Credit Strategy | Q3 2014

Wider or Tighter?

A few theories about the state of the credit market

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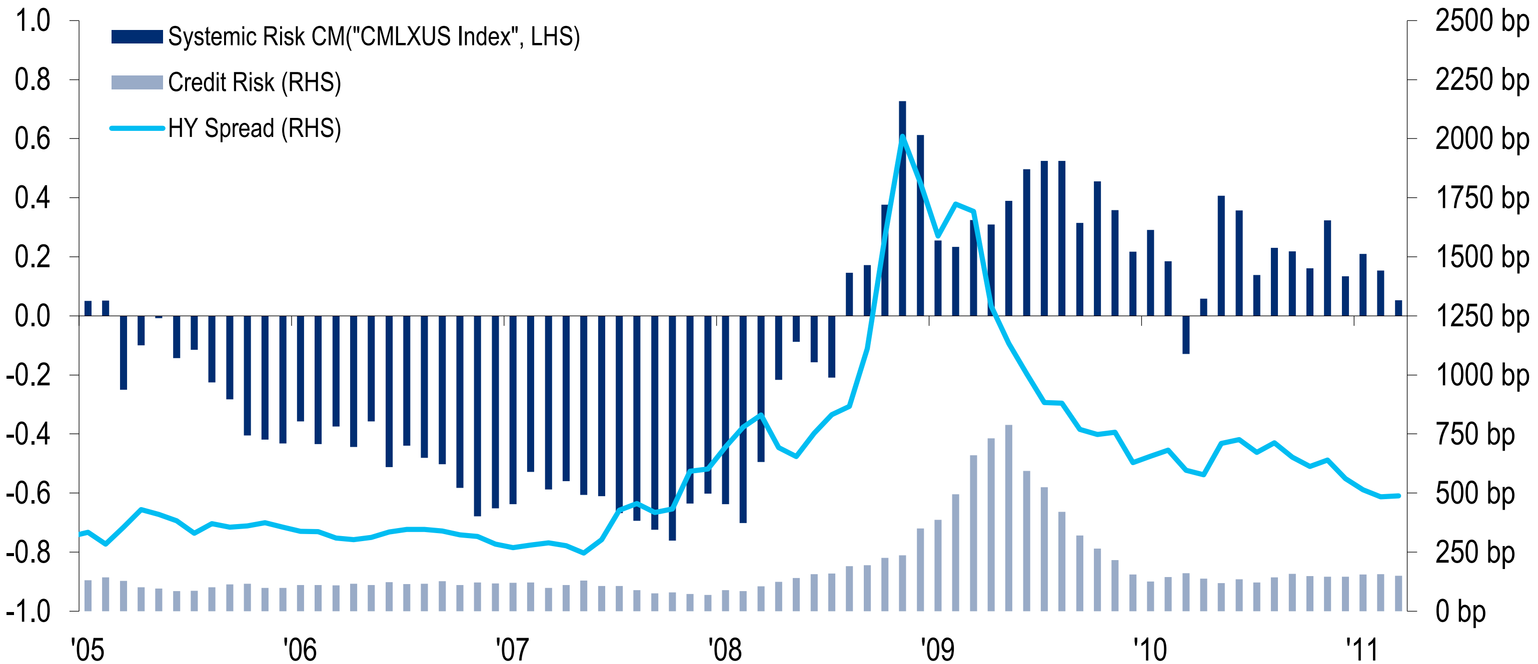
Theory #1: Credit is Rich

1. “Fair” Value Approach Says…

We use a risk index comprised of assets in other markets (e.g., VIX, swaptions, etc.) and expected default risk to calculate fair value in credit. In the HY market the R-squared is 91%.

“Expected” HY Cash Spread = 0.4 * (Credit Loss) + 347.7 * (Liquidity & Vol Risk) + 470.1

HY cash spread vs. credit and liquidity & vol risk



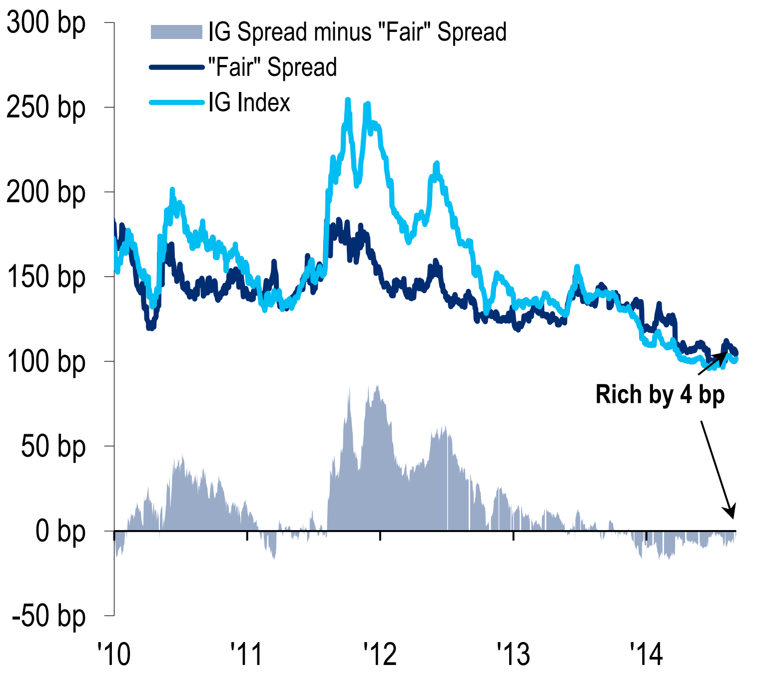
Source: Citi Research, Bloomberg, Moody’s

Note: As of December 31, 2011; Credit Loss calculated by multiplying LTM default rate by LTM recoveries of unsecured bonds, then we offset the credit loss by 9-month period forward. Adjusted liquidity index removes the credit part from the original index; we do not include the Sep ‘08 to May ‘09 period into our regression calculations

1. HG and HY Are Right Where They Should Be

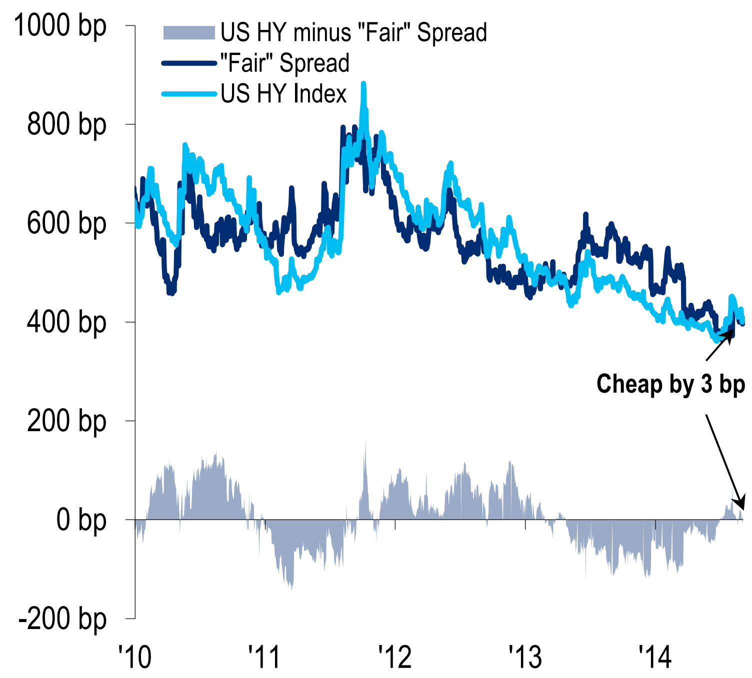
Our models suggest that both high-grade and high-yield are pretty much right in line with valuations in other markets (or all markets are equally manipulated by the Fed/CBs).

Historical difference in actual spread vs. "fair" spread for IG cash*



Source: Citi Research, Bloomberg, Moody's
Note: As of Sep 4, 2014; Credit loss calculated using the same distribution as the spec grade default rate; then we offset the credit loss by 9-month period forward. Systemic risk measured by adjusted Citi liquidity index; 40% recovery assumed; *regression based on Mar '04 to Mar '11 monthly data with an exception of the Sep '08 to Jun '09 period

Historical difference in actual spread vs. "fair" spread for HY cash*

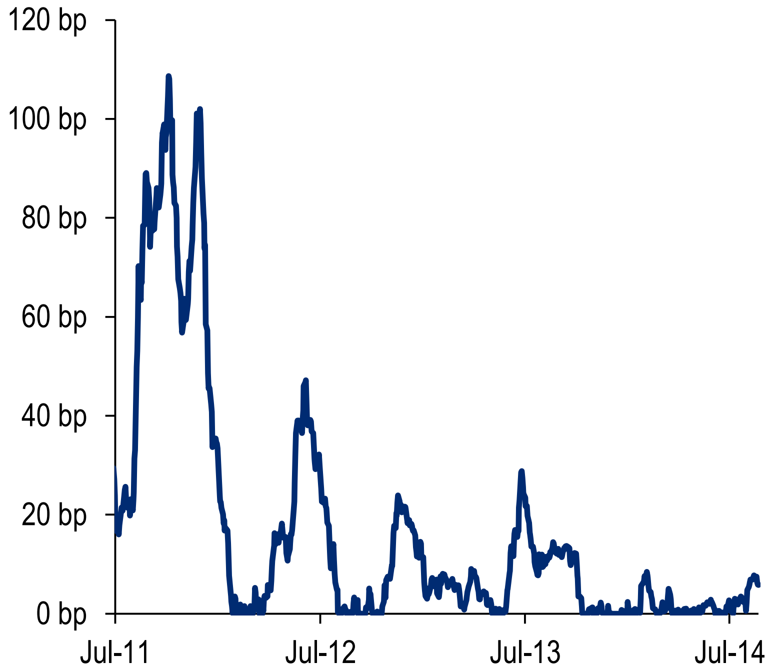


Source: Citi Research, Bloomberg, Moody's
Note: As of Sep 4, 2014; We offset the credit loss by 9-month period forward. Systemic risk measured by adjusted Citi liquidity index; 40% recovery assumed; *regression based on Mar '04 to Mar '11 monthly data with an exception of the Sep '08 to Jun '09 period

2. Putting Vol Into Perspective

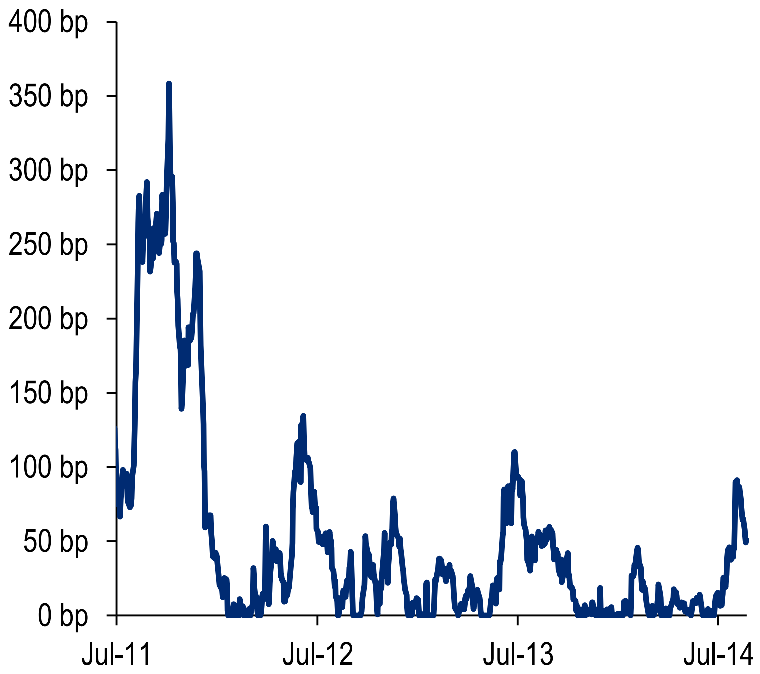
The June/July setback felt bad, especially for HY, but it's important to put it into perspective. Drawdowns in HG continue to hover near zero, and in HY have been smaller and shorter than in recent years.

HG drawdowns continue to hover near zero



Source: Citi Research
Note: As of August 15, 2014; Drawdowns are the max jump in bp from the tightest point in a 90-day period

while HY drawdowns are smaller and shorter

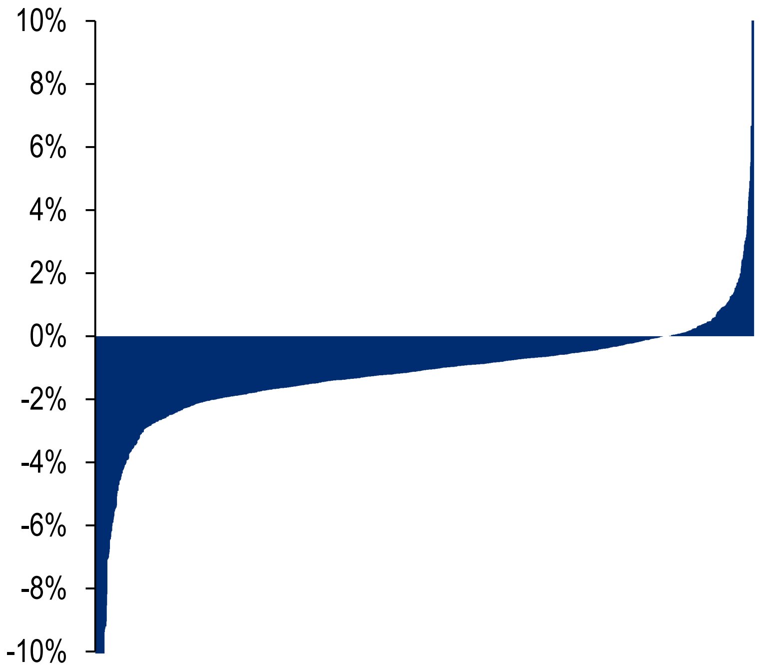


Source: Citi Research
Note: As of August 15, 2014; Drawdowns are the max jump in bp from the tightest point in a 90-day period

2. "Big" Yields (Relative to Vol) Help Limit Downside

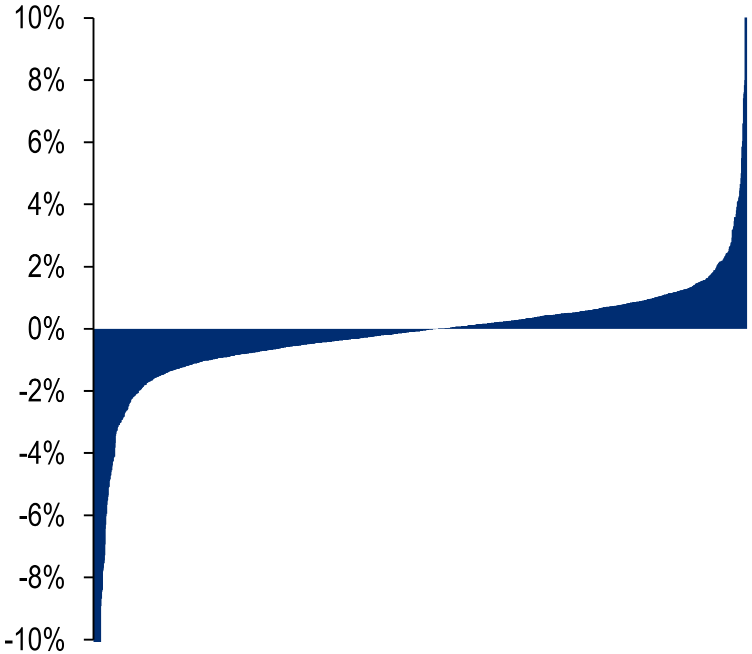
Part of the reason for somewhat subdued P&C volatility is because of yields…they're low in an absolute sense but fairly high relative to volatility.

HY index constituents PRICE change in June to August period skewed way to the downside…



Source: Citi Research
Note: As of August 18, 2014

…but TOTAL RETURNS are basically a coin flip

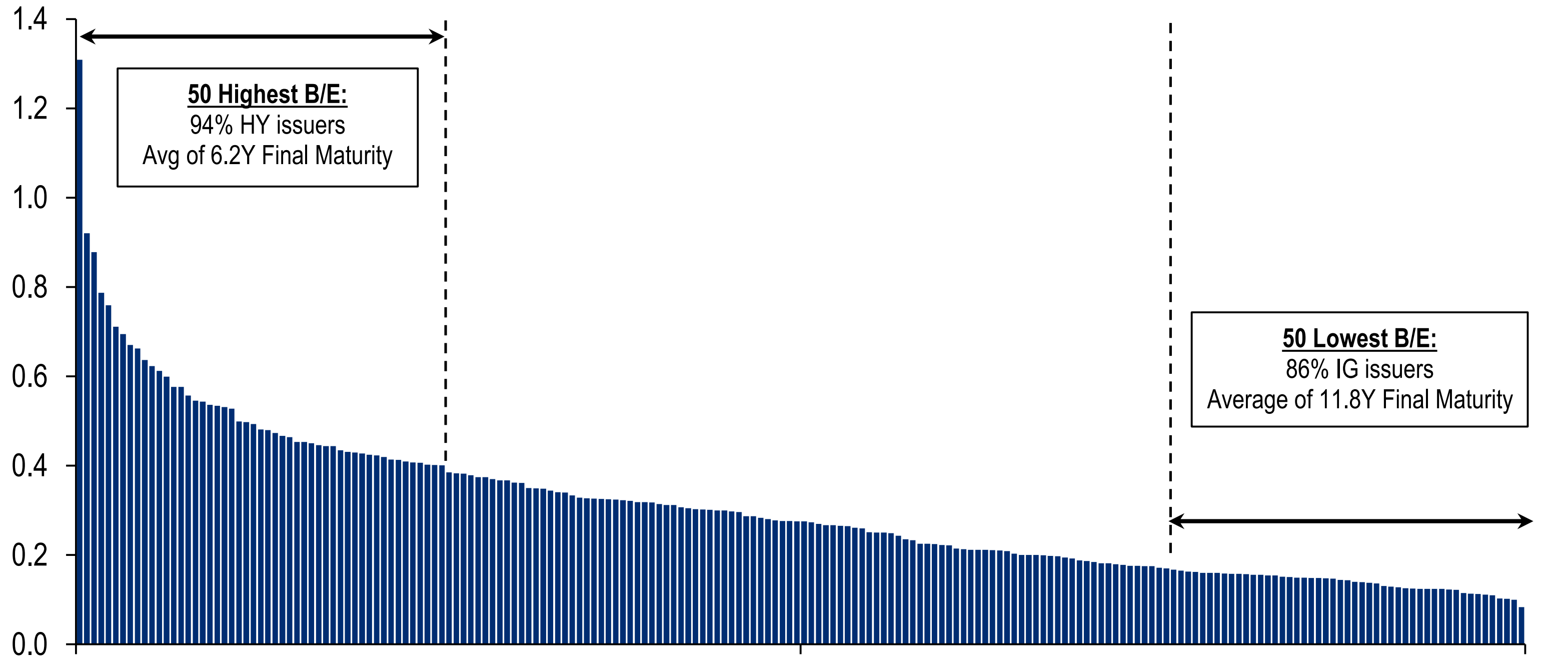


Source: Citi Research
Note: As of August 18, 2014

2. Trade Idea: Combining Volatility & Valuations

We calculated risk-adjusted “breakevens” (spread / duration / vol) for the 100 largest HG and 100 biggest HY names. Names with the highest B/Es are HY, and the worst breakeven names are characterized by longer tenors and low spreads.

6-month vol adjusted spread breakevens for select IG and HY issuers, current

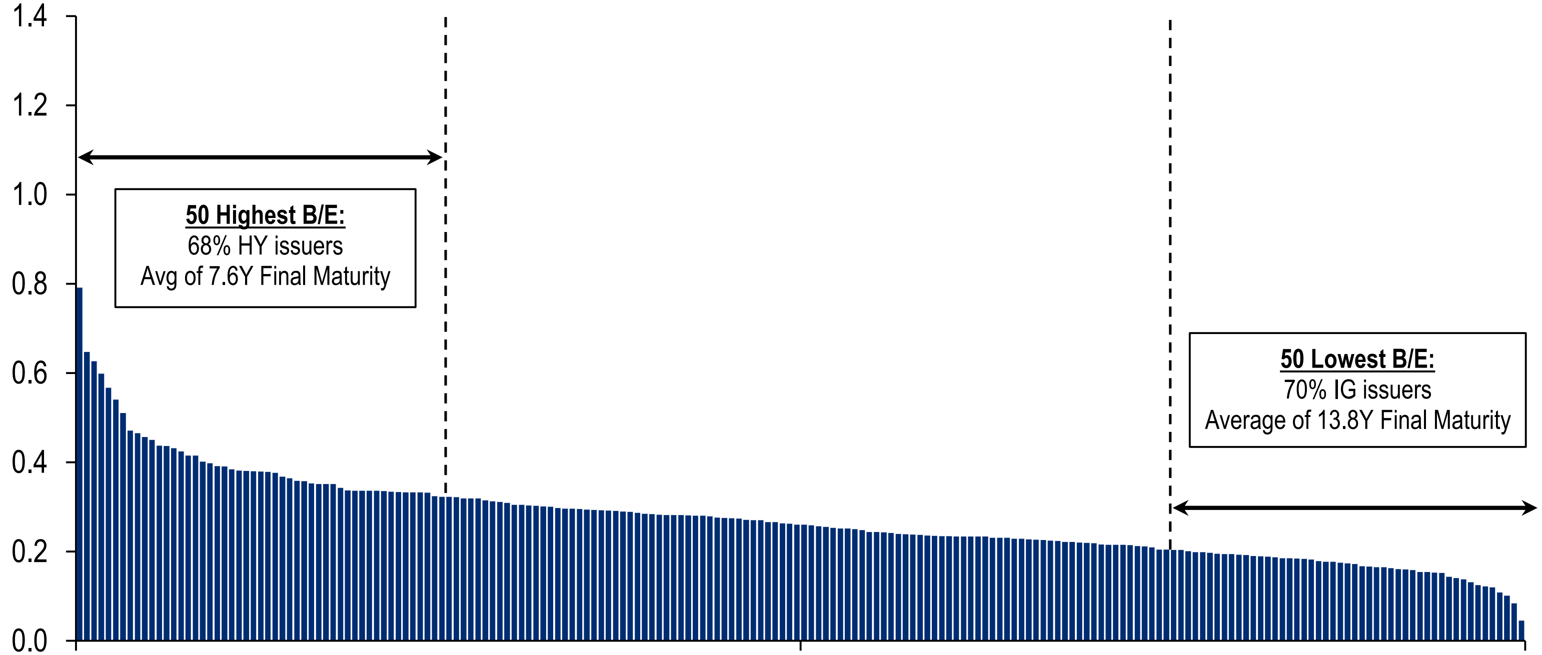


Source: Citi Research
Note: As of August 19, 2014; based on largest 100 IG and 100 HY issuers in indexes

Side Note: How Did This Picture Look Circa '11

We ran the numbers as of Sept '11. Interestingly, despite tighter spreads breakevens are actually higher now than then. (Essentially, vol fell more than spreads.) Also 50 highest B/E are more concentrated in HY issuers now than they did then.

6-month vol adjusted spread breakevens for select IG and HY issuers, Sep '11



Source: Citi Research
Note: As of September 1, 2011; based on largest 100 IG and 100 HY issuers in indexes

3. Is Credit Rich vs. Other Asset Classes?

To compare the risk / reward profile of different assets we calculated how much leverage is needed to earn 10% (i.e., we made them return-neutral). We take into account leverage costs and haircuts based on the “typical” investor.

Leverage needed to meet 10% return bogey currently vs. historical norms

Asset	(Gross Yield	–	Cost)	x	Leverage	=	Yield Target
CLO AAA	1.68%		0.95%		~~13.6x~~		10%
CDX.IG 5Y	0.81%		0.00%		12.3x		10%
Agency	1.34%		0.19%		8.7x		10%
Treasury	1.37%		0.13%		8.1x		10%
Mortgage	2.49%		0.19%		4.3x		10%
IG Cash	2.94%		0.61%		4.3x		10%
Lev Loans	4.27%		1.47%		3.6x		10%
IG9 10Y 3-7	2.82%		0.00%		3.5x		10%
Muni ETF	2.89%		-0.27%		3.2x		10%
CDX.HY 5Y	3.37%		0.00%		3.0x		10%
CLO BBB	4.73%		1.14%		2.8x		10%
HY Cash	5.00%		0.70%		2.3x		10%
EM Bond ETF	4.40%		-0.27%		2.1x		10%
SPX	5.68%		0.53%		1.9x		10%
HY15 5Y 0-15	13.66%		0.00%		1.0x		10%

Source: Citi Research, Bloomberg, LCDComps
Note: As of August 20, 2014; SPX based on expected year-end level (price performance + yield); EMB and MUB based on yields; does not take into account fees and other expenses and various haircut assumed; Gross yield for floaters are calculated over 3M LIBOR

3. How Risky are Levered Positions?

With respect to what could happen to levered positions in a tail scenario (defined as the single worst monthly performance since 2011), we find some surprising results. For example, HY is less risky than Treasuries.

Worst monthly experience over the past three years

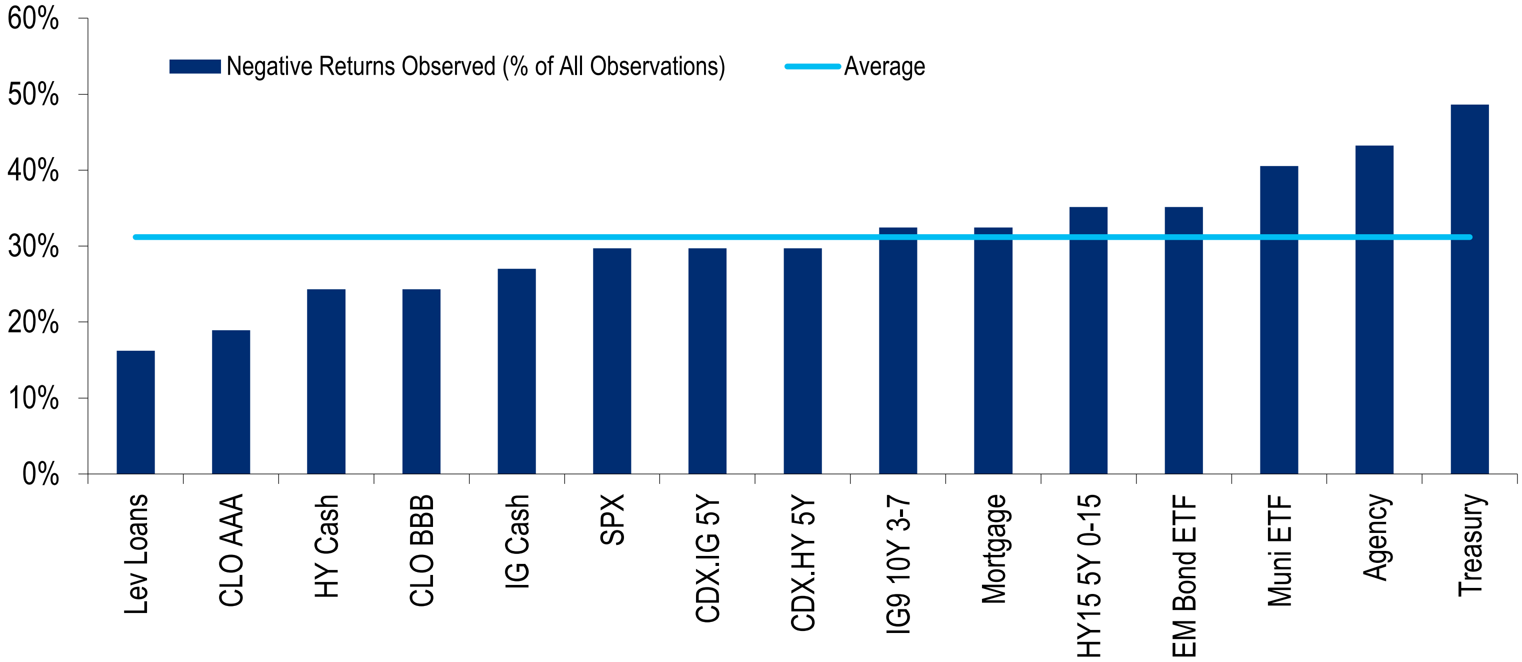
		"Worst" Returns since Jul '11		
	Current Leverage	Month	Unlevered	Levered
Mortgage	4.3x	May '13	-1.6%	-6.9%
HY Cash	2.3x	Aug '11	-3.9%	-9.0%
Muni ETF	3.2x	May '13	-3.0%	-9.6%
CLO AAA	13.6x	Sep '11	-0.8%*	-10.3%
EM Bond ETF	2.1x	May '13	-4.9%	-10.5%
IG Cash	4.3x	Jun '13	-2.6%	-11.1%
Agency	8.7x	Jun '13	-1.3%	-11.4%
Treasury	8.1x	May '13	-1.7%	-13.6%
SPX	1.9x	Sep '11	-7.0%	-13.6%
CDX.HY 5Y	3.0x	Aug '11	-4.8%	-14.1%
CDX.IG 5Y	12.3x	May '12	-1.2%	-15.2%
Lev Loans	3.6x	Aug '11	-4.4%	-15.7%
HY15 5Y 0-15	1.0x	Sep '11	-20.8%	-20.8%
CLO BBB	2.8x	Sep '11	-8.9%	-24.8%
IG9 10Y 3-7	3.5x	May '12	-16.4%	-58.2%

Source: Citi Research, Bloomberg, LCDComps
Note: As of August 20, 2014;*- using 1.0 monthly return for Sep '11 only due to data limitation

3. How Risky are Levered Positions?

We also looked at the likelihood of each asset generating a negative outcome (as opposed to the magnitude of a one-off negative event). ALL cash corporate products beat the average, ranging from leveraged loans to stocks.

Likelihood of a having negative return in any given month

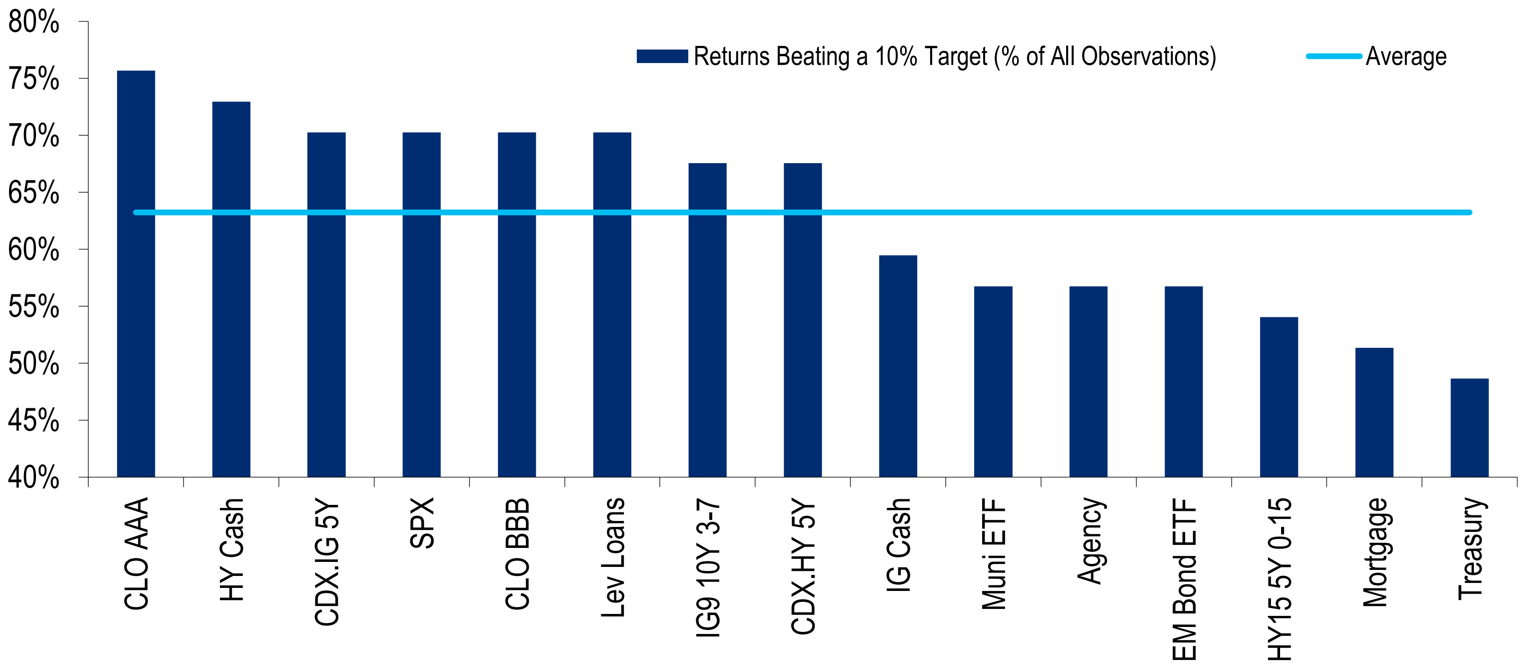


Source: Citi Research, Bloomberg, LCDComps
Note: Based on monthly total returns data from Aug '12 to Jul '14

3. Any Upside?

Lastly, we consider upside potential for each asset class. We define upside potential as the chance that the 10% return bogey could be beat using annualized monthly returns after taking into account required leverage. The results are fairly mixed, but as a rule of thumb cash corporates tend to score better than alternatives.

Chance that the 10% bogey is beat after taking current leverage into account



Source: Citi Research, Bloomberg, LCDComps
Note: Based on monthly total returns data from Aug ‘12 to Jul ‘14

3. And the Winner Is…

For various risk metrics we rank each asset relative to the overall group (from 1 to 15, with 1 being the best). Using the average score for our overall ranking, we find that corporates are compelling.

What's the best way to meet a 10% return bogey? (1 = best to 15 = worst)

	Ranking for Risk Metrics			
	Tail Risk Exposure	Neg Rtn Potential	Upside Potential	Overall Ranking
~~CLO AAA~~	4	~~2~~	~~1~~	~~2.3~~
HY Cash	2	4	1	2.3
Lev Loans	12	1	3	5.3
IG Cash	6	5	9	6.7
SPX	9	8	3	6.7
CLO BBB	14	4	3	7.0
CDX.IG 5Y	11	8	3	7.3
CDX.HY 5Y	10	8	7	8.3
Mortgage	1	10	14	8.3
EM Bond ETF	5	12	10	9.0
Muni ETF	3	13	10	8.7
Agency	7	14	10	10.3
IG9 10Y 3-7	15	10	7	10.7
HY15 5Y 0-15	13	12	13	12.7
Treasury	8	15	15	12.7

Source: Citi Research, Bloomberg, LCDComps
Note: As of August 20, 2014

Theory #2: Something Will Soon Derail the Market

1. Fundamentals Drive Results More Than "Unknowns"

History suggests that if you don't expect a recession and a meaningful pickup in defaults you've got a small chance of success if you structurally underweight the broad market because Treasury yields may rise, China may slow down, etc.

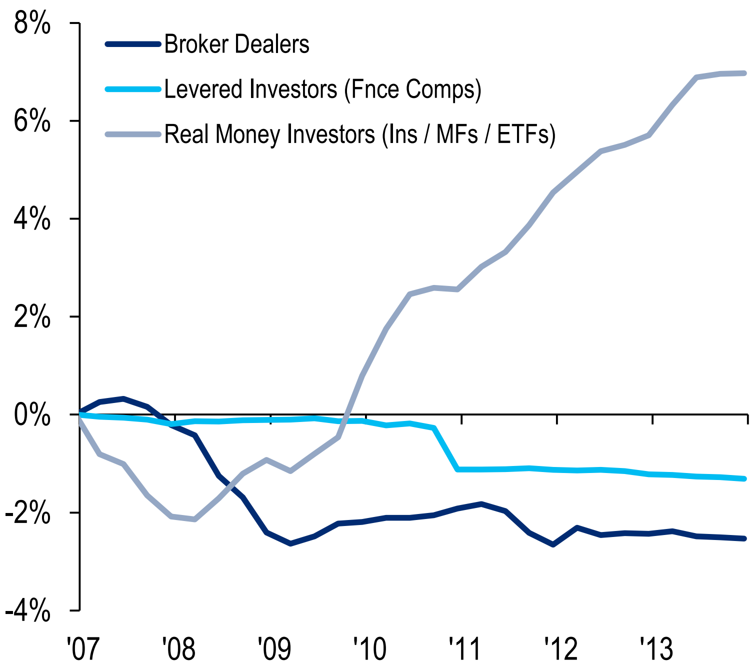
	Year	Total Return	Fundamental Backdrop	Exogenous Events
1	1990	-1.6%	• Recession • Default rate trending higher	• Gulf War • S&L crisis
2	1991	40.3%		
3	1992	17.3%		
4	1993	17.1%		
5	1994	-1.9%		• 10Y Treasury yields rise almost 2.5% • Peso crisis
6	1995	19.7%		
7	1996	10.5%		
8	1997	14.9%		• Asia financial crisis
9	1998	2.8%		• Russia defaults • Long-Term Capital bailout
10	1999	-0.6%	• Heading into recession • Default rate trending higher	• 10Y Treasury yields rise 1.7%+ • Dot com bubble at its fullest
11	2000	1.5%		
12	2001	-0.8%	• Recession • Default rate trending higher	• Dot com bubble burst • Argentina defaults
13	2002	1.7%		
14	2003	28.1%		
15	2004	8.8%		
16	2005	3.8%		• Auto downgrade / correlation crisis
17	2006	11.2%		
18	2007	-0.4%	• Recession	• Housing market crash
19	2008	-20.9%	• Recession • Default rate trending higher	• Financial crisis
20	2009	48.9%		
21	2010	15.6%		• BP oil spill in Gulf of Mexico • GS investigation
22	2011	6.2%		• Sovereign debt crisis
23	2012	13.4%		
24	2013	6.6%		• Fed tapering • 10Y Treasury rates rise 1.4%

Source: Citi Research

1. And We May Not be Particularly Vulnerable to Unknowns

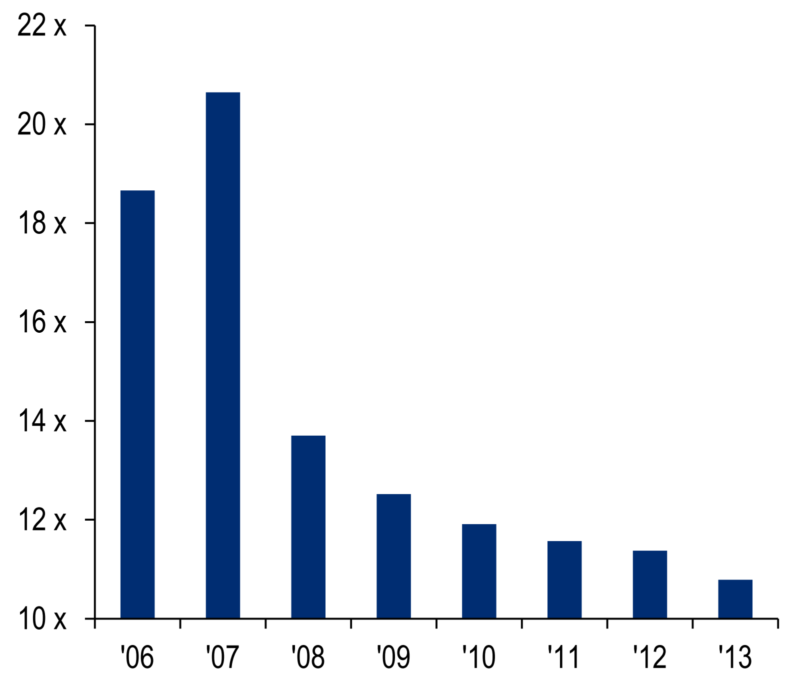
The current market environment may not be as vulnerable as you might think. For example, by a number of metrics investors' use of leverage is still subdued.

Change in corporates held by various investor types (as a % of the market)



Source: Citi Research, Federal Reserve Board
Note: Change from Q4 '08 to Q4 '13

Bank leverage has tumbled since '07

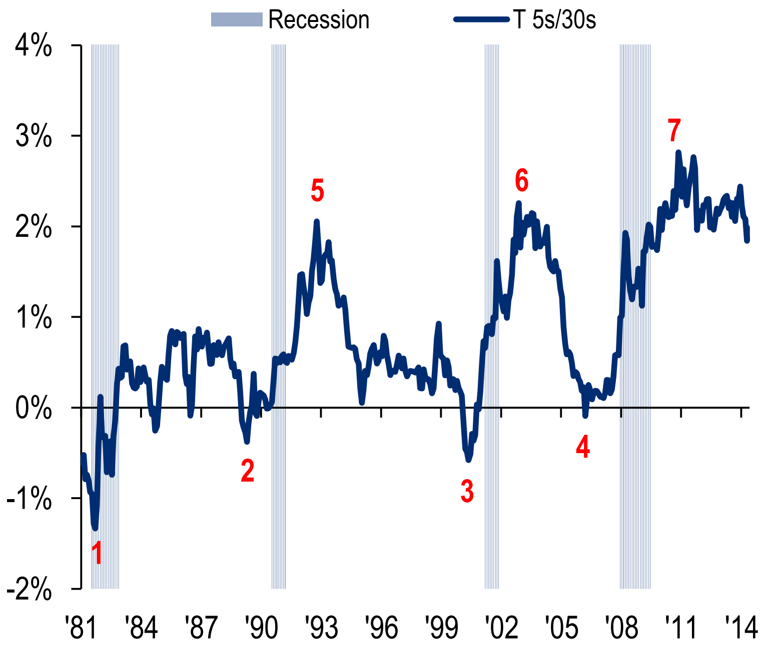


Source: Citi Research
Note: Average of C, BAC, JPM, MS, GS assets over equity ratios

1. And We May Not be Particularly Vulnerable to Unknowns

Using history as a guide, the still steep Treasury curve currently does not indicate a sustained risk-off environment. We acknowledge that due to QE history may be less of a guide than usual, though.

Historically flat curves tend to imply weakness, steeper curves the opposite



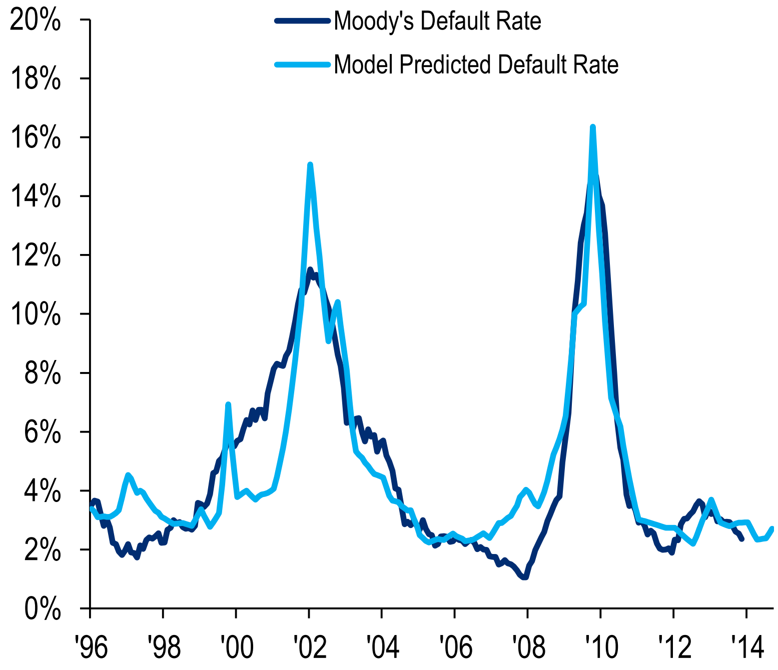
	Period		S&P 500 Levels & Returns		
	From	To	Beginning	End	Return
PERIODS FOLLOWING FLAT TREASURY 5S/30S CURVE					
①	Dec-81	Aug-82	126.4	107.1	-15%
②	Jun-90	Nov-90	361.2	304.0	-16%
③	Sep-00	Oct-02	1517.7	815.3	-46%
④	Nov-07	Mar-09	1549.4	735.1	-53%
PERIODS FOLLOWING STEEP TREASURY 5S/30S CURVE					
⑤	Oct-92	Oct-93	417.8	458.9	+10%
⑥	Nov-02	Nov-03	885.8	1050.7	+19%
⑦	Nov-10	Nov-11	1183.3	1253.3	+6%

Source: Citi Research, Bloomberg
Note: As of April 17, 2014

2. Little Default Risk Near-Term

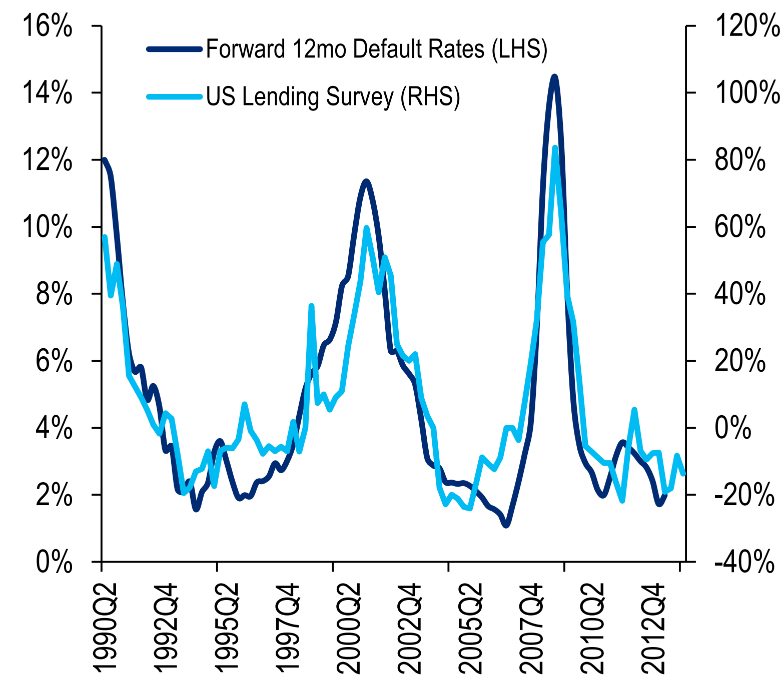
We, like the rest of the world, expect default rates to remain muted in the period ahead.

Modeled vs. actual default rates



Source: Citi Research, Moody's

US lending survey vs. forward 12M default rate

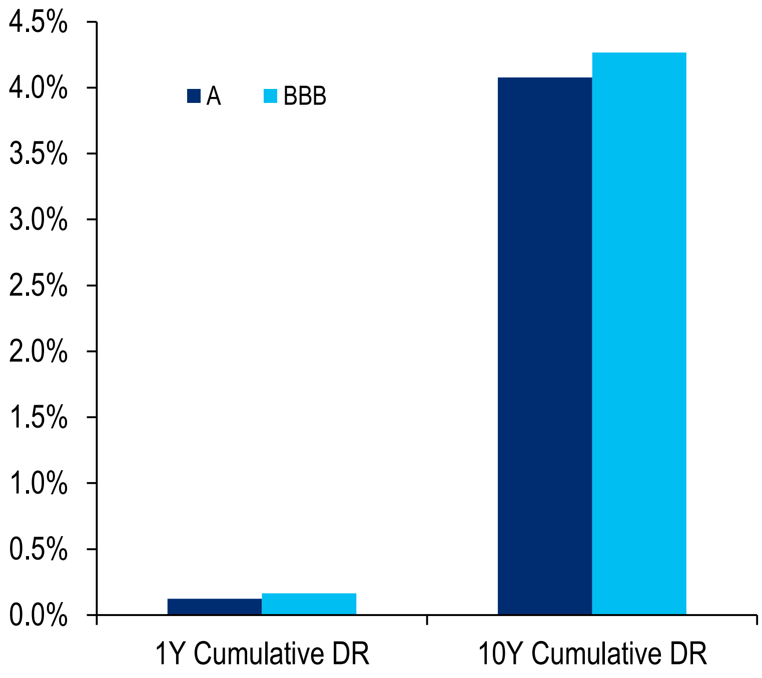


Sources: Citi Research, Issuer based default rate from Moody's, US Lending Survey shows results of "Net % of Domestic Respondents Tightening Standards for C&I Loans". Please refer to *"Will the (Credit) Cycle Be Unbroken?"* dated May 28th, 2014 for more detail.

2. But Complacency Reigns Supreme

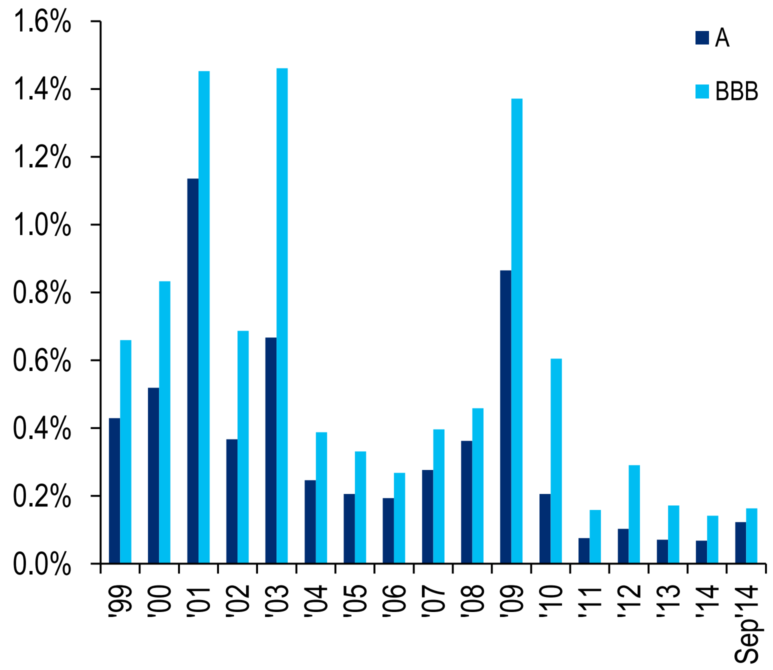
The typical single-A issuer has a one-year implied default rate of 12 bp and the typical triple-B 16 bp. Not much of a difference in a period of rising leverage.

Market implied cumulative default rate in HG, 1Y vs. 10Y



Source: Citi Research
Note: As of September 2, 2014

Historical market implied 1Y cumulative default rates, A vs. BBB

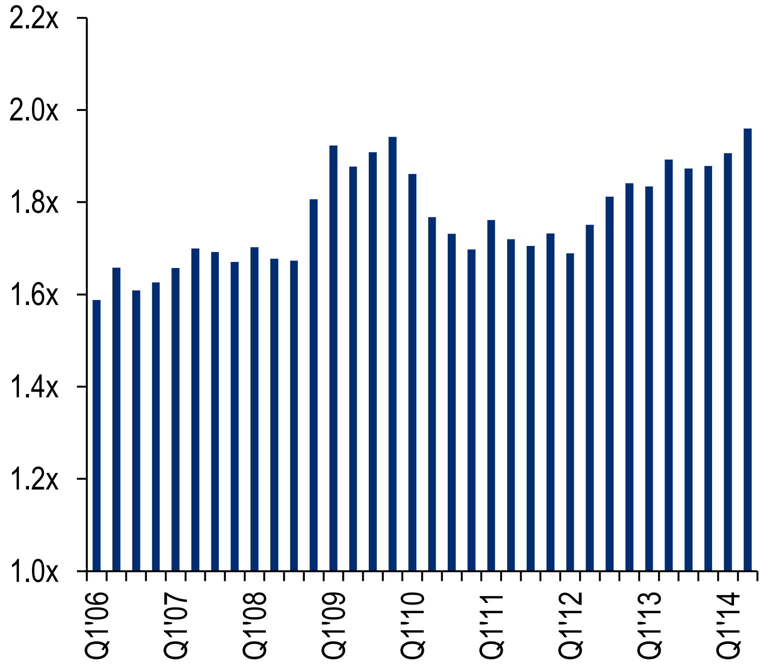


Source: Citi Research
Note: As of September 2, 2014 for current. All others are year-beginning; based on median

2. How is Fundamental Default Risk Evolving?

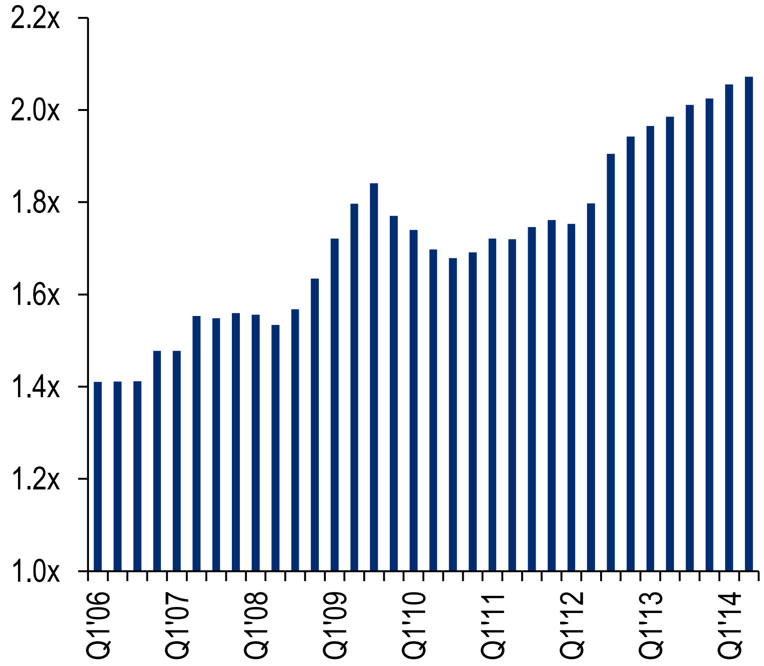
We calculated leverage for two baskets of names — the overall IG universe updated quarterly since ’06, and for a basket comprised of credits that held an IG rating at any time since ‘06 (to capture falling angels). Either way, it doesn’t look good.

Median leverage ratio (total) for HG industrial corporates



Source: Citi Research, Bloomberg
Note: Median of total debt over LTM EBITDA at issuer level

Median leverage ratio (total) for industrial corporates that are or have been HG since ’06

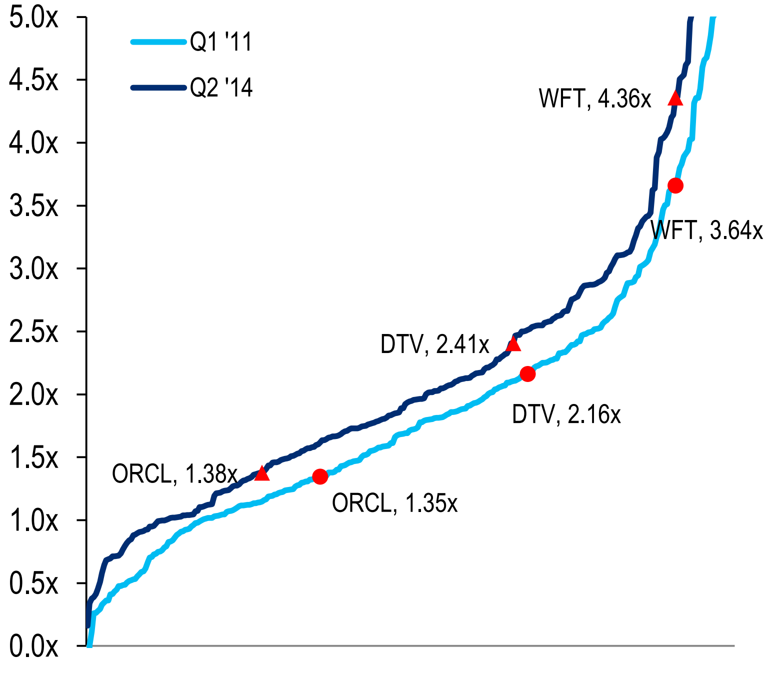


Source: Citi Research, Bloomberg
Note: Median of total debt over LTM EBITDA at issuer level

2. Who is Levering Up?

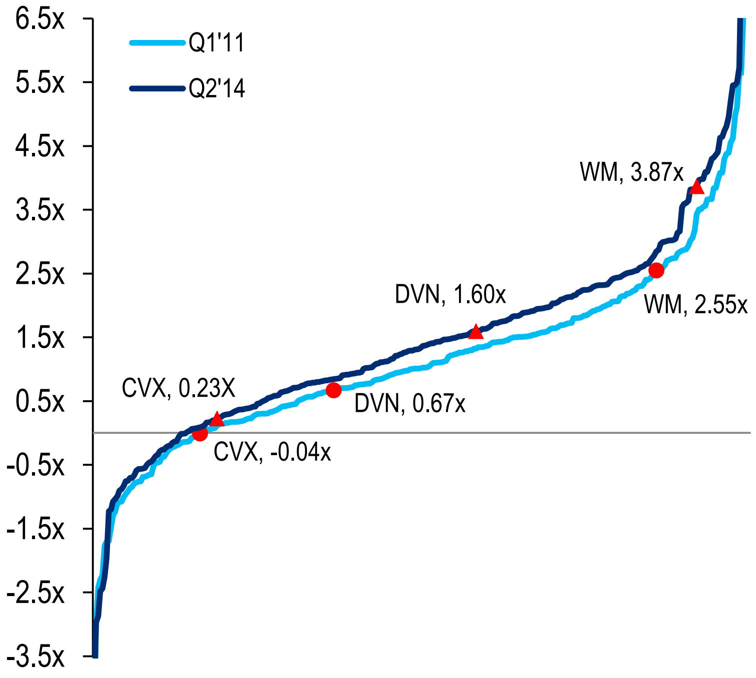
Pretty much everybody. We calculate leverage for the IG universe today and three years ago (leverage ratio on the Y axis, names on the X axis and ordered from most to least levered). **In gross and net terms there has basically been a parallel shift upward.**

Total leverage ratio distribution for HG corporates in 2011 v. 2014 (ex-financials)



Source: Citi Research, Bloomberg
Note: Total debt over LTM EBITDA at the issuer level; as of 2Q '14; based on 312 issuers, ex-util

Net leverage ratio distribution for HG corporates in 2011 v. 2014 (ex-financials)

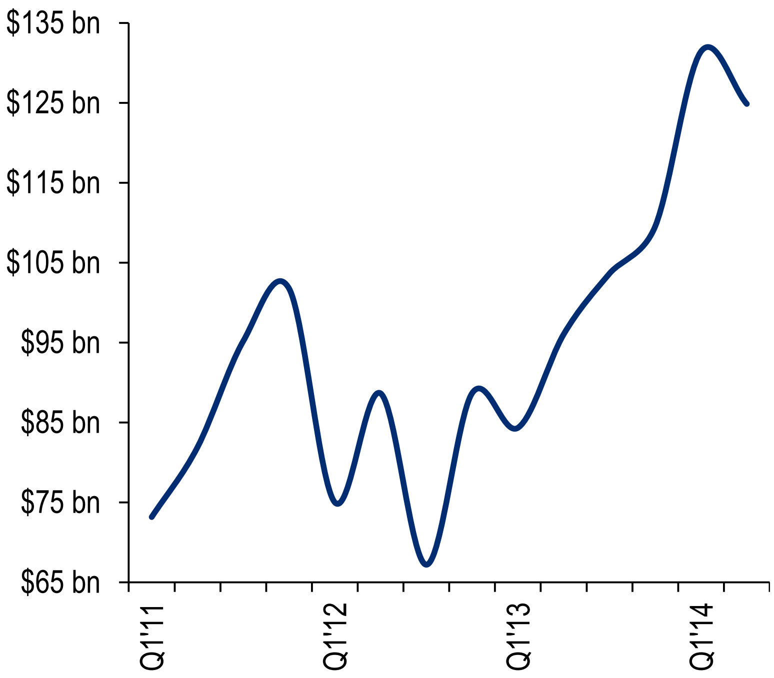


Source: Citi Research, Bloomberg
Note: Net debt over LTM EBITDA at the issuer level; as of 2Q '14; based 310 issuers, ex-util

2. "Sneaky" Leverage on the Rise as Well

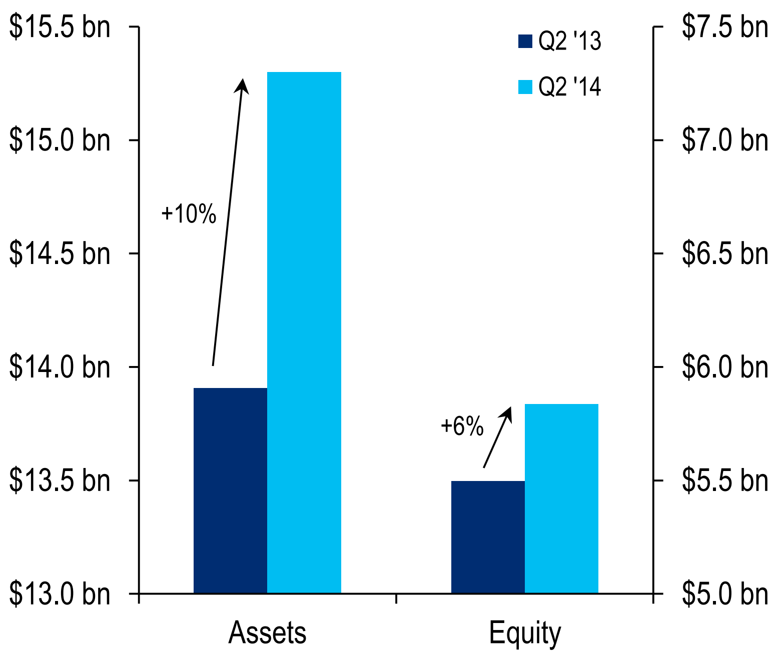
One way to lever up is buyback shares, an activity that has been on the rise. Another way is grow assets faster than equity, and activity that has also ticked up recently.

Total share buybacks for HG corporates (ex-financials



Source: Citi Research, Bloomberg
Note: Average $ amount of shares bought back v. average total debt at the issuer level; as of 2Q '14; based on 603 issuers, ex-util

Asset growth (median) v. equity growth (median) for HG corporates (ex-financials)



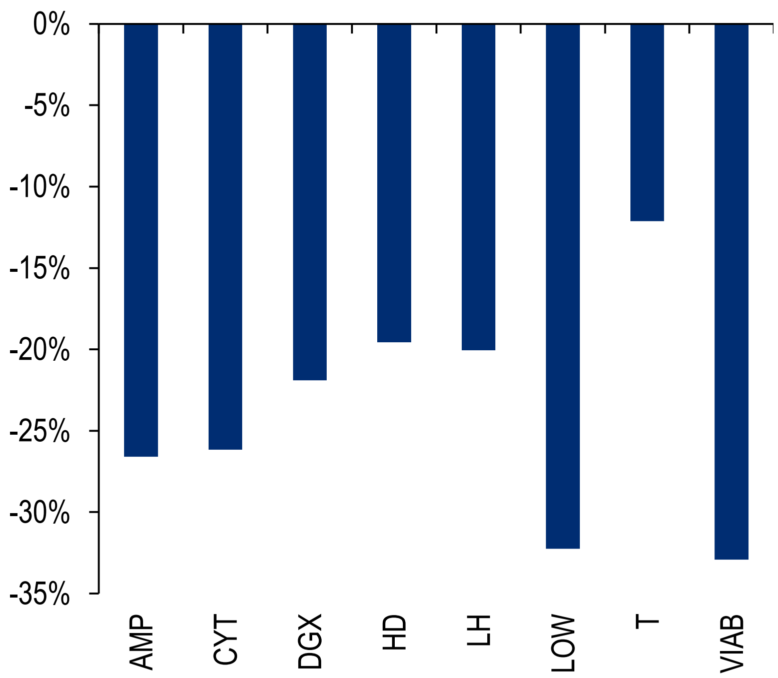
Source: Citi Research, Bloomberg
Note: Average of total assets v. average balance sheet equity at the issuer level; as of 2Q '14; based on 603 issuers, ex-util

Side Note: Why Do Companies Buy Back Rich Shares?

In theory and all else equal, a company that buys its own shares will boost its EPS, but unfortunately its default risk is likely to rise as well. This may not be good for share price. But in practice this is not necessarily true, since factors such as QE can drive default risk as much as company-specific actions.

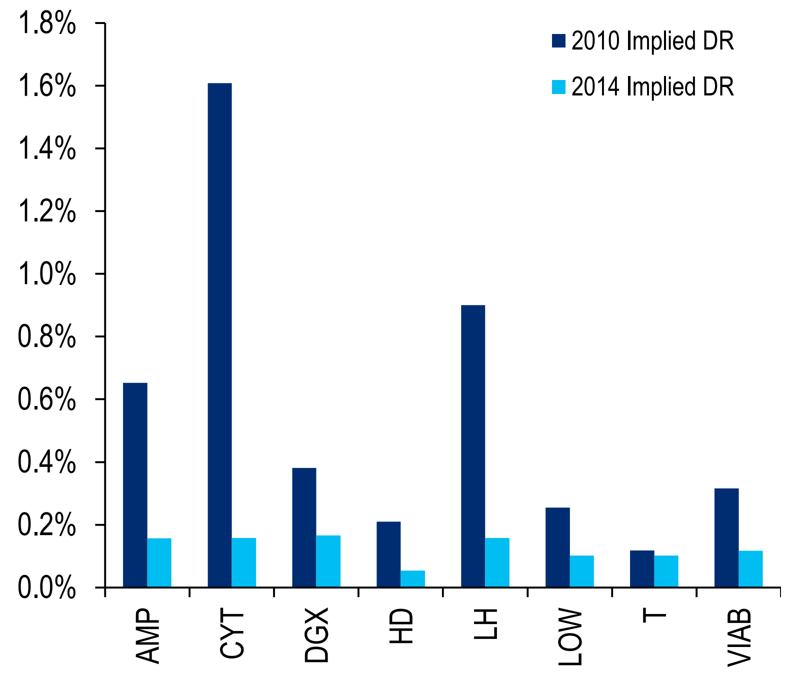
THEORY: P/E Multiple * Chance of Survival * EPS = Share Price

Change in number of shares outstanding from ’10 to ’14 as percent of shares outstanding



Source: Citi Research, Bloomberg
Note: From 2010 beginning to August 18, 2014

Implied default rate for the same issuers is down, not up, despite buybacks

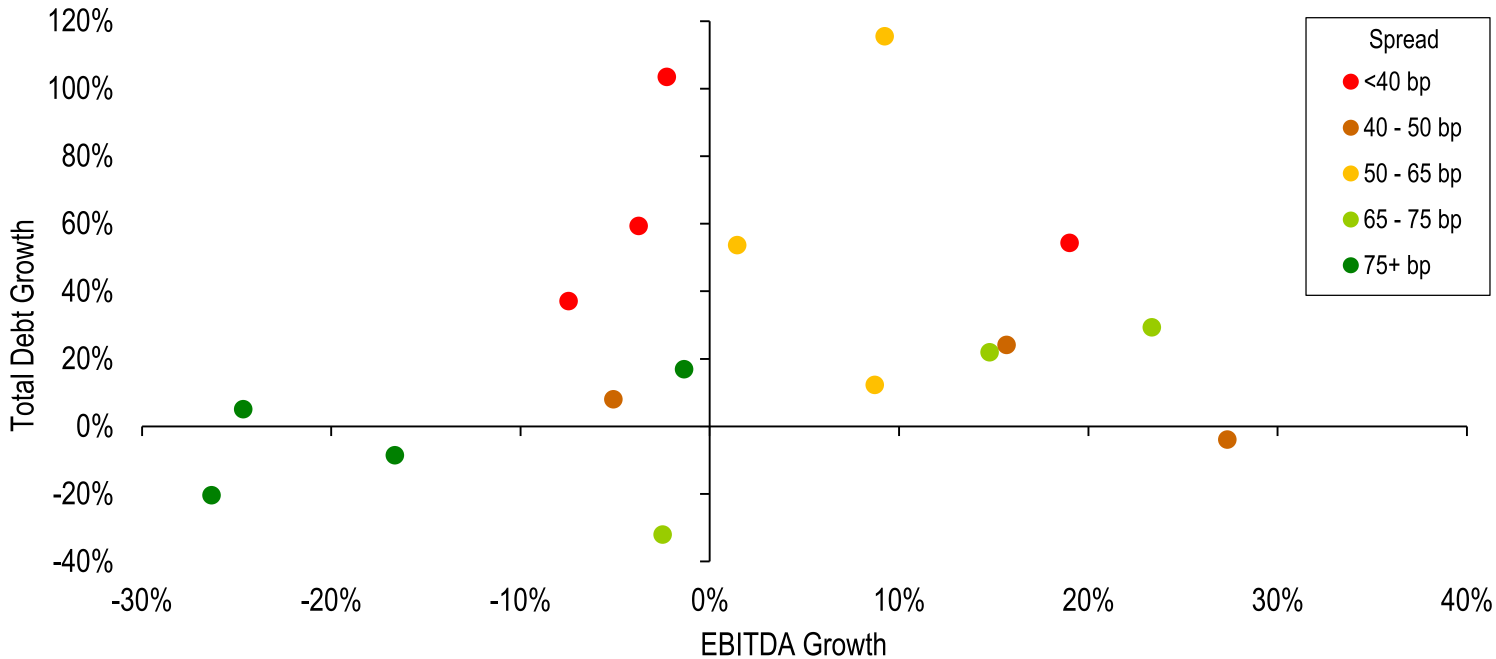


Source: Citi Research
Note: implied default rates are as of 2010 beginning and August 18, 2014

2. Trade Idea: Find ↑ EBITDA + ↓ Debt + High Spread

In the current environment the relationship between fundamentals and valuations is not particularly close. Opportunities to add (avoid) names with strong profit growth, modest debt growth and relative high spreads are available (e.g., avoid CVX).

EBITDA versus total debt growth for basket of *DOUBLE-A OR BETTER* names, Q1' 11 to Q2 '14

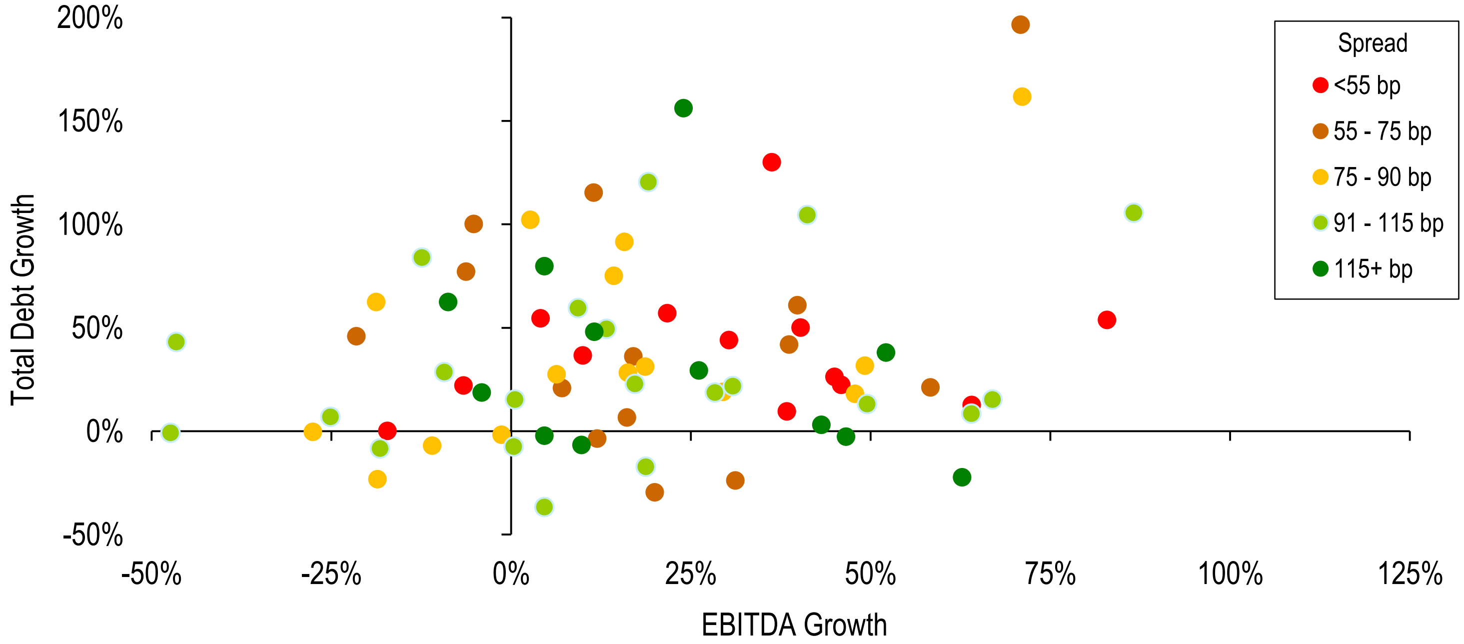


Source: Citi Research, Bloomberg
Note: EBITDA growth from 2011 to 2014 v. total debt growth over same period at the issuer level; as of 2Q '14; based on 21 issuers, ex-util

2. Trade Idea: Find ↑ EBITDA + ↓ Debt + High Spread

In the current environment the relationship between fundamentals and valuations is not particularly close. Opportunities to add names with strong profit growth, modest debt growth and relative high spreads are available.

EBITDA versus total debt growth for basket of *SINGLE-A* names, Q1' 11 to Q2 '14

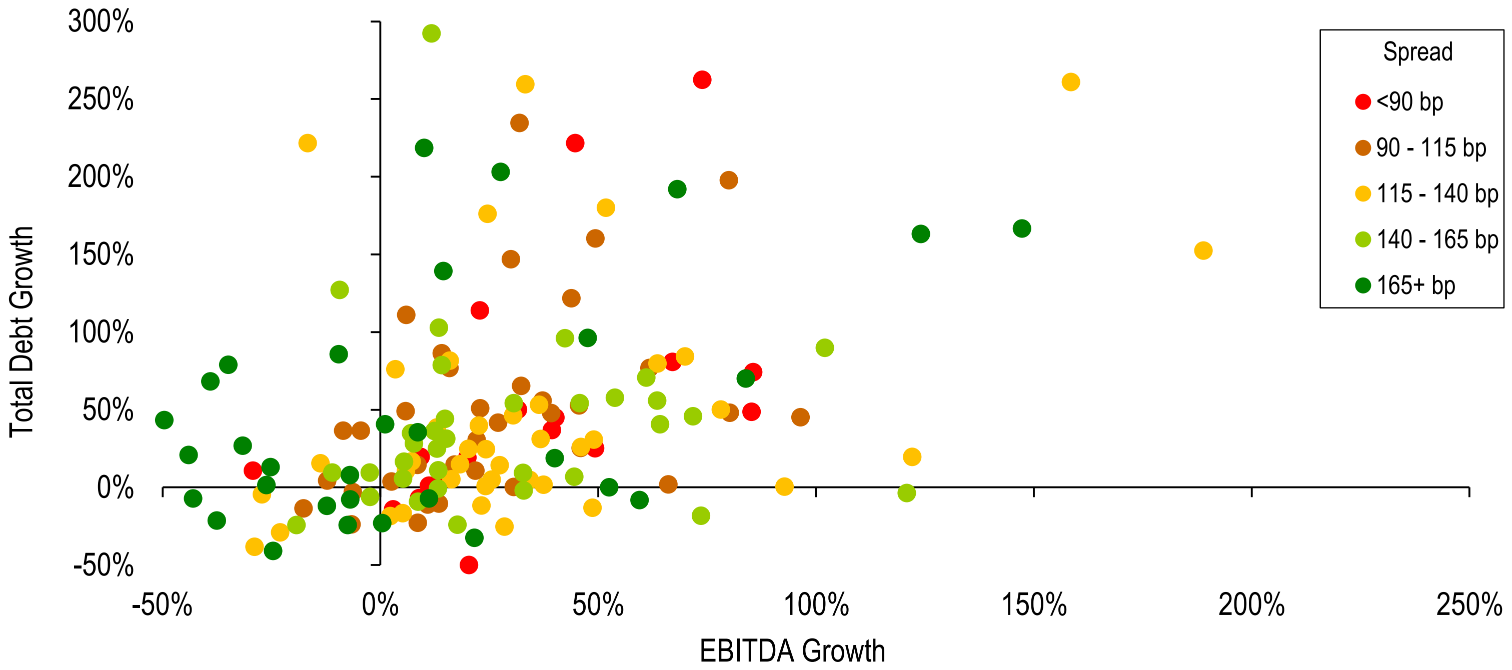


Source: Citi Research, Bloomberg
Note: EBITDA growth from 2011 to 2014 v. total debt growth over same period at the issuer level; as of 2Q '14; based on 96 issuers, ex-util

2. Trade Idea: Find ↑ EBITDA + ↓ Debt + High Spread

In the current environment the relationship between fundamentals and valuations are not particularly close. Opportunities to add names with strong profit growth, modest debt growth and relative high spreads are available.

EBITDA versus total debt growth for basket of *TRIPLE-B* names, Q1' 11 to Q2 '14

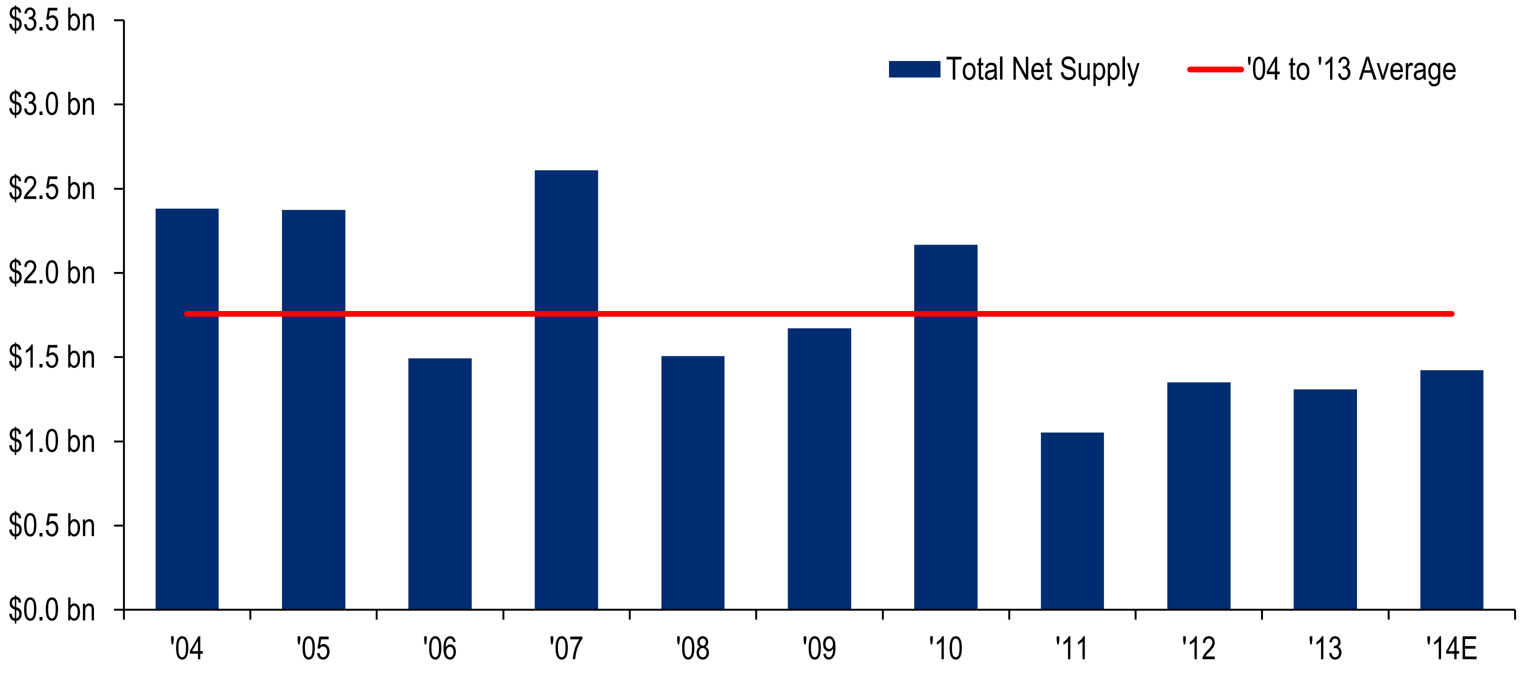


Source: Citi Research, Bloomberg
Note: EBITDA growth from 2011 to 2014 v. total debt growth over same period at the issuer level; as of 2Q '14; based on 192 issuers, ex-util

3. Manageable Supply in a Post-QE World?

Net supply in the overall bond market has been well below the longer-term average in recent years ($1.4 tn vs. $1.8 tn), a trend we expect to remain in place in the near-term.

Net U.S. fixed income supply over the past decade

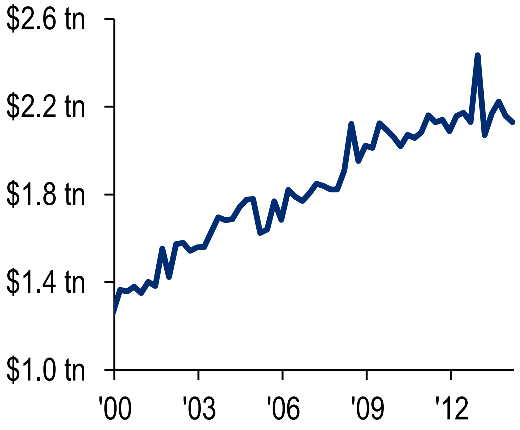


Source: Citi Research, SIFMA

3. Ample Demand in a Post-QE World?

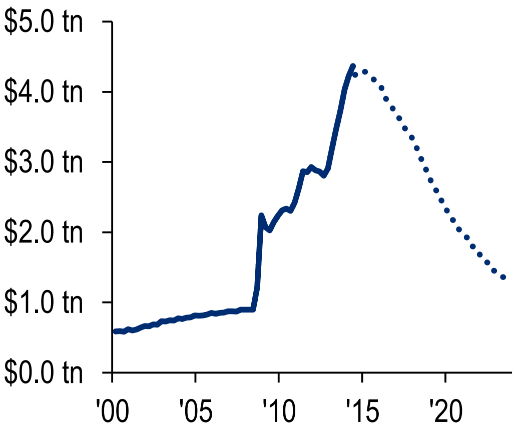
The end of QE isn't a good thing for credit, but let's put it into perspective; savings is running at a $2 tn pace, and the Fed's balance sheet isn't likely to normalize for many years. Result is that the gross amount of dollars looking for a home may continue to be quite elevated.

Gross savings less net capital transfers paid



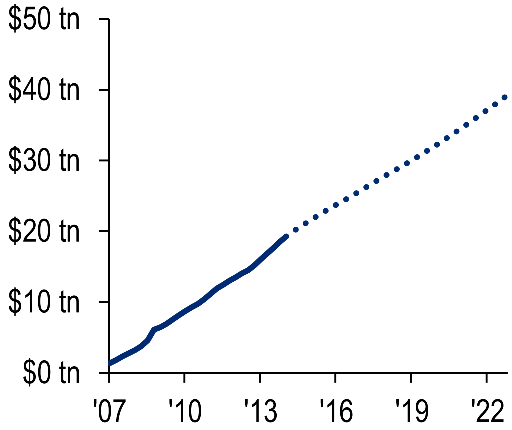
Source: Citi Research, Federal Reserve

Fed assets



Source: Citi Research, Federal Reserve

Cumulative savings + Fed assets

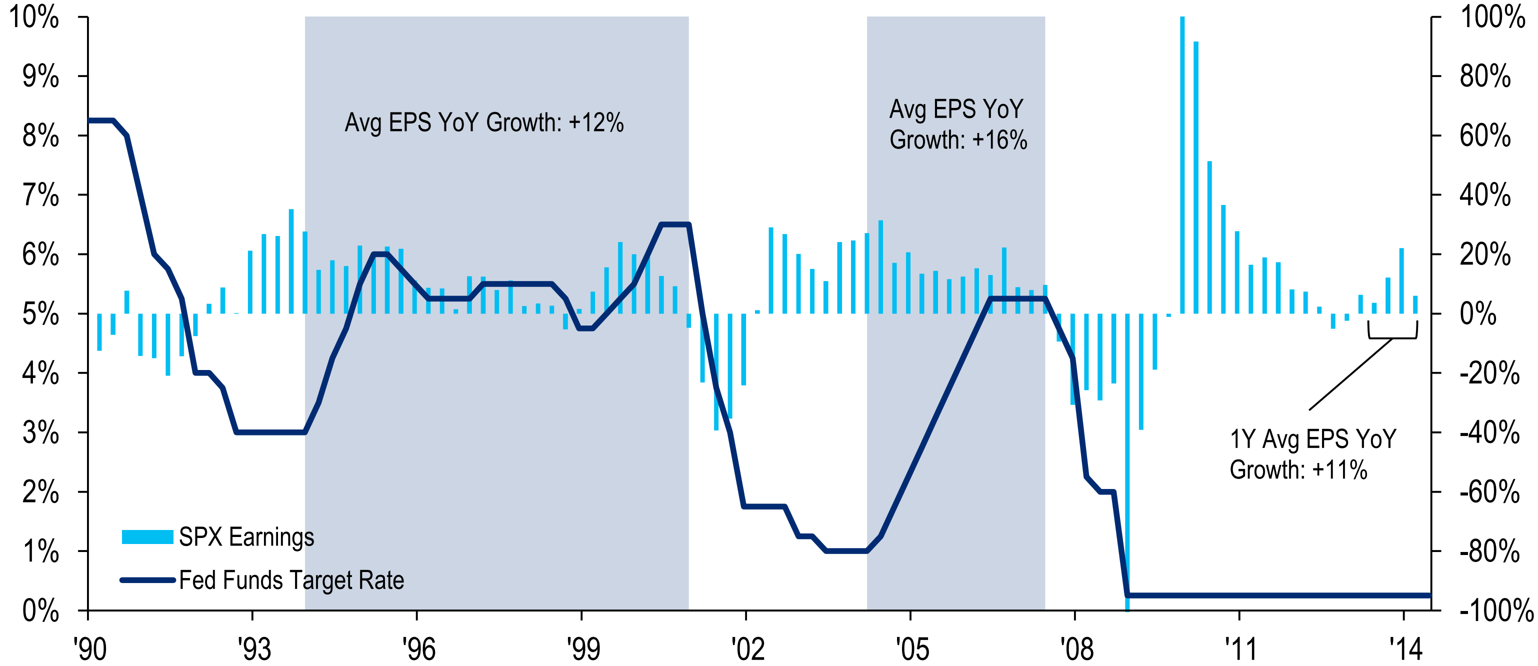


Source: Citi Research, Federal Reserve
Note: Expected gross savings calculated based on the linear equation on historical data since '94

3. Solid Growth in a Post-QE World

In the past two tightening cycles earnings growth averaged 12% and 16%, respectively. (Over the past year growth has averaged 11%, which is not great, but still might this be more of an equity problem?)

Corporate profits vs. Fed Funds target rate

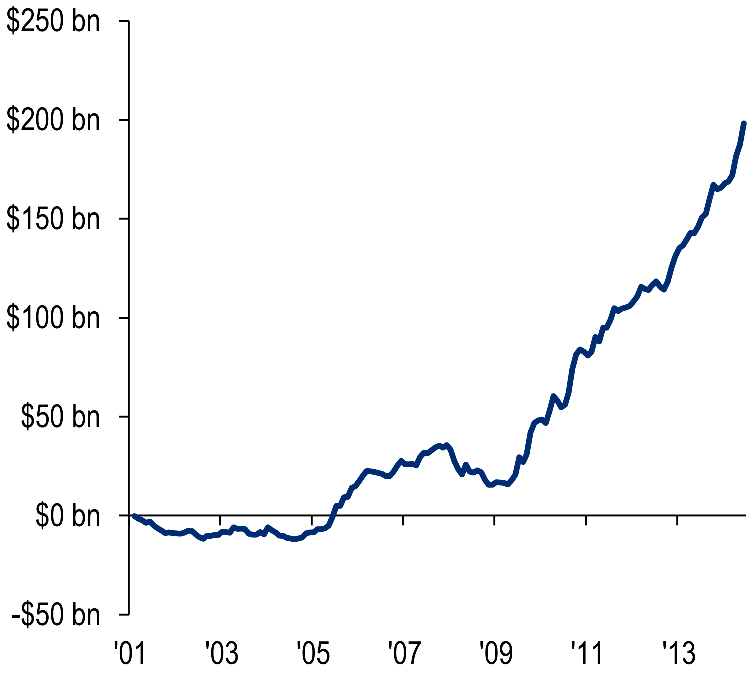


Source: Citi Research, Bloomberg, Federal Reserve

Side Note: If There is a Bubble, Where Might it Be?

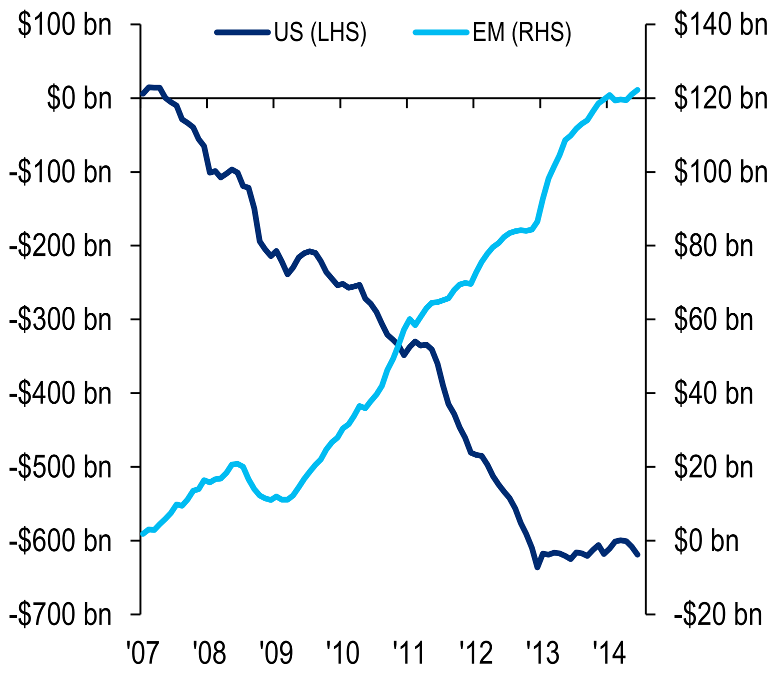
In credit we have seen two way capital flows in the wake of QE; for example, corporate treasuries have increased HG exposure at the expense of Treasuries, but HG has lost capital to HY as traditional HG investors added HY risk. In essence, non-traditional capital entered, traditional capital left. Perhaps market segments that haven't experienced two-way flows may be most vulnerable.

Cumulative net purchases of Latam securities by US registered mutual funds



Source: Citi Research, TIC
Note: As of Jun '14

Cumulative equity mutual fund net flows in EM and US since '07



Source: Citi Research, ICI
Note: As of Jun '14

4. Our Take on Rates — Where They Are Headed

Below we present a summary of our economic team's forecasts. They are looking for a 10-year of 2.8% by year-end.

Economic forecasts: the U.S. outlook at a glance

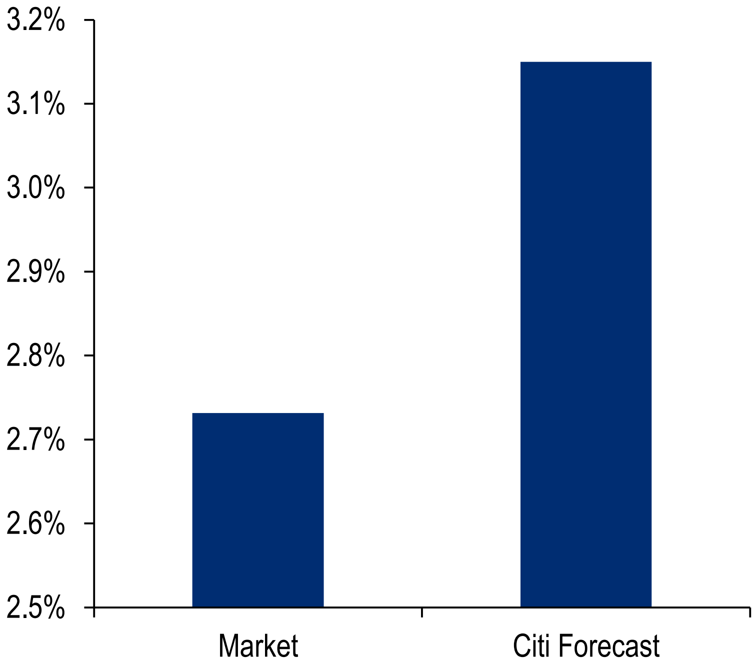
	2014				2015	
	Q1 '14	Q2 '14	Q3 '14F	Q4 '14F	Q1 '15F	Q2 '15F
GDP (Q/Q % Change, SAAR)	-2.1	4.0	3.2	3.2	3.2	3.0
Personal Consumption	1.2	2.5	2.7	2.9	3.1	3.1
Business Investment	1.6	5.5	6.7	6.6	6.8	6.8
Housing Investment	-5.3	7.5	7.3	9.0	7.5	6.9
Government	-0.8	1.6	0.1	-0.4	0.3	0.3
Exports	-9.2	9.5	3.8	3.7	6.1	6.0
Imports	2.2	11.7	2.0	2.1	3.6	5.0
CPI (Y/Y %)	1.4	2.1	2.1	2.3	2.4	2.1
Core CPI (Y/Y %)	1.6	1.9	2.0	2.1	2.2	2.1
Industrial Production (Y/Y % Change)	3.3	4.2	4.2	3.8	3.7	3.1
Unemployment Rate (%)	6.7	6.2	6.1	5.9	5.9	5.7
10Y Treasury (%, End of Period)	2.72	2.53	2.60	2.80	2.95	3.10
Fed Funds (%, End of Period)	0.25	0.25	0.25	0.25	0.25	0.25

Source: Citi Research, Bureau of Economic Analysis, Bureau of Labor Statistics, Office of Management and Budget, Federal Reserve Board, First Call
Note: As of August 20, 2014

4. Our Take on Rates — Where They Are Headed

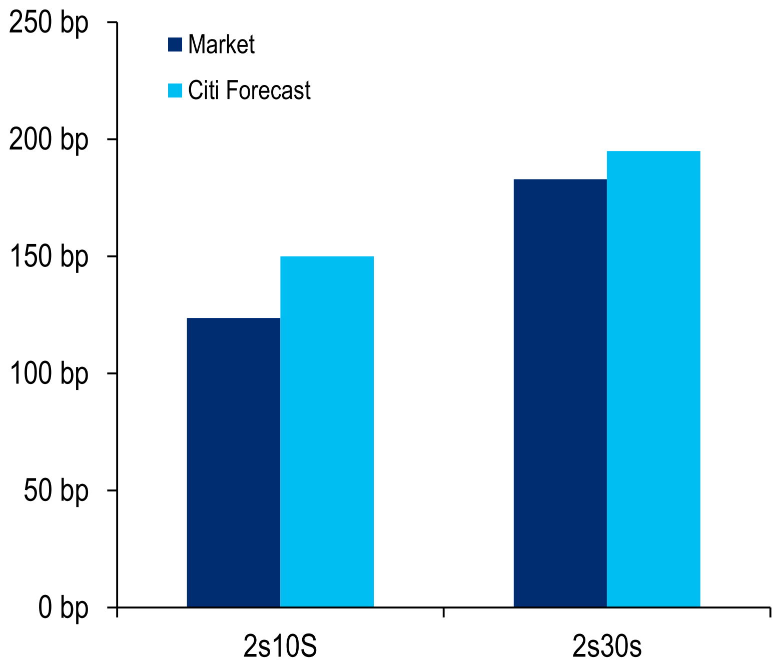
Our economists expect the normalization of monetary policy to begin in Sep ’15 – later than consensus – and normalization to progress at a slower than normal pace. That said, we expect the 10Y yield to be higher than what the forwards are pricing in, and the curve steeper.

We expect 10Y yields to rise to 3.15% by Q3 15, which is higher than what the market is pricing in



Source: Citi Research

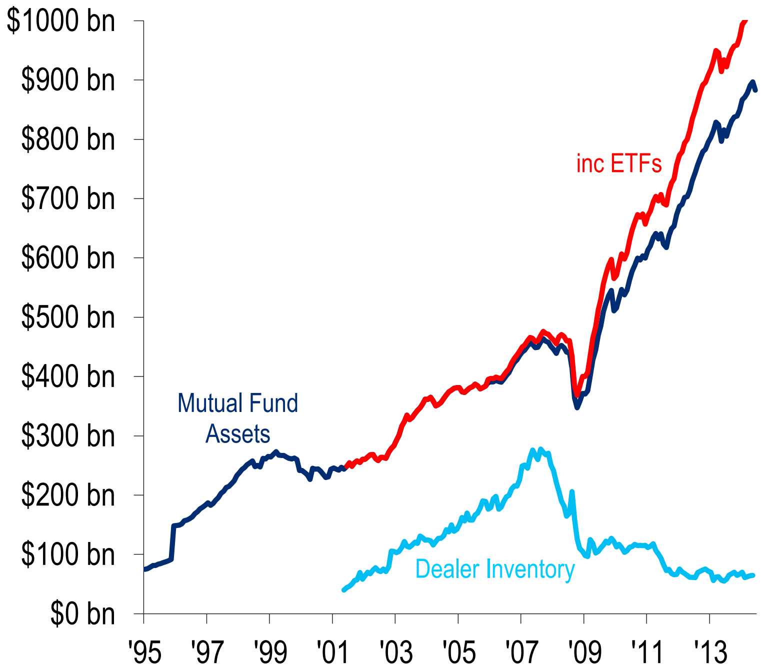
Forecasted Treasury slopes in Q3 2015, market vs. Citi



4. Potential Problem — No Easy Way to Transfer Risk

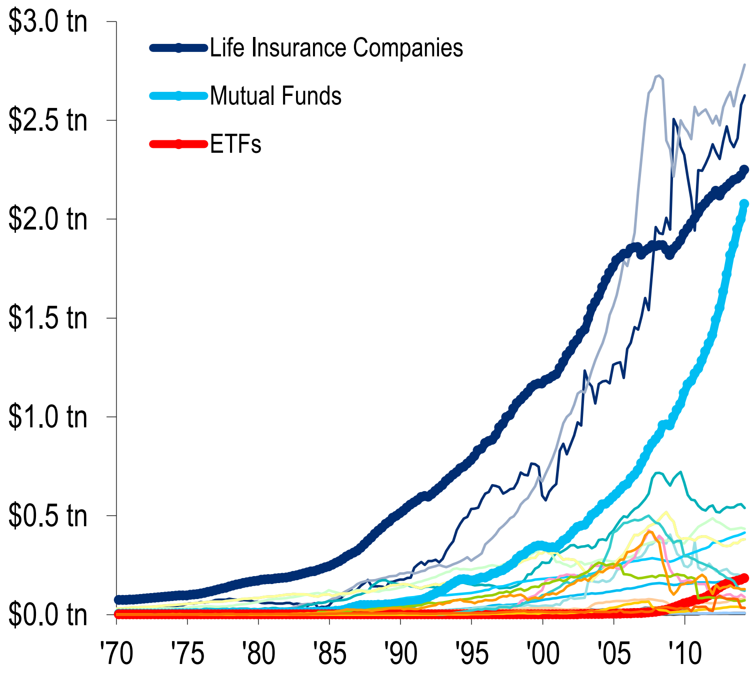
There haven't been all that many large sources of demand in recent years. If there is selling pressure, who will buy? Dealers? Prop desks? Credit hedge funds?

MF assets vs. dealer inventory



Source: Citi Research, Federal Reserve, ICI
Note: As of July 2014

Corporate bond holdings by investor type

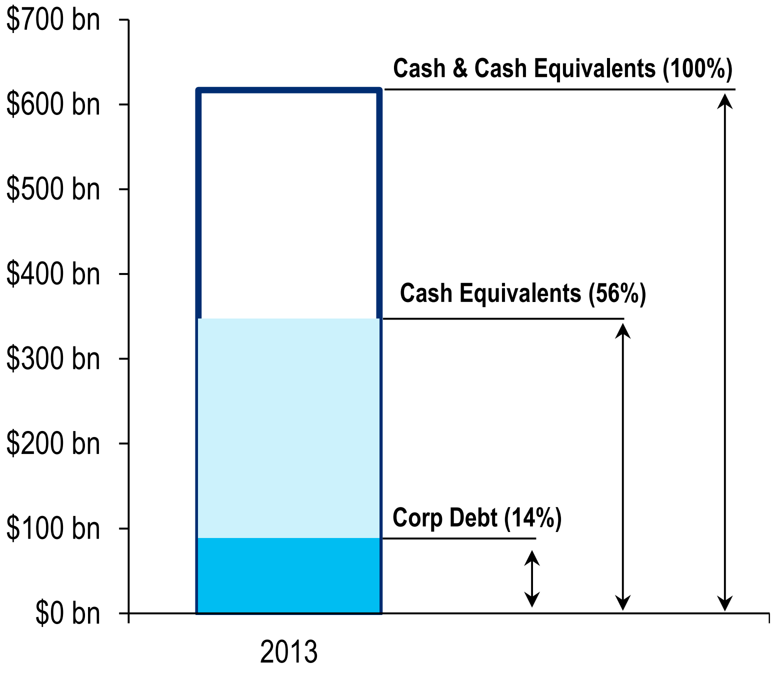


Source: Citi Research, Federal Reserve
Note: As of Q1 2014

4. Potential Problem — There May Be a Lot of Tourist Money

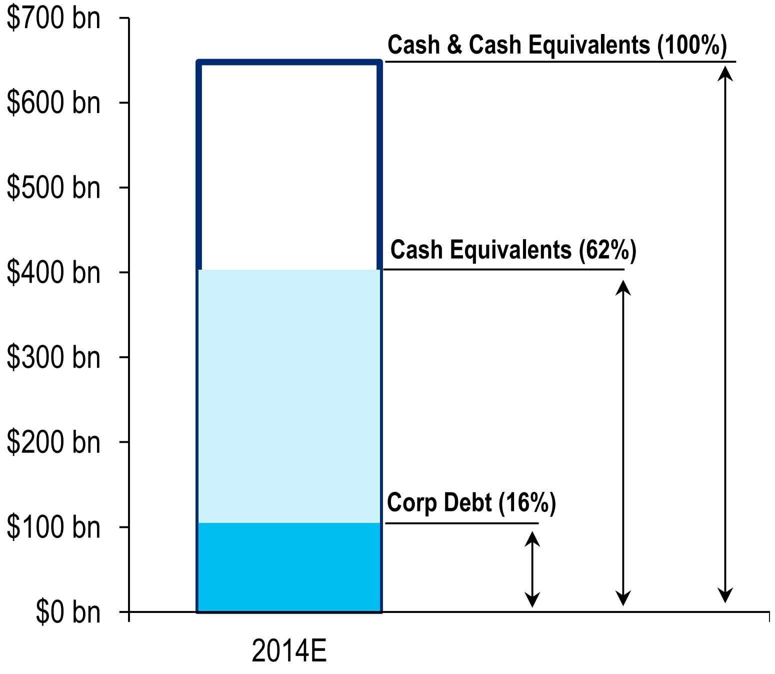
In a low default, low vol world investors have been buying corporates as a cash substitute. What if this money goes back in cash or Treasuries as yield rise?

In 2013, 56% of cash at companies was held in the form of "cash equivalents." Of this corporates made up a good portion



Source: Citi Research, Bloomberg
Note: 2013 year-end figures estimated based on '12 to Q3 '13 changes; Based on sum of 20 companies ; Sample represents 65% of the non-fin SPX ST investments; Cash equivalents represent short-term investments only

Now a bigger proportion is held in cash equivalents, and more equivalents are corporate bonds



Source: Citi Research, Bloomberg
Note: Based on sum of 20 companies ; Sample represents 65% of the non-fin SPX ST investments; Cash equivalents represent short-term investments only

4. On the Bright Side…

We looked at how the markets typically perform before and after the Fed hikes rates. This time may be different, but historically these periods haven't been a problem.

What happens to the markets 6 months *before* Fed fund target rate hikes?

Initial Hike	High-Grade	High-Yield	SPX
Aug '80	-12 bp	—	+14.5%
May '83	-24 bp	—	+13.2%
Dec '86	-40 bp	—	-1.5%
Feb '94	-18 bp	-73 bp	+2.9%
Jun '04	+3 bp	-16 bp	-2.1%
Average	**-18 bp**	**-44 bp**	**+5.4%**

Source: Citi Research, Bloomberg

What happens to the markets 6 months *after* Fed fund target rate hikes?

Initial Hike	High-Grade	High-Yield	SPX
Aug '80	-21 bp	—	+4.8%
May '83	-23 bp	—	-1.1%
Dec '86	-35 bp	—	+14.0%
Feb '94	-9 bp	+13 bp	-6.4%
Jun '04	-6 bp	-20 bp	-1.5%
Average	**-18 bp**	**-3 bp**	**+2.0%**

Source: Citi Research, Bloomberg

4. On the Bright Side…

We looked at how the markets typically perform when Treasury rates rise. This time may be different, but historically these periods haven’t been a problem.

Relationship between the Treasury sell-offs and corporate market returns

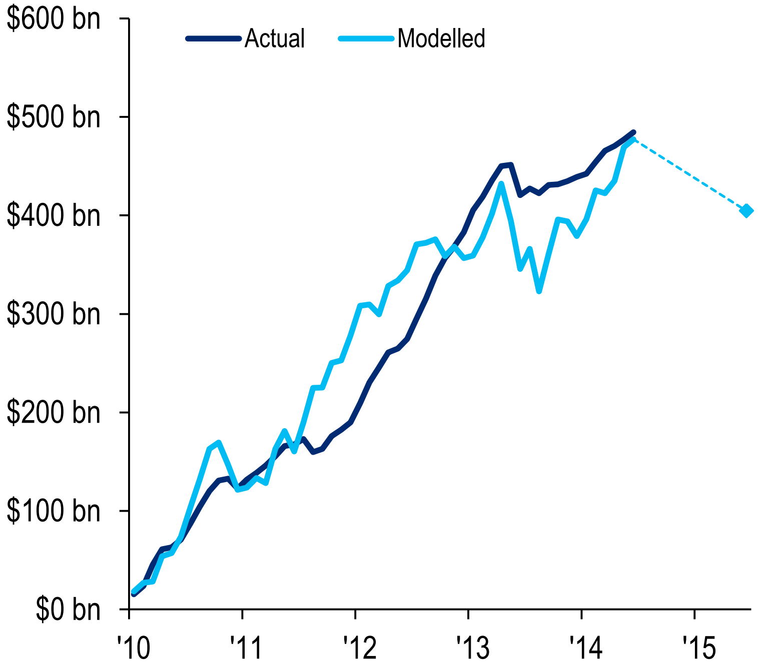
From	To	10Y Treasury Yield	High-Grade Spread	High-Yield Spread	SPX Price
Mar '88	Mar '89	+1.15%	-38 bp	—	+7.9%
Aug '89	May '90	+1.22%	-20 bp	+132 bp	-4.4%
Oct '93	Dec '94	+2.52%	-39 bp	-66 bp	-1.1%
Feb '96	Sep '96	+1.36%	-13 bp	-94 bp	+2.5%
Oct '98	Feb '00	+2.25%	-20 bp	-122 bp	+37.1%
Nov '01	Apr '02	+1.16%	-31 bp	-227 bp	+8.3%
Jun '03	Jun '04	+1.28%	-32 bp	-228 bp	+16.3%
Jul '05	Jul '06	+1.22%	-7 bp	-43 bp	+6.6%
Jan '09	Jan '10	+1.63%	-380 bp	-962 bp	+23.5%
Sep '10	Apr '11	+1.00%	-39 bp	-207 bp	+26.4%
May ’13	Sep ’13	+1.11%	+5 bp	+41 bp	+2.2%
Median		**+1.22%**	**-31 bp**	**-108 bp**	**+7.9%**

Source: Citi Research, Bloomberg
Note: All periods are month beginnings

4. On the Bright Side…

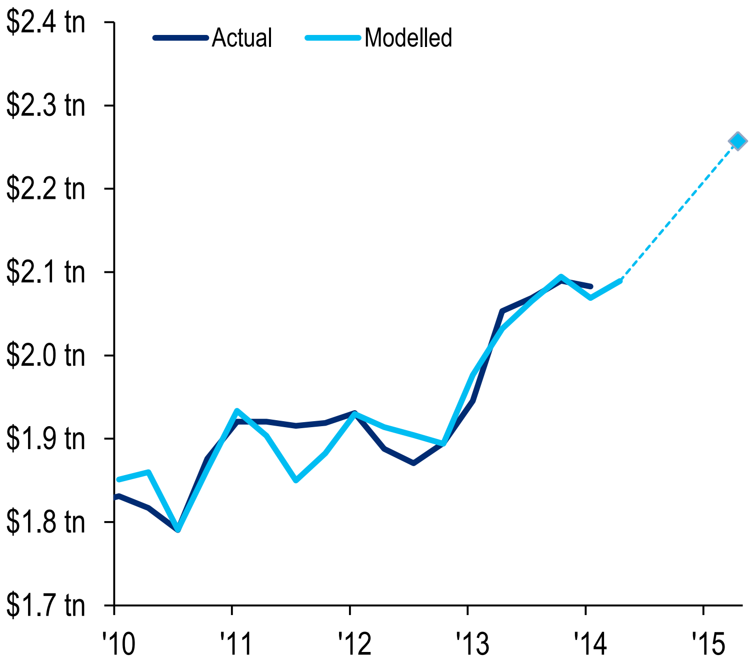
Higher rates are bad for some investors but good for others. Consider demand for mutual funds and life companies. If we assume that a 3.5% 10-yr and a 4.25% 30-yr in mid-2015, we expect an outflow of 5% of AUM, but incremental inflows of 8% from life companies.

Cumulative flows into credit mutual funds since ’09, actual vs. modeled



Source: Citi Research, EPFR, Bloomberg
Note: Regression based on 10Y T yield and SPX; we assume 3.5% 10Y T yield and 2050 SPX for 2Q15 estimate

Actual vs. expected amount of corporate bonds held by insurance companies

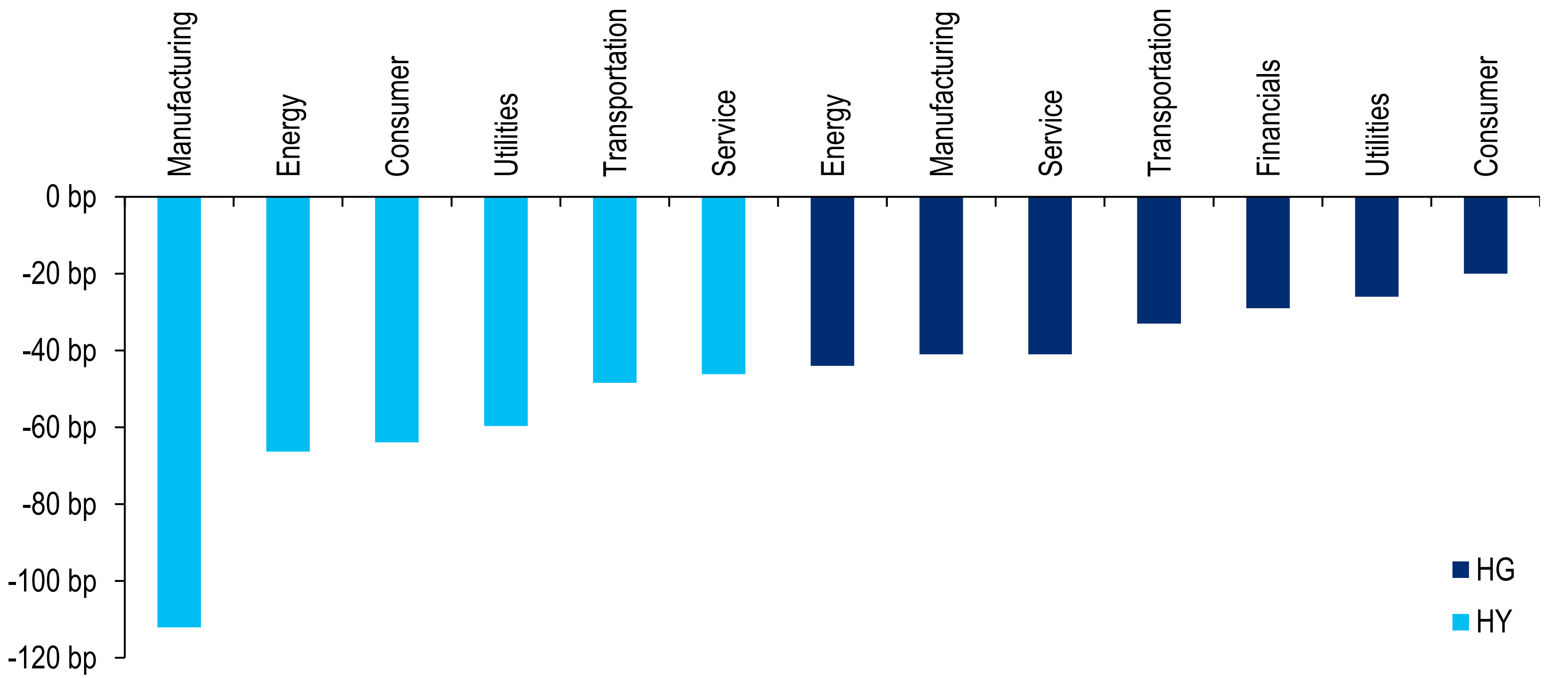


Source: Citi Research, Federal Reserve
Note: Bond positions are price adjusted; based on long-bond yields, crediting rates, and unemployment rates; we assume no spread change and 4.25% 30Y T yield, 2.8 crediting rates, and 6.1% unemployment rate for 2Q15 estimate

4. Trade Idea: What Sectors Do Best When Rates Rise?

We also examined sector performance during rising rate periods since ’80 and find that in median terms all sectors exhibited tightening. We also found that high-yield sectors outperformed the high-grade sectors, and that in both HG and HY the manufacturing and energy sectors did the best.

Typical spread performance by sectors in HG and HY when the 10-year Treasury yield rose by 1% or more over a short period of time



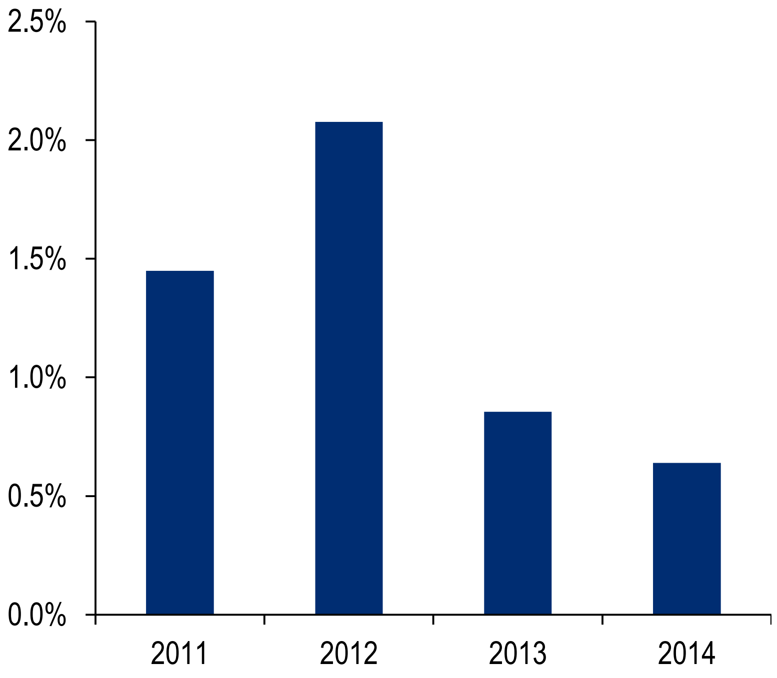
Source: Citi Research, Bloomberg
Note: Based on median of periods presented on previous page

Theory #3: There's No Opportunity in Credit!

1. Where's the Alpha?

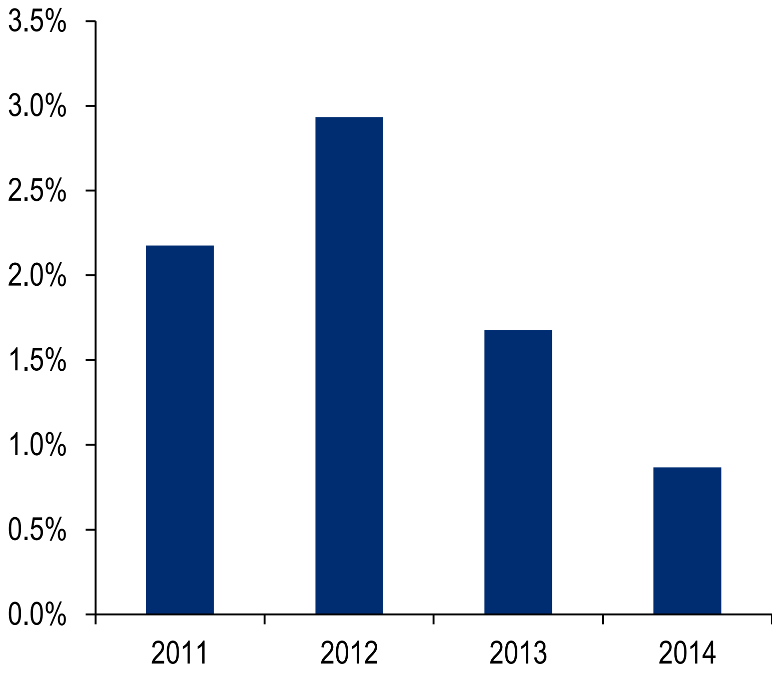
How do current alpha generating opportunities compare to past years? What is available now is MUCH lower than normal.

HG outperformance from optimal rating, curve, sector, market direction, and issuer positioning



Source: Citi Research
Note: No trading costs assumed; YTD returns are annualized; All positions are rebalanced once per year. Outperformance determined by overweighting best performer by 5% and underweighting worst performer by 5%

HY outperformance from optimal rating, curve, sector, market direction, and issuer positioning

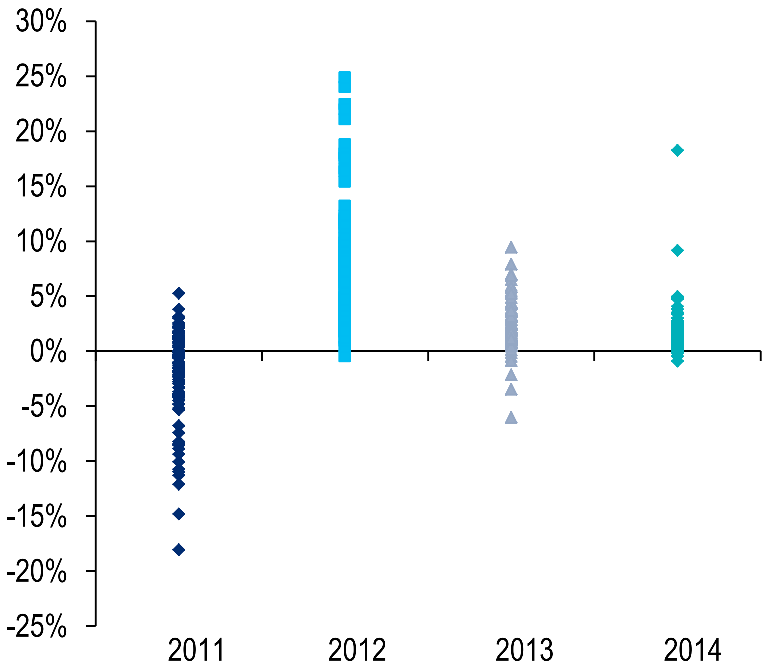


Source: Citi Research
Note: No trading costs assumed; YTD returns are annualized; All positions are rebalanced once per year.

Side Note: Low Correlation, But Not Much Dispersion

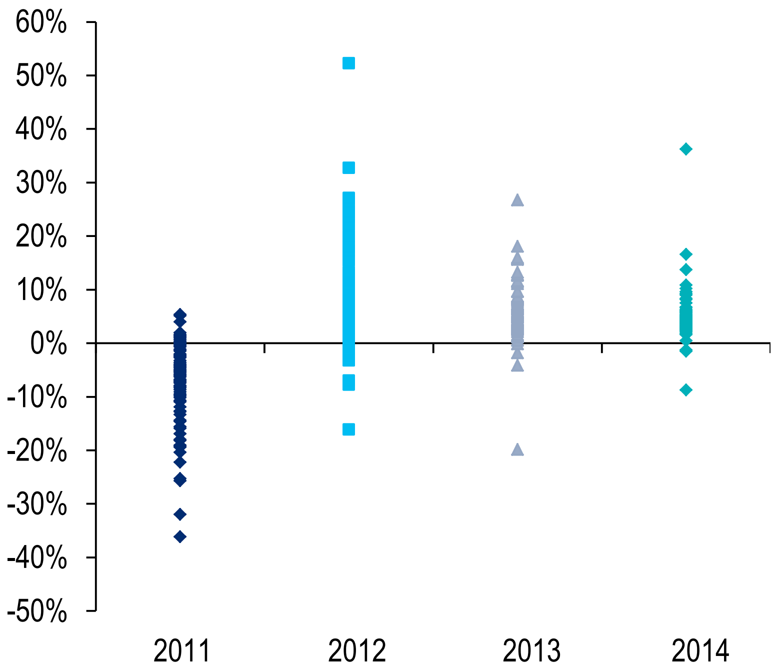
Issuer performance dispersion is much lower now than it has been. There are a few outliers, but by and large issuer performance has been getting increasingly clustered.

Excess returns of 100 benchmark issuers in high-grade



Source: Citi Research
Note: Feb-May performance

Excess returns of 100 benchmark issuers in high-yield

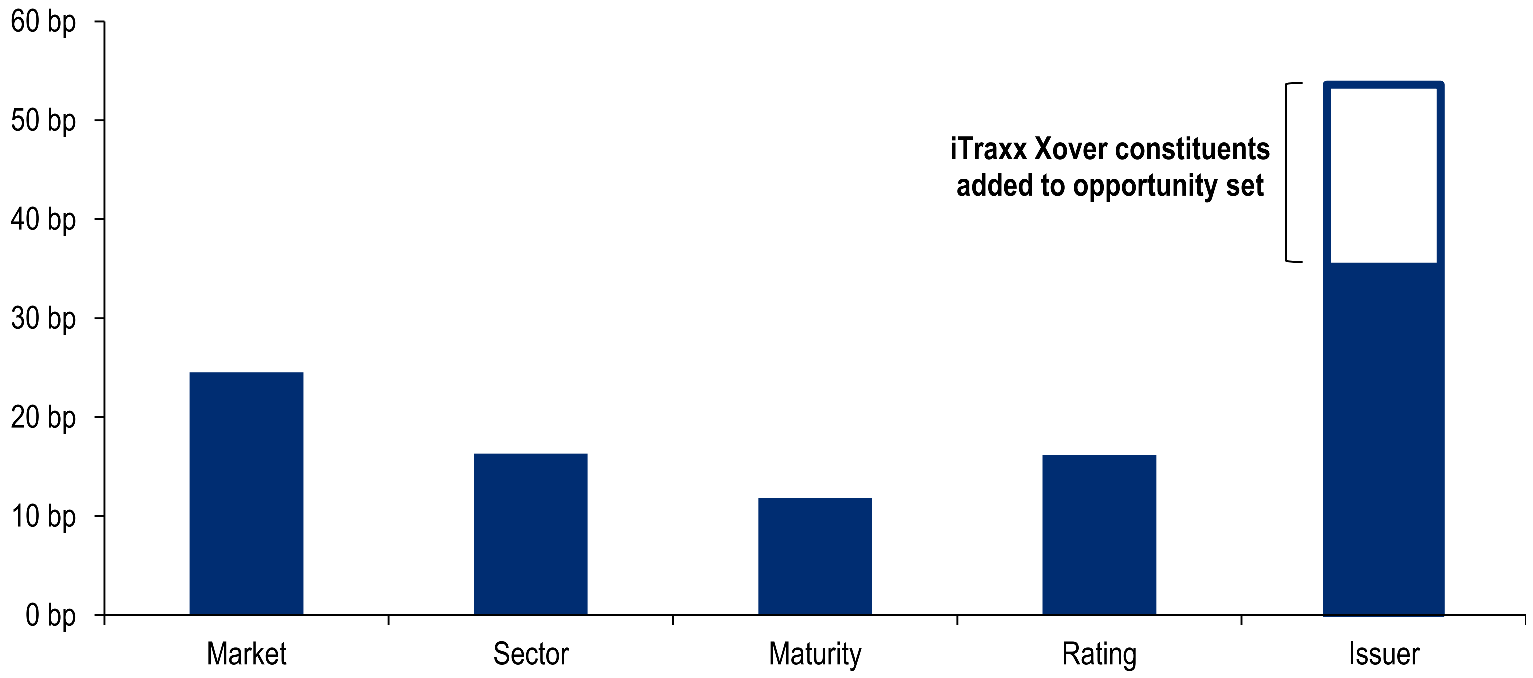


Source: Citi Research
Note: Feb-May performance

1. Where's the Alpha?

Two ways to beat the market — keep it simple (and liquid) and broaden one's opportunity set.

Adding iTraxx Xover S20 constituents to the opportunity set for credit picking makes the amount of alpha generated meaningfully higher

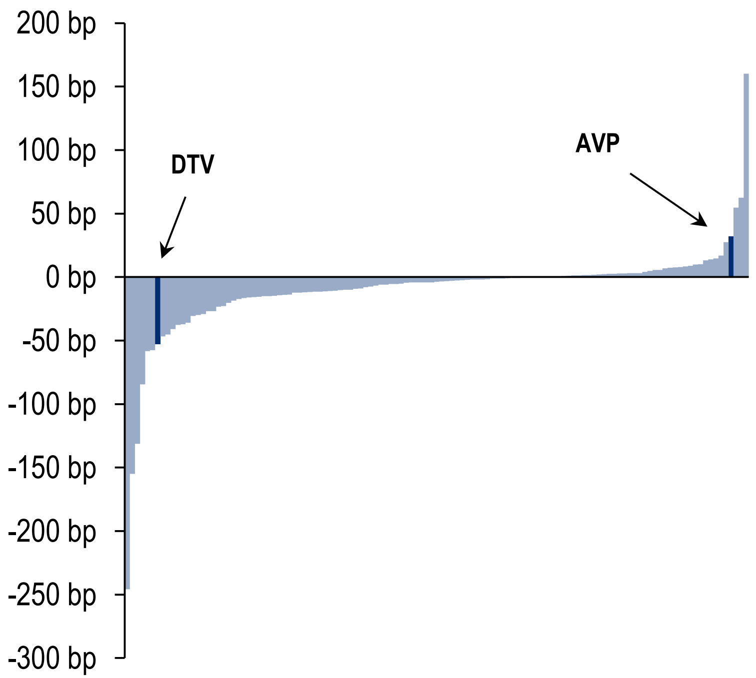


Source: Citi Research

2. Capture Dislocations Between Valuations and Risk

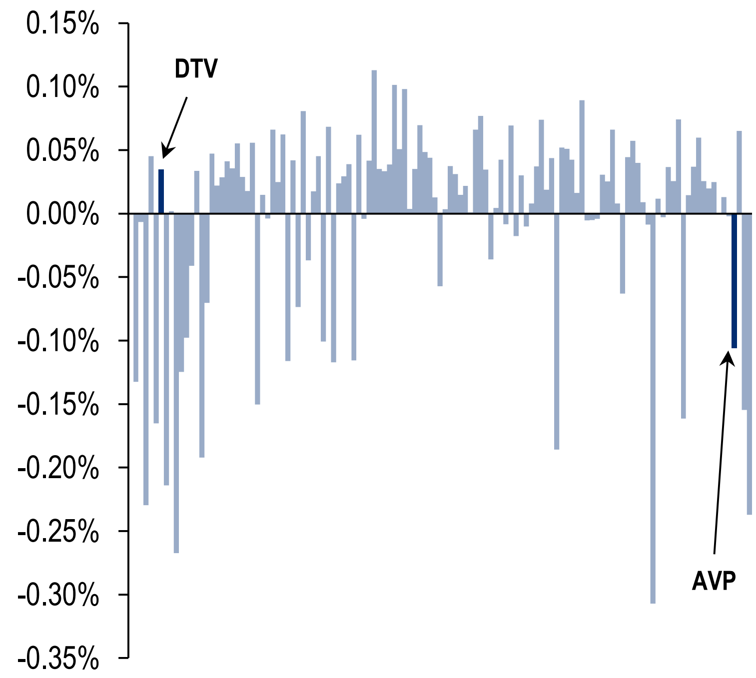
Technicals may be driving the price action, and that creates dislocations between fundamentals and valuations.

YTD spread change for CDX.IG index constituents



Source: Citi Research
Note: As of September 2, 2014; S22 constituents

YTD default risk change for CDX.IG index constituents



Source: Citi Research
Note: As of September 2, 2014; S22 constituents

2. Trade Idea: Opportunities May Be Investor-Specific

We believe that it is important to consider opportunities that have emerged in a “customized” context. For example, consider an opportunity for a generic insurance company…

$$\textbf{Return on Capital} = \frac{\textbf{Yield} - (\textbf{Default Rate} \times \textbf{Loss Given Default})}{\textbf{Capital Requirement}}$$

IG corp vs. alternative assets

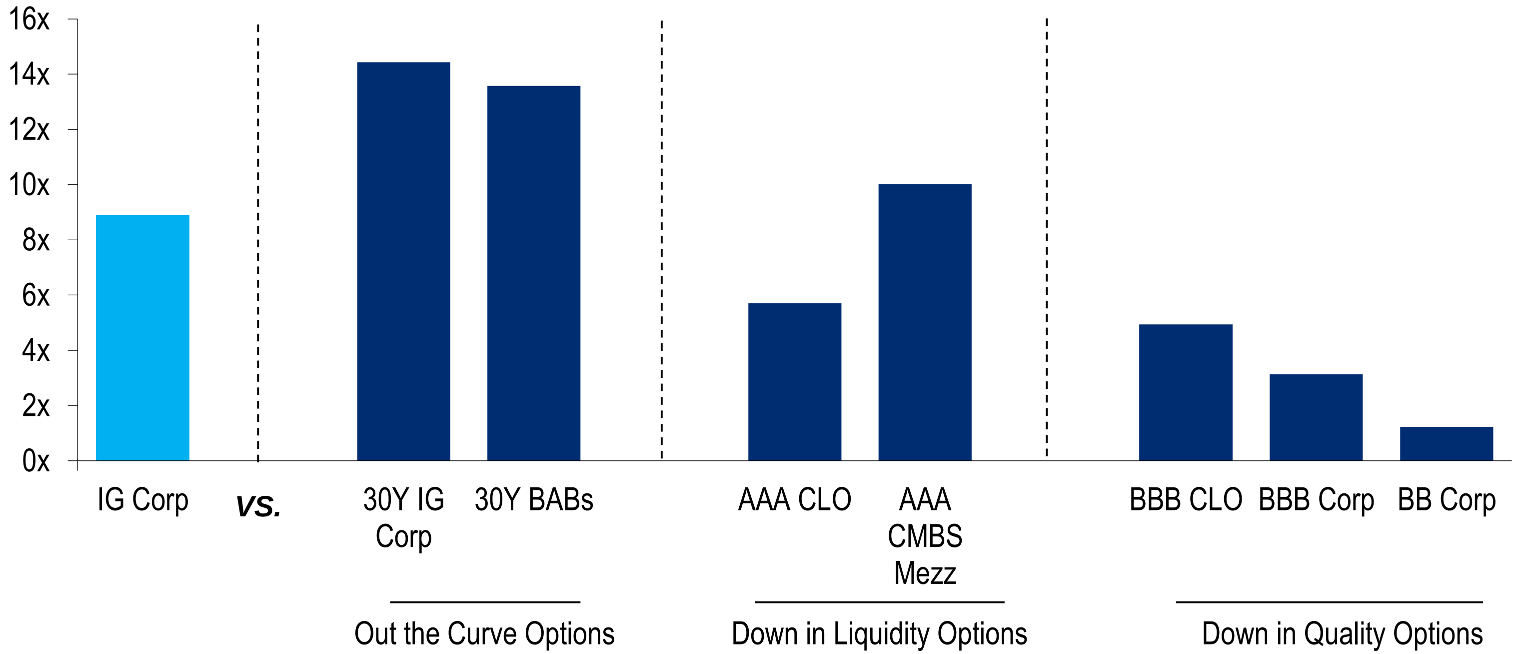
	Yield	—	Compensation for Default Risk	=	Risk Adjusted Yield	÷	Capital Requirement	=	ROC Ratio
IG Corp	**2.86%**		**0.24%**		**2.62%**		**0.295%**		**8.9x**
OUT THE CURVE OPTIONS									
30Y IG Corp	4.52%		0.26%		4.26%		0.295%		14.4x
30Y BABs	4.10%		0.10%		4.00%		0.295%		13.6x
DOWN IN LIQUIDITY OPTIONS									
AAA CLO	1.68%		0.00%		1.68%		0.295%		5.7x
AAA CMBS Mezz	2.96%		0.00%		2.96%		0.295%		10.0x
DOWN IN QUALITY OPTIONS									
BBB CLO	4.73%		0.00%		4.73%		0.959%		4.9x
BBB Corp	3.27%		0.26%		3.01%		0.959%		3.1x
BB Corp	4.46%		0.29%		4.17%		3.393%		1.2x

Source: Citi Research, Bloomberg
Note: As of August 18, 2014

2. Trade Idea: Opportunities May Be Investor-Specific

$$\textbf{Return on Capital} = \frac{\textbf{Yield – (Default Rate x Loss Given Default)}}{\textbf{Capital Requirement}}$$

ROC ratios using risk-adjusted yields



Source: Citi Research, Bloomberg
Note: As of August 18, 2014:

3. Where's the Crowd? Our Approach…

Step 1

- **Magnitude of Unexpected Flows:** Meaningful difference between actual and expected flows?

Step 2

- **Trend Reversal:** Do unusual flows represent the continuation of a trend?

Step 3

- **Size of Imbalanced Position**: Is the positioning large enough to matter if unwound?

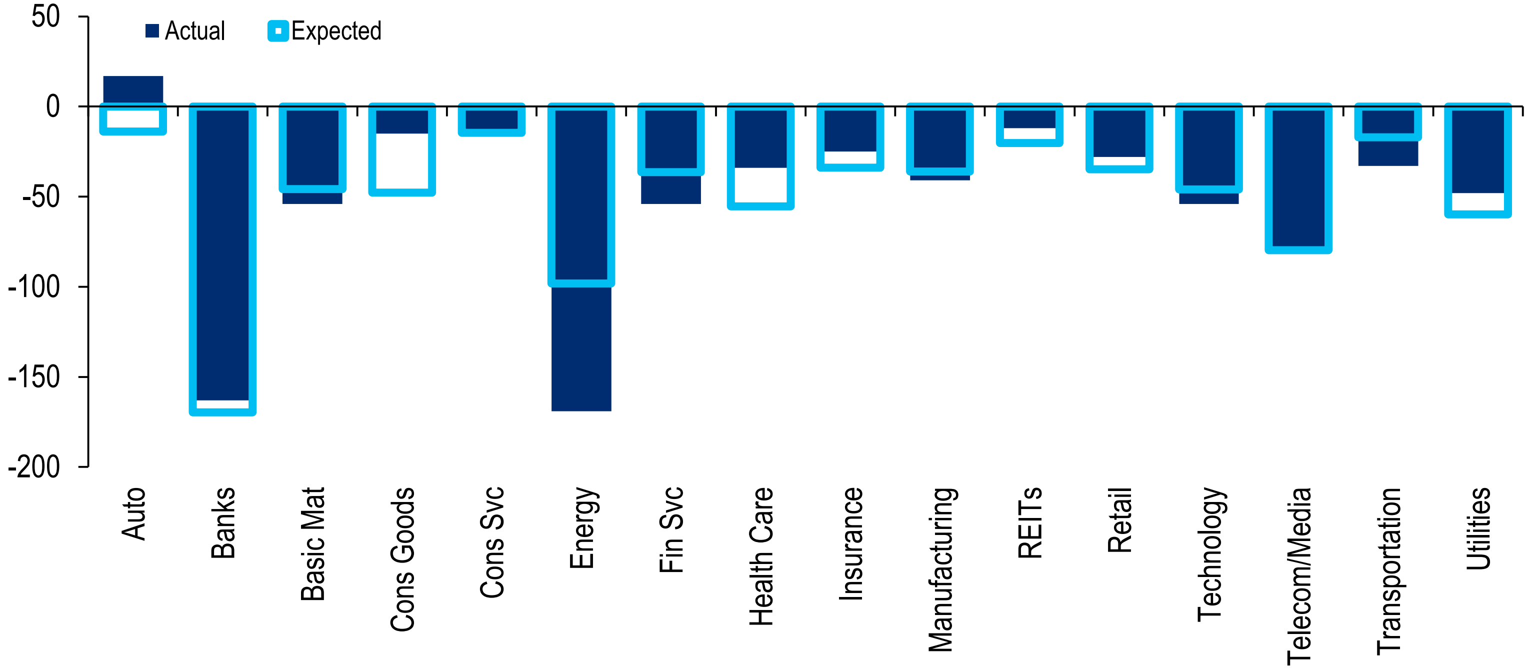
Step 4

- **Reversal Ratio:** Is the positioning at risk of near-term reversal?

Source: Citi Research

3. Actual vs. Expected Flows

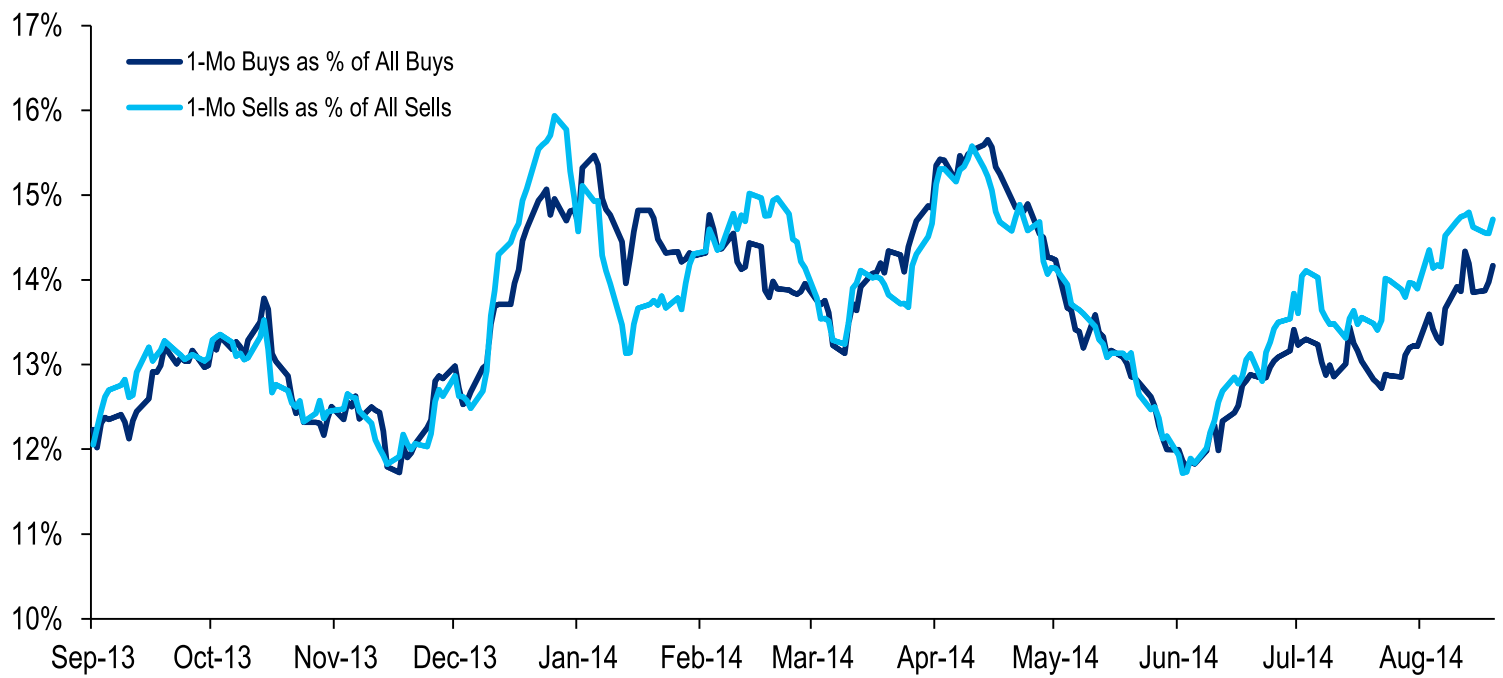
Difference between actual and expected net buys in high-grade, May ’14 to Aug’14



Source: Citi Research, TRACE
Note: Block size of $5 mm+; expected net buys calculated based on August par amounts; from May 27 to August 27, 2014

3. Flagging Reversals

1-month rolling client buys and sells of high-grade energy securities as a percentage of all buys / sells



Source: Citi Research, TRACE
Note: As of August 27, 2014; block sized trades of $5mm+; 20-trading day cumulative rolling

3. Avoid the Crowd! Or At Least Be Mindful of It…

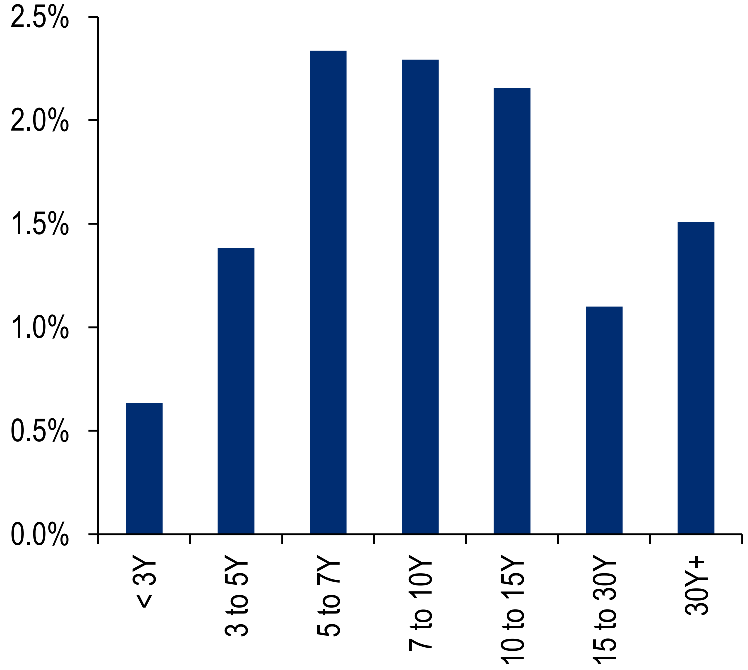
	Valuations			4-Step Approach for Finding Crowded Trades			
Sector	Current (bp)	1Y Tights (bp)	1Y Wides (bp)	1. Magnitude of Unexpected Flows	2. Trend Reversal?	3. Size of Imbalanced Position	4. Reversal Ratio
CROWDED LONGS							
HY Energy	383	341	476	94	N	253	0.45%
CCC or Below	860	664	860	97	N	726	-0.84%
CROWDED SHORTS							
IG Energy	122	115	162	-71	N	-494	-0.55%
IG Fin Svc	89	84	157	-18	N	-260	-0.19%
BBB	133	127	193	-131	N	-1395	-0.30%
IG 7-10Y	113	109	165	-330	N	-896	-1.86%
HY Basic Mat	651	423	651	-110	N	-159	-0.12%
PETBRA	220	220	322	-31	N	-211	0.30%
HCA	245	230	348	-36	N	-44	-0.32%
CIT	189	175	257	-39	N	-51	-0.18%
BTU	396	298	475	-30	N	-92	-0.18%

Source: Citi Research, TRACE
Note: Spread as of August 27, 2014

4. Curve Positioning

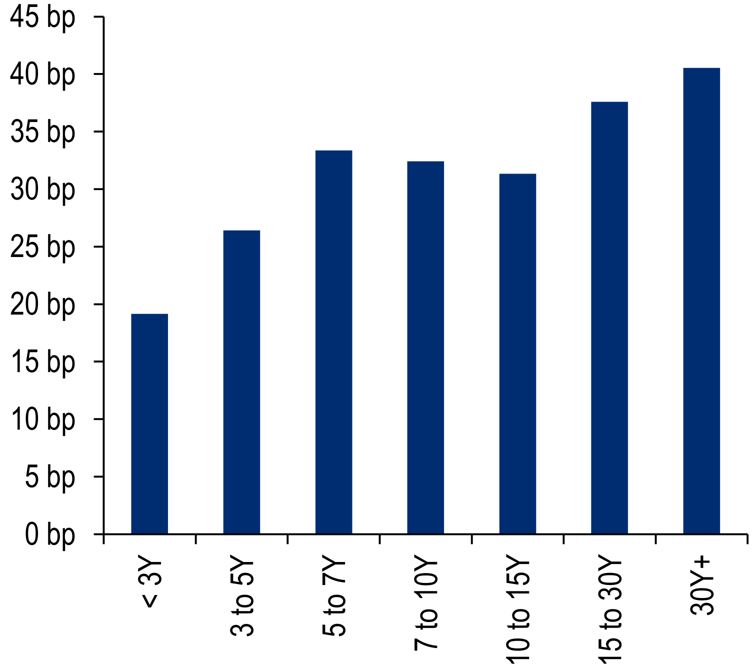
In a risk / reward context in the IG space, the belly of the curve seems to offer value. In fact, excess returns have been high, in part due to roll, and vol not all that different than average.

YTD excess return by maturity bucket in HG



Source: Citi Research
Note: As of August 31, 2014

YTD spread vol by maturity bucket in HG

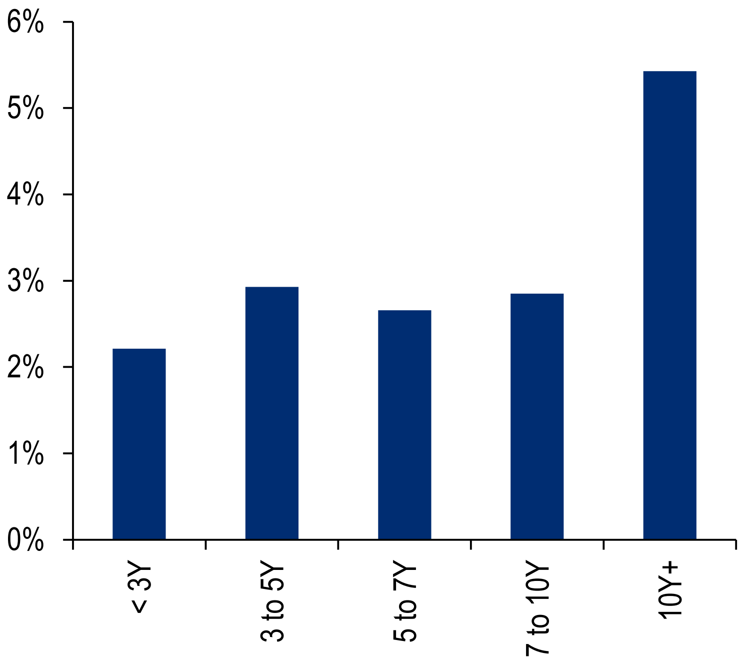


Source: Citi Research
Note: As of August 31, 2014

4. Curve Positioning

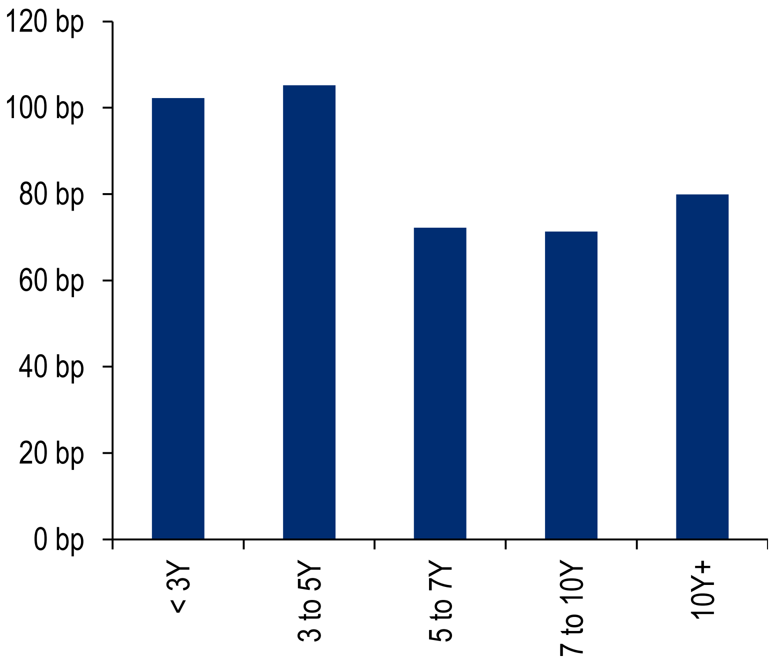
In HY and from a MTM perspective the balance between risk / reward does not appear terribly compelling in the front-end.

YTD excess return by maturity bucket in HY



Source: Citi Research
Note: As of August 31, 2014

YTD spread vol by maturity bucket in HY

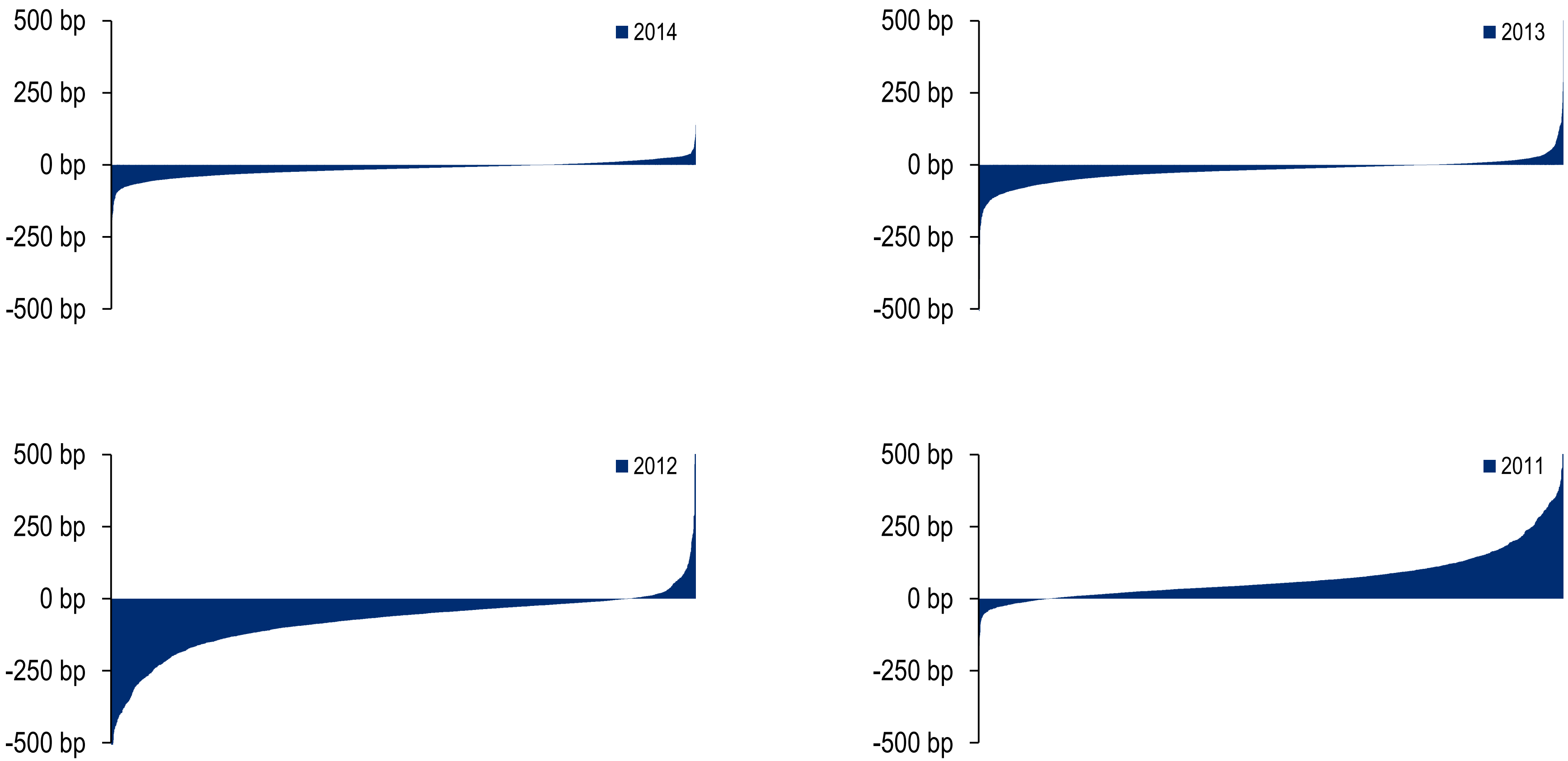


Source: Citi Research
Note: As of August 31, 2014

5. Hedging Strategies in the Current Environment

There are some exceptions, but by and large the difference between outperformers and underperformers is really quite modest in the current environment, which means it really isn't that costly to short "bad" names funded with "good" ones. Decoupling between "good" and "bad" assets should occur if the market sells off (e.g., flight to quality). Avoid names like CAG, K, CPB.

HG index constituents spread changes



Source: Citi Research
Note: 2014 as of August 31, 2014 YTD change; using year-beginning index constituents for each year

Theory #4: Liquidity Premiums are Constant

1. Quantifying Liquidity

In an effort to better incorporate liquidity into the investment decision-making process, we compiled liquidity scores for corporate bonds based on a five-factor model.

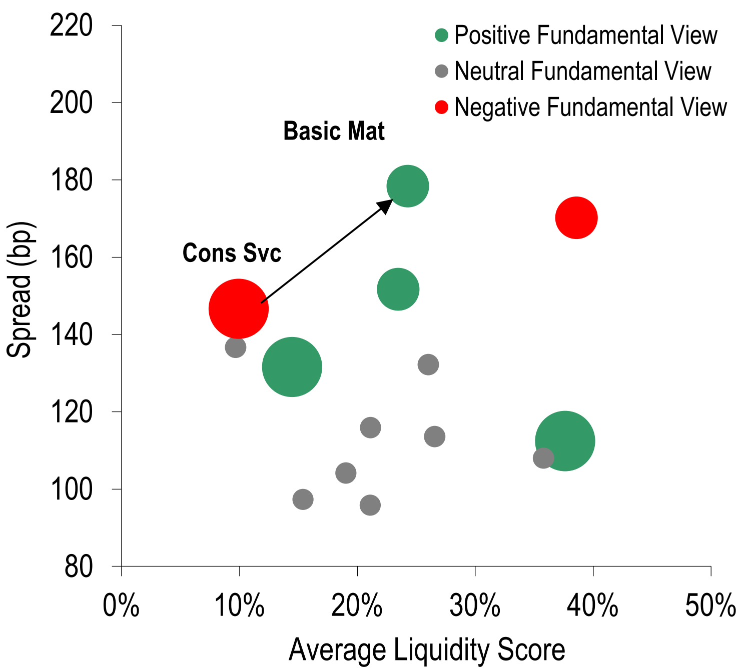
Five-factor liquidity model

1. **Block Sized Trades:** Number of $5mm+ trades for HG and $1mm+ for HY
2. **Clustering of Trades:** Measure of trading activity on an “average” day
3. **Quality of Trading Activity:** Ratio of end-client activity vs. all trading activity, with more client activity being consistent with higher quality activity
4. **Diversity of Trades:** Difference between end-investor buys and sells.
5. **Volatility:** Measure of 1-year spread vol; in general, less volatile issues tend to be more liquid as they are like to have higher risk-transferability

Liquidity in a Relative Value Context

We quantify liquidity conditions at the sector level. We see opportunities to move up in liquidity, pick up spread, and into sectors that we prefer from a fundamental perspective.

HG liquidity score vs. spread by sector



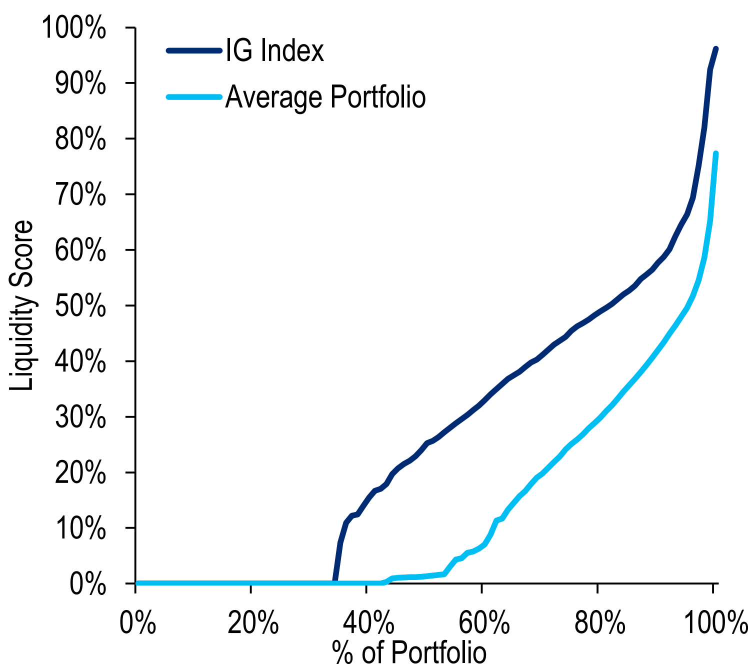
HG Sector	Price ($)	Spread (bp)	Liquidity Score	Expected 1Y Default Rate	Analyst View (-2 to +2)
Autos	107.8	108	36%	0.15%	0
Banks	107.8	112	38%	0.11%	+2
Basic Materials	104.7	178	24%	0.21%	+1
Consumer Goods	108.2	104	19%	0.10%	0
Consumer Service	106.8	147	10%	0.14%	-2
Energy	108.4	152	23%	0.17%	+1
Financial Services	108.2	132	26%	0.14%	0
Healthcare	106.9	96	21%	0.09%	0
Insurance	111.2	132	14%	0.22%	+2
Manufacturing	106.3	97	15%	0.10%	0
REITs	106.3	150	11%	0.16%	0
Retail	107.8	116	21%	0.11%	0
Technology	104.0	114	27%	0.11%	0
Telecom & Media	108.9	170	39%	0.12%	-1
Transportation	107.7	137	10%	0.18%	0

Source: Citi Research, TRACE
Note: As of October 30, 2013

Always Be Mindful of Your Liquidity Profile

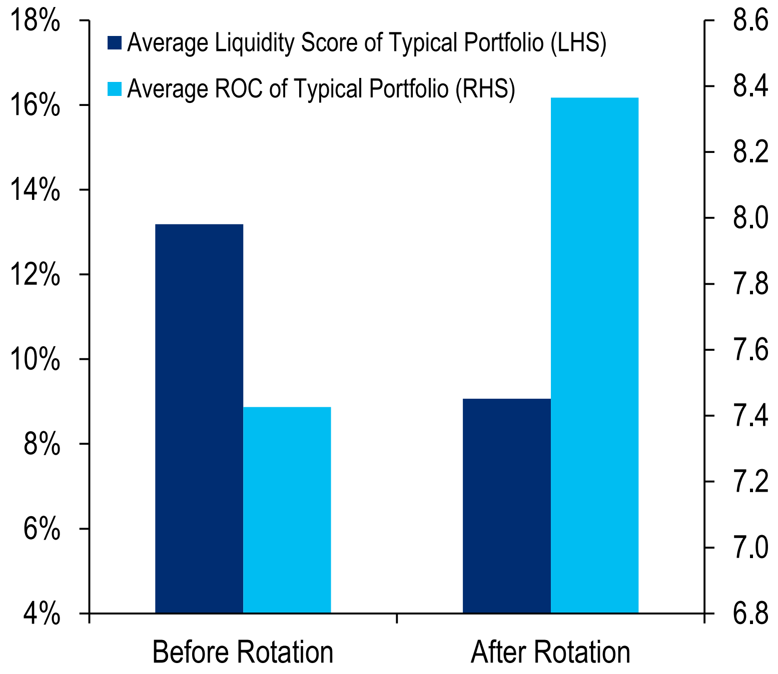
As of last year, the typical insurance portfolio was less liquid than the market average. But was it illiquid enough given liquidity premiums at that time? For each name that was held in the typical portfolio, we looked for another CUSIP (of the same name) in the same maturity bucket that was less liquid. ROC jumped from 7.4% to 8.4% based on this simple rotation.

Liquidity profile of the broad market and the typical insurance portfolio



Source: Citi Research, TRACE
Note: As of October 14, 2013; percent of portfolio based on market value as of October 11, 2013 using 2012YE portfolios

ROC difference between "optimal" and average portfolio is meaningful

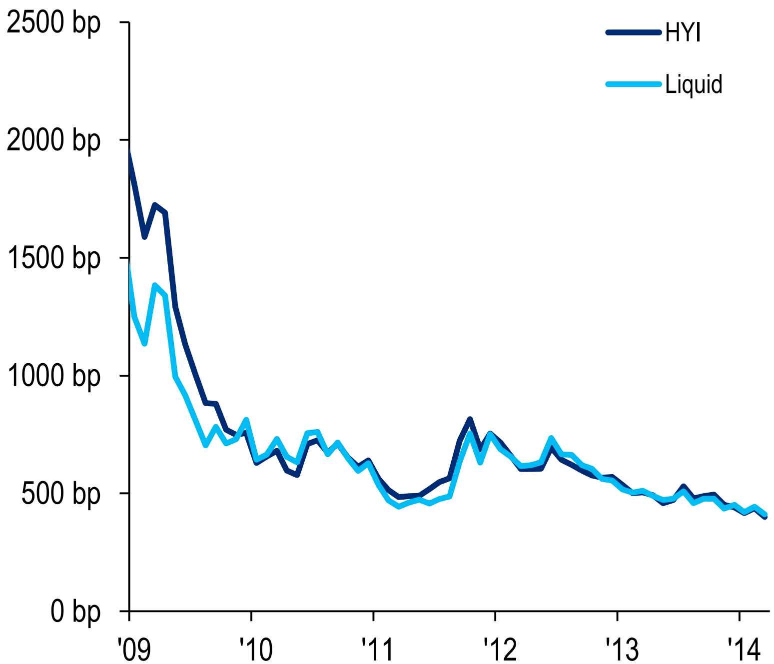


Source: Citi Research, TRACE
Note: As of October 14, 2013; percent of portfolio based on market value as of October 11, 2013 using 2012YE portfolios

Trade Idea: Not Much of a Liquidity Premium Available Now

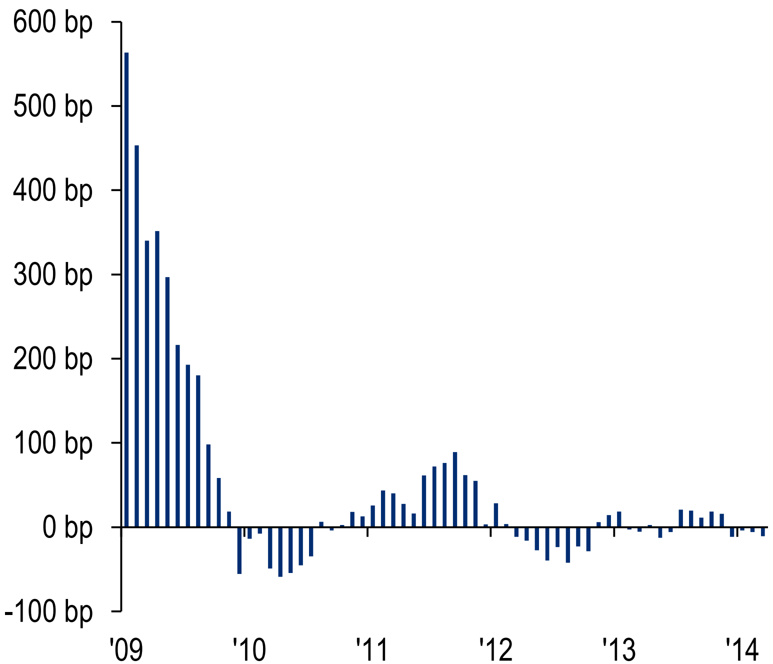
We created a portfolio of liquid names in the HY market and compared the average spread of this portfolio with the broad market. Our preliminary work shows that liquidity premiums are very transient, and that not much of a premium is available at this juncture.

Spreads of typical high-yield bond vs. liquid high-yield bond



Source: Citi Research

Spread difference between the typical bond and liquid bond in high-yield



Source: Citi Research

Trade Idea: But Opportunities Can Be Found

Outliers can always be found. We screened for names that had better than average liquidity, but had more spread and less volatility.

ADD CANDIDATES that have good carry and liquidity, but exhibit relatively modest volatility

Issue	Years to Maturity	Rating	Par Amount ($mm)	Price ($)	YTW (%)	Spread (bp)	1Y Spread Vol (bp)	1Y Range as % of Spread	Liquidity Score
BAC 5s of '21	6.8	Baa2 / A-	2000	111.4	3.1	108.0	45	82%	46%
BACR 5.14s of '20	6.2	Baa3 / BBB	1094	108.8	3.5	162.9	50	69%	28%
ETP 4.65s of '21	6.8	Baa3 / BBB-	800	108.1	3.3	124.7	51	83%	26%
K 4s of '20	6.4	Baa2 / BBB+	850	106.6	2.9	88.5	54	35%	31%
LLL 4.75s of '20	5.9	Baa3 / BBB-	800	108.9	3.1	123.7	52	87%	29%
MO 4.75s of '21	6.7	Baa1 / BBB+	1500	110.7	3.0	95.5	40	82%	26%
Average	**6.5**	**Baa2 / BBB**	**1221**	**109.0**	**3.15**	**117**	**46**	**71%**	**33%**
IG Index	**10.2**	**A3 / A-**	**720**	**109.4**	**2.88**	**103**	**54**	**91%**	**26%**

Source: Citi Research
Note: As of August 7, 2014

Side Note: Liquidity in Your Portfolio

How does the spread / liquidity tradeoff look in your portfolio? Pass it along and we'll take a look…

		CURRENT LEVEL			RISK METRICS		
	Maturity	Spread	YTM	Price	Liquidity Score (60D)	1Y Spread Vol	Implied 1Y Default Prob
Select Fields Only	9.9	125	3.0	103.9	33%	13	0.17
Portfolio	9.9	125	3.0	103.9	33%	13	0.17
IG Cash Index	10.4	138	3.2	108.3	26%	14	0.33
By Sector for ALL portfolio							
Auto Mfg/Vehicle Parts	4.6	129.1	2.4	103.0	45%	13	0.21
Banks	6.4	151.7	2.9	103.7	51%	13	0.18
Basic Materials	10.2	211.2	4.0	100.8	34%	28	0.54
Building/Bldg Products	9.2	110.0	3.6	94.6	0%	20	0.05
Consumer Goods	12.1	122.7	3.3	108.0	26%	10	0.09
Consumer Service	6.4	129.2	3.0	106.9	13%	11	0.10
Energy	11.4	151.8	3.5	104.6	35%	14	0.19
Financial Services	10.0	130.0	3.1	104.0	37%	12	0.13
Healthcare	10.5	98.3	2.8	102.3	33%	8	0.06
Insurance	10.2	128.0	3.1	105.7	30%	20	0.18
Leisure & Gaming	5.6	100.0	2.5	102.5	9%	28	0.30
Manufacturing	11.8	112.1	3.3	99.9	40%	8	0.05
REITs	7.7	152.6	3.6	102.6	22%	13	0.15
Retail	12.8	103.8	3.4	103.1	34%	9	0.09
Technology	8.3	114.8	3.0	99.9	36%	9	0.09
Telecom & Media	10.9	148.2	3.4	106.4	33%	12	0.14
Transportation	15.1	132.1	3.9	101.8	16%	14	0.15
Utilities	10.9	129.3	3.2	106.0	13%	10	0.10

Source: Citi Research, Hypothetical portfolio example

Appendix A-1

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