133	72	112	0.95	-22	-26	4	-20
Health Care Equipment & Services	BSX	Boston Scientific Corp	2.65	Oct-18	100.85	74	70	53	1.03	-21	-22	1	-17
Health Care Equipment & Services	BAX	Baxter International Inc	1.85	Jun-18	99.51	40	27	19	1.00	-21	-19	-2	-16
Paper and Forest Products	MWV	MeadWestvaco Corp	7.375	Sep-19	119.99	102	83	82	1.36	-20	-19	0	-18
Consumer Products	NWL	Newell Rubbermaid Inc	2.05	Dec-17	100.43	54	61	35	1.02	-19	-19	0	-20
Retail	GPS	Gap Inc/The	5.95	Apr-21	113.81	127	77	108	1.25	-19	-16	-2	-22
Industrial Products	AVT	Avnet Inc	4.875	Dec-22	104.72	168	88	150	1.10	-19	-19	1	-16
Retail	AZO	AutoZone Inc	4	Nov-20	105.87	74	41	56	1.11	-19	-17	-2	-22
Metals & Mining	NEM	Newmont Mining Corp	3.5	Mar-22	94.58	199	133	180	0.92	-19	-10	-9	-20
Pharmaceuticals	AMGN	Amgen Inc	2.125	May-17	101.69	35	38	17	1.04	-18	-18	0	-14
Aerospace & Defense	LMT	Lockheed Martin Corp	3.35	Sep-21	102.78	56	24	37	1.06	-18	-21	3	-17
Industrial Products	HON	Honeywell International Inc	5	Feb-19	111.94	34	19	16	1.22	-18	-18	0	-15
Pipelines	KMP	Kinder Morgan Energy Partners LP	2.65	Feb-19	99.80	90	85	72	1.01	-18	-21	3	-20
Transportation	R	Ryder System Inc	2.55	Jun-19	99.96	66	53	49	1.01	-18	-15	-2	-12
Chemicals	EMN	Eastman Chemical Co	2.4	Jun-17	101.99	50	74	32	1.04	-18	-29	12	-18
Cable/DBS	DTV	DIRECTV Holdings LLC	1.75	Jan-18	99.53	47	53	30	1.00	-17	-23	6	-19
Retail	LOW	Lowe's Cos Inc	1.625	Apr-17	100.74	28	28	12	1.02	-17	-16	-1	-14
Food and Drug Retail	KR	Kroger Co/The	2.3	Jan-19	99.89	54	45	37	1.01	-17	-16	0	-16
Gaming, Lodging & Leisure	CCL	Carnival Corp	3.95	Oct-20	104.46	94	61	78	1.09	-16	-9	-8	-15
P&C Insurance	ALL	Allstate Corp/The	7.45	May-19	122.67	42	29	26	1.41	-16	-27	11	-25
Electric Utilities	AEP	American Electric Power Co Inc	1.65	Dec-17	99.87	30	25	15	1.00	-16	-16	1	-17
Metals & Mining	AA	Alcoa Inc	5.4	Apr-21	106.95	188	129	173	1.14	-15	-13	-3	-6
Food, Beverage & Tobacco	MDLZ	Mondelez International Inc	2.25	Feb-19	99.72	52	44	37	1.00	-15	-24	8	-22
Consumer Products	WHR	Whirlpool Corp	2.4	Mar-19	99.51	69	65	55	1.00	-14	-13	-1	-10
Oil & Gas	APC	Anadarko Petroleum Corp	6.375	Sep-17	113.32	49	63	34	1.25	-14	-19	5	-18
Advertising Dependent Media	VIA	Viacom Inc	2.5	Sep-18	101.25	50	49	37	1.03	-14	-16	2	-17
Aerospace & Defense	BA	Boeing Capital Corp	2.9	Aug-18	103.89	22	13	9	1.08	-13	-16	2	-13

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Table 12: CDX IG 22 Basis Report

Sector	Ticker	Issuer	Coupon	Maturity	Price	Cash Sprd	5y CDS	Interp CDS	Hedge Ratio	Basis	1W Ago	1W Chg	1M Avg
Transportation	UNP	Union Pacific Corp	2.25	Feb-19	100.59	30	19	17	1.02	-13	-15	2	-12
Services	AET	Aetna Inc	1.5	Nov-17	99.48	32	32	19	1.00	-13	-19	6	-7
Cable/DBS	CMCSA	Comcast Corp	1.974	Apr-19	98.61	44	35	31	0.99	-12	-13	1	-10
Cable/DBS	TWC	Time Warner Cable Inc	4	Sep-21	105.21	83	50	71	1.10	-12	-14	2	-10
Diversified Financials	AXP	American Express Co	1.55	May-18	98.53	40	41	29	0.98	-11	-12	1	-10
Diversified Telecom	VZ	Verizon Communications Inc	3.65	Sep-18	105.81	45	46	35	1.11	-10	-14	4	-11
Pharmaceuticals	BMY	Bristol-Myers Squibb Co	1.75	Mar-19	98.49	28	22	19	0.98	-8	-13	4	-7
Technology	MSI	Motorola Solutions Inc	3.75	May-22	98.51	156	106	148	0.99	-8	-28	20	-23
Real Estate	EQR	ERP Operating LP	4.625	Dec-21	108.81	86	53	79	1.17	-7	-6	-1	-6
Industrial Products	DE	Deere & Co	2.6	Jun-22	97.08	57	33	51	0.96	-6	-9	3	-6
Advertising Dependent Media	CBS	CBS Corp	1.95	Jul-17	101.16	34	63	29	1.03	-5	-6	1	-6
Food, Beverage & Tobacco	TSN	Tyson Foods Inc	4.5	Jun-22	105.62	122	75	116	1.11	-5	-9	4	-4
Technology	XRX	Xerox Corp	2.75	Mar-19	100.85	71	79	67	1.03	-4	-8	4	-5
Oil & Gas	WFT	Weatherford International PLC	4.5	Apr-22	104.98	132	90	128	1.10	-4	-8	4	-3
Technology	HPQ	Hewlett-Packard Co	2.75	Jan-19	101.51	59	69	56	1.04	-4	-5	2	-3
Food, Beverage & Tobacco	GIS	General Mills Inc	3.15	Dec-21	101.24	60	37	57	1.03	-3	-7	3	-2
Multi-line Insurance	GNW	Genworth Holdings Inc	7.7	Jun-20	120.07	159	141	156	1.37	-3	0	-2	-8
Services	UNH	UnitedHealth Group Inc	1.625	Mar-19	97.70	33	35	31	0.97	-2	-3	1	-3
Retail	HD	Home Depot Inc/The	2.25	Sep-18	101.49	21	25	19	1.03	-2	-2	0	-2
Automobiles	JCI	Johnson Controls Inc	3.75	Dec-21	103.46	85	55	84	1.07	-1	-4	2	-1
Retail	MCD	McDonald's Corp	1.875	May-19	99.06	19	20	18	0.99	-1	0	-1	5
Industrial Products	CAT	Caterpillar Inc	1.5	Jun-17	100.40	18	39	17	1.01	0	2	-2	2
Wireline Telecom	T	AT&T Inc	2.375	Nov-18	101.06	36	45	36	1.03	0	-2	3	-8
Real Estate	SPG	Simon Property Group LP	2.2	Feb-19	100.46	36	44	37	1.02	1	-7	8	-2
Auto Manufacturers	F	Ford Motor Co	6.5	Aug-18	115.53	64	88	65	1.29	1	-6	8	2
Retail	WMT	Wal-Mart Stores Inc	1.95	Dec-18	100.25	12	17	14	1.01	1	-1	2	3
Paper and Forest Products	IP	International Paper Co	9.375	May-19	129.91	64	72	65	1.54	1	3	-1	5
P&C Insurance	HIG	Hartford Financial Services Group Inc/The	4	Oct-17	106.95	35	67	37	1.13	2	5	-3	5
Diversified Financials	NRUC	National Rural Utilities Cooperative Finance Corp	2.15	Feb-19	99.97	36	45	38	1.01	3	0	3	-1
Retail	TGT	Target Corp	2.9	Jan-22	99.36	60	42	64	1.00	4	2	2	3
Chemicals	DOW	Dow Chemical Co/The	4.125	Nov-21	105.29	92	65	96	1.11	4	5	-1	6
Retail	SPLS	Staples Inc	2.75	Jan-18	101.21	97	191	102	1.03	4	-4	9	-1
Advertising Dependent Media	DIS	Walt Disney Co/The	1.1	Dec-17	98.94	6	21	11	0.99	4	4	0	4
Chemicals	SHW	Sherwin-Williams Co/The	1.35	Dec-17	99.43	14	37	20	1.00	6	9	-2	8
Multi-line Insurance	AIG	American International Group Inc	3.375	Aug-20	103.29	60	56	67	1.07	7	6	1	6
Oil & Gas	COP	ConocoPhillips	1.05	Dec-17	98.65	9	30	16	0.98	7	6	1	6
Oil & Gas	DVN	Devon Energy Corp	2.25	Dec-18	100.33	43	63	51	1.01	7	1	7	-3
Transportation	UPS	United Parcel Service Inc	1.125	Oct-17	99.39	3	19	10	0.99	7	9	-2	9
Technology	IBM	International Business Machines Corp	1.95	Feb-19	99.51	26	40	34	1.00	8	8	0	11
P&C Insurance	BRK	Berkshire Hathaway Inc	2	Aug-18	100.42	24	44	33	1.02	10	8	1	10
Retail	M	Macy's Inc	3.875	Jan-22	103.92	87	60	98	1.08	10	11	-1	14
Oil & Gas	HAL	Halliburton Co	2	Aug-18	100.90	15	35	25	1.02	10	-4	14	0
Chemicals	DD	EI du Pont de Nemours & Co	4.25	Apr-21	108.98	47	43	57	1.17	10	8	2	10
Food, Beverage & Tobacco	CPB	Campbell Soup Co	4.25	Apr-21	106.85	80	72	94	1.13	13	15	-2	16
Retail	JWN	Nordstrom Inc	4	Oct-21	106.47	62	52	76	1.12	14	15	-1	16
Pharmaceuticals	PFE	Pfizer Inc	1.5	Jun-18	99.58	2	24	16	1.00	14	11	3	9
Consumer Products	PG	Procter & Gamble Co/The	1.6	Nov-18	99.25	5	25	20	0.99	15	14	1	17
Diversified Financials	GE	General Electric Capital Corp	2.3	Jan-19	101.11	24	50	44	1.03	20	18	2	19
Oil & Gas	VLO	Valero Energy Corp	6.125	Feb-20	116.11	80	94	100	1.29	20	10	10	9
Retail	DRI	Darden Restaurants Inc	4.5	Oct-21	101.71	187	143	207	1.05	20	54	-33	53
Diversified Financials	HRB	Block Financial LLC	5.5	Nov-22	108.37	175	135	196	1.16	21	21	-1	26
Oil & Gas	RIG	Transocean Inc	2.5	Oct-17	100.23	110	258	135	1.01	25	18	6	9
Life Insurance	MET	MetLife Inc	1.756	Dec-17	100.87	10	57	34	1.02	25	21	3	15
Oil & Gas	NBR	Nabors Industries Inc	4.625	Sep-21	107.25	110	95	138	1.14	28	25	3	26
Facilities	DGX	Quest Diagnostics Inc	4.7	Apr-21	107.62	111	109	142	1.15	32	36	-4	35
Metals & Mining	ABXCN	Barrick Gold Corp	2.5	May-18	101.28	59	151	92	1.03	33	32	2	20
Retail	KSS	Kohl's Corp	4	Nov-21	103.97	102	93	149	1.08	47	46	2	54
Consumer Products	AVP	Avon Products Inc	4.6	Mar-20	102.34	203	261	277	1.06	74	61	13	51
Food and Drug Retail	SWY	Safeway Inc	4.75	Dec-21	101.29	217	333	426	1.04	209	213	-4	206

Source: BofA Merrill Lynch Global Research

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HY Basis Screen

Toys R Us Inc, with a basis of -248bp, occupies the topmost position on our list of issuers with the most negative basis. K Hovnanian Enterprises Inc, with a basis of -155bp, is second on the list. In terms of most positive basis, Forest Oil Corp (+419bp) and Clear Channel Communications Inc (+301bp) top the list.

Table 13: CDX HY 21 Basis Report

Sector	Ticker	Issuer	Coupon	Maturity	Price	Cash Sprd	5y CDS	Interp CDS	Hedge Ratio	Basis	1W Ago	1W Chg	1M Avg
Retail	TOY	Toys R Us Inc	10.375	Aug-17	82.63	1750	1673	1502	0.75	-248	-234	-14	-208
Consumer Durables - Non Auto	HOV	K Hovnanian Enterprises Inc	7	Jan-19	97.50	588	496	433	0.99	-155	-118	-37	-131
Commercial Services	URI	United Rentals North America Inc	7.375	May-20	108.13	355	184	206	1.17	-149	-167	18	-125
Paper and Forest Products	LPX	Louisiana-Pacific Corp	7.5	Jun-20	108.00	380	218	241	1.16	-139	-123	-16	-118
Technology	SDSINC	SunGard Data Systems Inc	6.625	Nov-19	102.50	430	296	300	1.07	-131	-111	-19	-86
Consumer Durables - Non Auto	PHM	PulteGroup Inc	7.625	Oct-17	112.00	207	168	83	1.23	-123	-90	-33	-96
Technology	UIS	Unisys Corp	6.25	Aug-17	105.88	276	317	153	1.12	-123	-105	-18	-110
Technology	TSG	Sabre Holdings Corp	6.35	Mar-16	108.25	198	303	85	1.16	-113	-103	-10	-116
Facilities	CYH	Community Health Systems Inc	7.125	Jul-20	107.13	394	258	288	1.15	-107	-75	-32	-66
Paper and Forest Products	NBDCN	Norbord Inc	5.375	Dec-20	97.26	373	230	269	0.98	-104	-90	-15	-99
Commercial Services	HTZ	Hertz Corp/The	4.25	Apr-18	100.25	265	261	161	1.02	-104	-108	4	-108
Commercial Services	IRM	Iron Mountain Inc	7.75	Oct-19	107.38	348	244	245	1.16	-103	-109	6	-90
Gaming, Lodging & Leisure	BC	Brunswick Corp/DE	4.625	May-21	98.38	265	125	165	0.99	-100	-96	-4	-102
Paper and Forest Products	OI	Owens-Illinois Inc	7.8	May-18	113.63	213	179	115	1.26	-98	-90	-8	-91
Consumer Durables - Non Auto	SPF	Standard Pacific Corp	8.375	May-18	114.50	239	218	143	1.28	-96	-70	-26	-85
Oil & Gas	TSO	Tesoro Corp	4.25	Oct-17	103.00	189	208	97	1.07	-92	-86	-6	-91
Chemicals	NCX	NOVA Chemicals Corp	8.625	Nov-19	104.88	252	160	162	1.12	-91	-260	169	-95
Other Insurance	RDN	Radian Group Inc	9	Jun-17	113.50	246	274	158	1.26	-88	-74	-14	-83
Food and Drug Retail	SVU	SUPERVALU Inc	6.75	Jun-21	101.25	449	295	363	1.05	-86	-76	-10	-79
Consumer Durables - Non Auto	DHI	DR Horton Inc	3.75	Mar-19	98.50	231	169	147	0.99	-85	-67	-18	-64
Textile & Apparel	LEVI	Levi Strauss & Co	6.875	May-22	106.50	411	257	327	1.14	-84	-100	16	-56
Retail	DDS	Dillard's Inc	7.13	Aug-18	112.50	193	166	116	1.24	-77	-60	-17	-69
Diversified Financials	CIT	CIT Group Inc	3.875	Feb-19	99.50	219	157	145	1.01	-75	-85	11	-72
Consumer Durables - Non Auto	VMC	Vulcan Materials Co	7	Jun-18	112.75	169	145	96	1.24	-74	-54	-20	-70
Facilities	THC	Tenet Healthcare Corp	6.75	Feb-20	105.38	346	260	273	1.12	-73	-64	-9	-68
Wireline Telecom	CTL	CenturyLink Inc	5.625	Apr-20	104.41	259	169	188	1.10	-71	-77	6	-65
Technology	DELL	Dell Inc	5.875	Jun-19	106.00	251	193	180	1.12	-71	-57	-14	-62
Diversified Financials	STAR	iStar Financial Inc	7.125	Feb-18	107.25	323	355	253	1.15	-70	-65	-4	-65
Food, Beverage & Tobacco	SFD	Smithfield Foods Inc	6.625	Aug-22	107.75	341	196	271	1.16	-69	-46	-24	-33
Technology	ALUFP	Alcatel-Lucent USA Inc	8.875	Jan-20	110.38	412	332	343	1.21	-69	-79	10	-52
Electric Utilities	NRG	NRG Energy Inc	7.625	Jan-18	111.50	237	287	170	1.22	-68	-66	-1	-61
Technology	AMD	Advanced Micro Devices Inc	6.75	Mar-19	103.50	395	371	328	1.09	-68	-68	1	-72
Cable/DBS	CHTR	CCO Holdings LLC	6.625	Jan-22	106.75	374	254	309	1.14	-65	-69	4	-60
Diversified Financials	ALLY	Ally Financial Inc	3.5	Jan-19	99.00	196	147	134	1.00	-63	-65	3	-57
Other Telecom	WIN	Windstream Holdings Inc	7.5	Jun-22	105.88	405	255	347	1.13	-57	-44	-14	-76
Gaming, Lodging & Leisure	MGM	MGM Resorts International	8.625	Feb-19	115.50	273	251	216	1.29	-57	-45	-12	-38
Advertising Dependent Media	NYT	New York Times Co/The	6.625	Dec-16	110.00	106	178	49	1.19	-57	-48	-8	-53
Consumer Durables - Non Auto	LEN	Lennar Corp	4.5	Jun-19	100.88	242	201	189	1.03	-53	-37	-16	-46
Paper and Forest Products	SEE	Sealed Air Corp	6.5	Dec-20	108.75	257	168	205	1.17	-52	-53	1	-56
Consumer Durables - Non Auto	RYL	Ryland Group Inc/The	6.625	May-20	106.75	306	234	257	1.14	-49	-38	-11	-57
Commercial Services	RLGY	Realogy Group LLC	9	Jan-20	110.25	351	294	303	1.21	-48	-26	-22	-5
Advertising Dependent Media	GCI	Gannett Co Inc	5.125	Jul-20	101.00	295	216	249	1.04	-47	-54	7	-49
Cable/DBS	DISH	DISH DBS Corp	5.125	May-20	101.63	268	200	223	1.05	-45	-59	14	-47
Metals & Mining	X	United States Steel Corp	6.875	Apr-21	107.00	320	220	277	1.15	-44	-19	-24	-51
Diversified Financials	AER	International Lease Finance Corp	5.875	Apr-19	107.75	210	184	172	1.15	-38	-25	-13	-34
Oil & Gas	CHK	Chesapeake Energy Corp	5.375	Jun-21	104.75	232	162	195	1.10	-37	-43	5	-72
Automobiles	CTBUS	Cooper Tire & Rubber Co	8	Dec-19	112.75	305	260	268	1.25	-37	-28	-9	-41
Technology	STX	Seagate Technology HDD Holdings	3.75	Nov-18	102.50	137	135	107	1.06	-30	-36	6	-49
Wireline Telecom	FTR	Frontier Communications Corp	9.25	Jul-21	116.63	371	261	342	1.32	-30	-21	-9	-27
Retail	LB	L Brands Inc	5.625	Feb-22	105.25	235	147	208	1.11	-28	-14	-14	-13
Wireline Telecom	LVLT	Level 3 Communications Inc	6.125	Jan-21	104.25	319	240	293	1.10	-26	-34	8	-15
Industrial Products	BBDBCN	Bombardier Inc	7.75	Mar-20	109.50	352	308	328	1.19	-24	-15	-10	-9
Auto Manufacturers	GM	General Motors Co	3.5	Oct-18	101.25	147	150	123	1.04	-24	-30	6	-27

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Table 13: CDX HY 21 Basis Report

Sector	Ticker	Issuer	Coupon	Maturity	Price	Cash Sprd	5y CDS	Interp CDS	Hedge Ratio	Basis	1W Ago	1W Chg	1M Avg
Metals & Mining	AKS	AK Steel Corp	8.375	Apr-22	103.75	534	435	511	1.10	-23	-26	4	-41
Consumer Durables - Non Auto	KBH	KB Home	8	Mar-20	111.75	329	287	308	1.23	-21	-13	-8	-27
Chemicals	OLN	Olin Corp	5.5	Aug-22	104.75	229	161	210	1.10	-19	-14	-5	-31
Cable/DBS	CVC	CSC Holdings LLC	8.625	Feb-19	116.75	247	267	229	1.32	-19	-24	6	-17
Facilities	HCA	HCA Inc	6.25	Feb-21	106.75	271	206	253	1.14	-18	-9	-10	-13
Chemicals	POL	PolyOne Corp	5.25	Mar-23	98.00	306	250	291	0.99	-16	-23	7	-15
Oil & Gas	PKD	Parker Drilling Co	7.5	Aug-20	105.75	406	371	393	1.13	-14	-1	-12	-31
Commercial Services	FDC	First Data Corp	12.625	Jan-21	121.25	408	341	403	1.41	-5	-39	33	0
Gaming, Lodging & Leisure	RCL	Royal Caribbean Cruises Ltd	5.25	Nov-22	103.75	219	139	214	1.08	-5	15	-20	3
Pipelines	KMI	Kinder Morgan Inc/DE	5	Feb-21	106.25	162	128	158	1.13	-4	-21	17	-20
Commercial Services	CAR	Avis Budget Group Inc	5.5	Apr-23	101.13	302	213	301	1.04	-2	1	-3	-3
Electric Utilities	AES	AES Corp/VA	7.375	Jul-21	113.38	262	210	260	1.25	-1	-2	0	-3
Automobiles	MTOR	Meritor Inc	6.75	Jun-21	105.00	356	279	357	1.11	0	16	-15	-7
Technology	FSL	Freescale Semiconductor Inc	10.75	Aug-20	111.00	321	289	322	1.23	1	68	-67	65
Retail	RAD	Rite Aid Corp	6.75	Jun-21	103.50	392	330	395	1.09	3	-17	19	-6
Automobiles	AXL	American Axle & Manufacturing Inc	7.75	Nov-19	113.63	264	267	274	1.26	10	16	-6	-5
Diversified Financials	AMGFIN	Springleaf Finance Corp	6	Jun-20	103.50	313	299	323	1.08	10	2	8	2
Diversified Financials	PHH	PHH Corp	7.375	Sep-19	108.00	346	361	358	1.16	12	11	2	13
Gaming, Lodging & Leisure	BYD	Boyd Gaming Corp	9	Jul-20	107.25	499	474	514	1.16	15	35	-21	-6
Technology	AMKR	Amkor Technology Inc	6.375	Oct-22	104.50	332	284	356	1.10	25	48	-23	20
Automobiles	GT	Goodyear Tire & Rubber Co/The	6.5	Mar-21	106.00	309	274	335	1.13	26	17	9	-27
Commercial Services	RRD	RR Donnelley & Sons Co	8.25	Mar-19	118.00	193	260	224	1.33	31	25	6	15
Consumer Durables - Non Auto	BZH	Beazer Homes USA Inc	7.25	Feb-23	102.00	457	390	491	1.06	34	25	9	20
Diversified Financials	DLX	Deluxe Corp	6	Nov-20	104.13	310	311	350	1.09	39	23	16	9
Diversified Telecom	S	Sprint Communications Inc	7	Mar-20	111.25	250	270	289	1.22	40	49	-9	46
Advertising Dependent Media	MNI	McClatchy Co/The	9	Dec-22	109.75	513	508	596	1.20	83	102	-19	107
Electric Utilities	CPN	Calpine Corp	6	Jan-22	107.25	260	307	372	1.15	112	111	1	80
Advertising Dependent Media	CCMO	Clear Channel Communications Inc	6.875	Jun-18	95.00	687	1176	988	0.95	301	338	-37	280
Oil & Gas	FST	Forest Oil Corp	7.5	Sep-20	96.88	602	1021	1022	0.98	419	387	32	332

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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

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