14 December 2012 | 14 pages

North America

Speculative Grade Credit Weekly

2013 High Yield and Loan Outlook: Puddles in a Yield Desert

Michael H Anderson
+1-212-723-3819
michael.henry.anderson@citi.com

Julie Pearson
+1-212-723-3099
julie.pearson@citi.com

Lili Yang
lili1.yang@citi.com

- We remain constructive on the speculative grade asset classes for 2013. A combination of a lack of yield and heightened interest rate duration risk in competing products as well as a scarcity of net supply at a time of strong inflows, will likely lead to another strong year, in our view. We project a total return of 7% for high yield and 5% for leveraged loans.
- Our view is not predicated on improving fundamental trends. At best, we predict those will be steady and more likely may deteriorate slightly as issuers bend to shareholder demands. Instead, our positive view is predicated on a lack of net supply, significant central bank accommodation suppressing volatility, and higher-quality assets priced to perfection.
- There are a number of risks to monitor but they are the same ones we've addressed over the past 2-3 years. The market has weathered them before and therefore we believe some investors have become numb to the headlines.
- We project another strong year for high yield and leveraged loan issuance as opportunistic issuers take advantage of the bid for risky assets. Perhaps the biggest limitation is that corporate demand to issue high yield and loans may not match investor demand. Still, we anticipate $325-350bn of high yield supply and $350-375bn of loan supply.
- We expect the default rate will remain low in 2013 and will close in the 2.5% range. Moody's expects the speculative grade default rate will decrease from 3.09% today to 2.5% in early 2013 before rising in the second half to 2.9%. We agree that defaults will decline in the first half as the bulge of defaults from early 2012 fall out of the trailing 12-month total. We don't agree, however, that the rate will climb in the second half.
- Despite record issuance, notable net supply was lacking in 2012. We think this trend will continue in 2013 and place the lack of new paper as one of the supporting factors for the market. We identify potential areas for supply growth in the upcoming year.
- If we were asset allocators and had the ability to choose among a wide variety of products, we would want to barbell our portfolios. We believe 2013 will be a period for adding high-beta exposure through triple-Cs for a number of reasons.
- As valuations reach new record heights, we anticipate negative convexity becoming a bigger factor in 2013. This factor is considerably more significant for leveraged loans due to issuers' ability to reprice outstanding loans. We highlight ways of mitigating the drag from negative convexity in the loan market.

Puddles in a Yield Desert

We remain constructive on the speculative grade asset classes for 2013. A combination of a lack of yield and heightened interest rate duration risk in competing products as well as a scarcity of net supply at a time of strong inflows, likely leads to another strong year. However, working against these markets is negative convexity.

Overview

2013 Speculative Grade Forecasts

High Yield Total Return	7.0%
Loan Total Return	5.0%
High Yield Issuance	$325-350bn
Loan Issuance	$350-375bn
Default Rate	2.5%

Source: Citi Research

Risky assets enjoyed an extraordinary 2012 and it might be tempting for investors to reduce credit risk as yields fall to all-time lows and numerous macro risks linger. However, we expect another strong year, particularly for high yield and leveraged loans. In our view, these assets provide “puddles of yield” in an otherwise mostly barren desert. Higher-quality investors’ yield thirst was quenched this year by declining yields/rising prices that generated excellent returns. In 2013, however, further price gains will be much harder to generate and current carry is at all-time lows.

The “liquidity on” trade triggered by extraordinary central bank accommodation has resulted in materially higher valuations across most assets. On the flip slide, yields in safer, higher-quality bonds have collapsed. Compounding this is the increase in duration risk caused by the aforementioned drop in yield and a general extension in the maturity profile of many company’s liabilities. Consequently, the scarcity of yield and the heightened duration risk have sent asset allocators in search of solutions to these issues.

Although high yield bonds and leveraged loans have their own shortcomings, they address both of these deficiencies to some extent. Loans are a popular asset class because their floating rate coupons limit interest rate sensitivity (even with LIBOR floors resulting in effectively fixed-rate coupons). In addition, yields are higher than most other asset classes (though, as we address later, the negative convexity of the product limits the applicability of stated loan yields). Speculative grade yields, while at all-time lows, still represent a significant spread to higher-quality assets. At the same time, however, the duration of high yield is slowly rising and, at some point, the fixed income component will limit returns. We don’t believe that will happen in 2013.

If we were asset allocators and had the ability to choose among a wide variety of products, we would want to barbell our portfolios. In other words, we would prefer exposure to assets that would rally in the event of normalization as well as those that are “super safe” and that should be resilient against any significant market retreat. The assets in the middle have rallied so much that they are bound to sell off when volatility returns (i.e. either conditions normalize and interest rates rise significantly or conditions deteriorate and spreads widen across the board). Admittedly, high yield and leveraged loans are not perfect universes to express such a view, but they contain some appealing characteristics. We believe many managers will implement a similar view and the mainstream appeal of speculative grade product, particularly for high yield, should result in steady inflows. Investors have been more reluctant to add risk through complexity, though that is shifting. For example, AAA CLO spreads remain very wide but we expect complex instruments will become more in favor in 2013.

As a result, we expect 2013 to be a relatively strong year for high yield and loans. Our view is not predicated on improving fundamental trends. At best, we expect those to be steady and more likely may deteriorate slightly as issuers bend to shareholder demands. Instead, our positive view is predicated on:

- **Lack of net supply at a time of historic inflows**: Through the expansion of its balance sheet, the Fed has removed a lot of paper from the

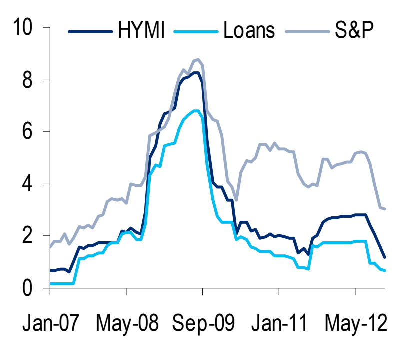
investable universe. This has resulted in investors scurrying down the quality spectrum and into high yield and leveraged loans. At the same time that investors are willing to take more risk, companies have mostly been reluctant to add significant leverage. As we detail later in the piece, the biggest limitation to our supply forecasts will be the source of the supply rather than demand.

- **Significant central bank accommodation suppressing volatility**: The Fed's actions have also dampened volatility. For all the talk of the major risk factors in the market, volatility this year has been the lowest since the crisis, which should embolden some investors to take advantage of historically wide spreads.

- **High-quality assets priced to perfection**: Considering that year-over-year core inflation is roughly 2%, most Treasuries generate negative real yields while investment grade credits at a 2.65% yield are not much better. As some might call it, investment grade fixed income products generally provide "return-free risk." Therefore, as we stated above, allocators need exposure to assets that could perform relatively well if and when conditions normalize. High yield is not the perfect asset class to accomplish this (with many higher-quality names trading with 3- and 4-handle yields) but will be one of the first choices for investors seeking yield, in our view.

Risks

Trailing 12M Std Deviations of Total Returns



Source: Citi Research, Bloomberg

We may be constructive on valuations, but that doesn't mean we don't recognize that there are a number of significant risks to consider. At the same time, the ability of these risks to generate the same sell offs as they have in the past is dwindling (i.e. it will take a much bigger shock to trigger a retreat). In other words, many of the known risks are the same ones the market has weathered over the past few years and, as a result, some investors have become numb to the headlines. Additionally, the extraordinary liquidity measures provided by central banks have also acted to suppress volatility, in our view. Total return volatility fell to post-crisis lows in 2012 for the high yield, leveraged loan and equity markets.

Therefore, the hurdle to trigger a high yield sell off is increasing. In a scenario where Spanish yields return to 6 or 7%, we don't expect high yield managers to reduce risk meaningfully, unless the market gets worried that the ECB's OMT program will not be sufficient to address Spain and Italy's debt. Even as headlines around the fiscal negotiations in Washington swirled, risk assets rallied in late November and early December. Nevertheless, here are our thoughts on how the various risks could affect the speculative-grade markets

- **Europe**: Although Washington likely grabs much of investor attention into early 2013 as budgets and debt ceiling limits are negotiated, we still view Europe as the primary risk for the entire year, even if the OMT reduces the likelihood of that tail risk materially. Europe could become more of a problem if political support for the OMT wanes or if the Spanish economy turns further south and its borrowing needs increase substantially. Another potential source of strain is a potential "Grexit" over the next 12-18 months, which Citi Economists have reduced to a 60% probability from 90%. The downgrade in this prediction is encouraging, in our view, but given the level of public discontent with austerity measures, the situation could deteriorate once again. In conclusion, we believe a long-lasting sell off in high yield from European concerns would require the crisis in Europe to take another step it hasn't reached to date.

- **Washington/Fiscal Cliff/Debt Ceiling**: As we write our outlook, the fate of the fiscal negotiations hang in the balance, even if the headlines have taken a positive turn this week. For the purposes of this outlook, we assume a deal will be reached to avert the full fiscal adjustment and the debt ceiling is raised with less acrimony than last August. Unfortunately, it's possible the deal accomplishes only the minimum needed and long-term debt sustainability measures and entitlement reforms are incomplete. As a result, the specter of escalating debt levels could remain with us for future years but unlikely causes much disruption in 2013.

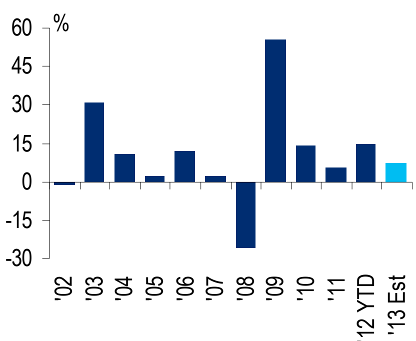
- **Fed Liquidity Reversal**: For now it appears that the Federal Reserve is all in. The September announcement committed to a "highly accommodative stance…for a considerable time after the economic recovery strengthens." In addition, the reelection of President Obama probably means the Fed will continue to be headed by a dovish Chairman after Bernanke's term ends in early 2014. Although we label this a doubtful outcome, a risk to the rally is that the Fed decides, at some point, that the additional quantitative easing programs are not worth the benefit. In other words, the low level of yields make it difficult for individuals/municipalities/companies to meet retirement goals/promises, which triggers an increase in saving and weighs on consumer and corporate spending. Liquidity has largely driven the current rally and any indication that the Fed is looking to pull back should cause a rush of money to the exits.

The one issue we intentionally left off our list is deteriorating lending standards. If our optimistic call is correct, we should see a continuation of weakening in standards in 2013. Clearly this will influence the future distressed calendars, but that is more likely to require a couple of years of seasoning, in our view. In the short run, the deterioration might be a sign that investors will be more willing to provide lifelines to existing, marginal credits.

Forecasts

Returns

High Yield Market Index Total Returns



Source: Citi Research

Over the last 23 years, the High Yield Market Index ended a year in negative territory only 5 times (1990, 1994, 2000, 2002 and 2008). Considering that we enter 2013 at an all-time record low for yield to begin a year, investors have the thinnest margin for error in avoiding a negative return. At a 6% yield, the breakeven yield back is roughly 150bp. So if yields back up 150bp, the total return for high yield in 2013 would be roughly zero. If we include the convexity effect, the breakeven would decline by 10bp to 140bp. Historical yield volatilities indicate that a move of that magnitude is not out of the question.

Although expectations will be muted, we remain optimistic for returns relative to yields. As we detailed in the overview, a lack of yield in competing products combined with a continued lack of net supply will place upward pressure on speculative grade valuations. For high yield, we expect market yields will continue to drift lower and set new all-time record lows next year. As a result, high yield will benefit from its greater duration and it will outperform loans for a fifth straight year. Granted the margin between high yield and loans has compressed, but as long as the Fed is pushing investors down in quality, it will be difficult for loans to lead. At some point either interest rates and/or default rates will increase and loans will be well positioned to outperform, but in the near term they will serve as a low-beta, slightly lower-returning alternative to high yield.

One factor that should work in the market's favor next year is the performance momentum the high yield market has historically exhibited. 2012's year-to-date return of 14.9% may not appear extraordinarily impressive on an absolute basis, but it is the fourth best year on a relative basis. When we normalize annual returns relative to yield levels (by calculating the return/beginning-of-the-year yield ratio), we discover that 2012 lags only 1991, 2003 and 2009 in relative performance. Years where the return/yield ratio exceeds 1.7x (4 observations), the subsequent annual return averages 1.3x the yield. When we input 6% for the current yield to worst, this predicts an 8% high yield total return for 2013.

Our actual projection of a 7% return for high yield in 2013 is not far off. Beginning with a yield of 6% and assuming some price appreciation/yield decline and modest default losses, we arrive at our 7% target. This implies a spread of 475bp assuming the Fed is able to keep the curve from rising materially next year. This spread is well through the all-time average of 550bp but only slightly inside the all-time median of 495bp.

For loans, we expect a slightly lower return of 5%. Loan coupons should make up the bulk of this, but we also expect a continued pull to par for the asset class, though at a diminished pace from what we experienced in 2012. Counteracting this is the potential for another wave of repricings, particularly if CLO new-issue spreads decline with new buyers of CLO liabilities entering that market in 2013. Modest default loss will also subtract from the return.

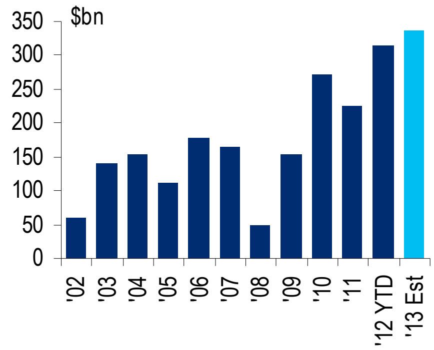
Issuance

We project another strong year for high yield and leveraged loan issuance as opportunistic issuers take advantage of the bid for risky assets. Perhaps the biggest limitation is that corporate demand to issue high yield and loans may not match investor demand. A couple of years ago the capital markets were broken and as conditions healed, high yield was one of the first markets to reopen. Consequently, high yield issuance benefited from dormant primary markets such as CMBS and loans. Now that the capital markets are rapidly improving, high yield will need to compete with other products for issuers. For example, many loans are being issued without maintenance covenants which makes them more appealing to some issuers than bonds. Add in minimal call restrictions and it's easy to see why leveraged loans could steal supply from the high yield market. The lack of net supply is a theme we address in more detail later in the outlook.

Given our constructive outlook, we expect another record or near-record year of $325-350bn for high yield issuance in 2013. Once again, we expect refinancing to comprise a bulk of the supply. However, one difference from 2012 is that there will probably be moderately less bond-for-loan refinancing, but the high yield market will provide itself plenty of refinancing opportunities. In addition to $20bn of 2013 bond maturities, there is over $260bn of callable debt over the next two years (split roughly evenly between 2013 and 2014). Considering that 60% of the 2013 callable paper trades above that call price we expect much of that paper to be refinanced next year. Furthermore, some of the 2014 refinancings could be pulled forward if issuers become concerned that 10-year Treasury yields are poised to rise in the following year.

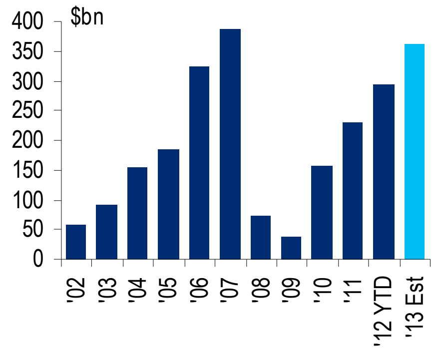
The loan market's performance exceeded our expectations heading into this year. According to S&P, loan issuance topped $300bn for the first time since 2007. We predict loan issuance will accelerate in 2013 and hit $350-375bn, much of it driven by refinancings and repricings. Again, net supply will be hard to come by, in our view.

High Yield Issuance



Source: Citi Research

Leveraged Loan Issuance



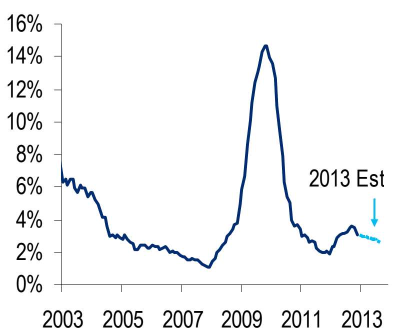
Source: Citi Research, S&P LCD

Default Rates

Both the high yield and leveraged loan default rates accelerated moderately in 2012 from 1.88% to 3.09% (through October) according to Moody's. Much of the increase occurred in the spring when the backlog of distressed credits was purged with a number of long-time distressed issuers entering bankruptcy. The rating agency expects the speculative grade default will decrease in early 2013 to 2.5% before rising in the second half to 2.9%.

We agree that defaults will decline in the first half as the bulge of defaults from early 2012 fall out of the trailing 12-month total. We don't agree, however, that the rate will climb in the second half and therefore expect default rates will close 2013 in the 2.5% range. Leverage in new deals is rising, but interest coverage ratios (a better measure of near-term default risk, in our view) remain high because of the general level of interest rates. In addition, our economics team predicts 2.4% GDP growth next year which should be strong enough to prevent a significant increase in distressed situations.

Speculative Grade Trailing 12M Default Rate



Source: Citi Research, Moody's

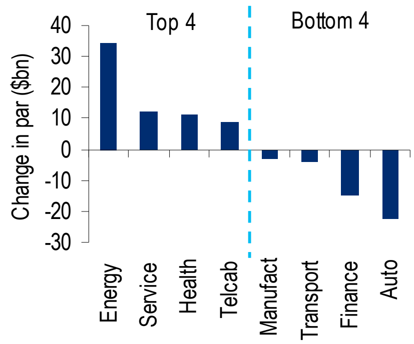
Theme #1: Will There Be Enough Net Supply?

Headline issuance in the leveraged finance markets was impressive in 2012. High yield supply broke the all-time record set in 2010 while loans registered their largest post-crisis tally. What was missing, however, is notable net supply and some investors have expressed concern that the trend will continue in 2013. We generally agree that it will and place the lack of new paper as one of the supporting factors for the market.

So how could the market grow so little amidst so much supply? First, the majority of the new deals were used for refinancings – 63% in high yield and 50% in loans (which understates the true refinancings because it doesn't include recap deals which are weighted heavily to the repayment of the existing loans). Second, the market lost some deals to default and upgrade to investment grade.

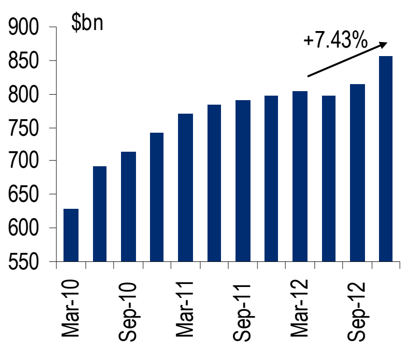
To approximate how much the market grew in 2012, we use the Citi High Yield Market Index as a proxy for the overall high yield bond market. The Index grew 7.4% to $856bn from $796bn this year. This is a conservative estimate of market growth because the Index doesn't include non-North American issuers and as we note below, non-US issuers comprised 20% of the calendar. By sector, the biggest gains were registered in energy (+34% of par), services (+25%), and healthcare (+16%) and the biggest declines were experienced in autos (-53%, Ford upgrade), financials (-21%), and transportation (-22%). We highlight below potential areas for market growth in the upcoming year.

High Yield Sector Growth and Contraction



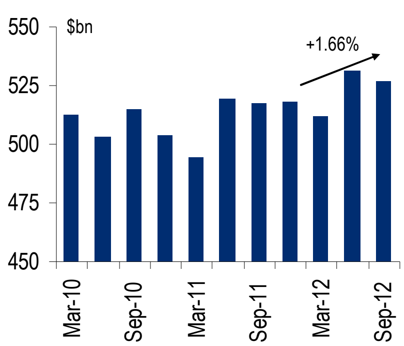
Source: Citi Research, chart only includes the largest growing and contracting sectors

Citi High Yield Market Index



Source: Citi Research

Outstanding Institutional Leveraged Loans



Source: Citi Research, S&P LCD

Over in the loan market, outstanding institutional leveraged loans grew by only 1.7% in 2012 (according to S&P). Limiting the growth of the market was the trend of some higher-quality issuers, such as Burger King and Universal Health Systems, tapping the pro rata loan market to repay institutional term loans. Other issuers such as Reynolds and Community Health Systems took advantage of the attractive bond market and issued bonds to take out existing term loans.

Sponsor Activity

Despite record issuance, LBOs were only 4% of high yield and 10% of loan issuance in 2012. We did not see many very large LBO deals with the $7.15bn LBO of EP Energy as the largest deal for the year. The number of deals financed grew to 68 in 2012 from 56 in 2011[1], but the total LBO transaction volume was about flat ($91bn vs $95bn) and the average deal size decreased ($1.3bn vs $1.7bn). The LBO pipeline for early 2013 is relatively light at $20bn of announced deals. With 28 deals coming to market in the fourth quarter, some 2013 supply may have been pulled forward as sponsors tried to get deals done before year end due to fiscal cliff uncertainty.

At our Credit Conference last month, commentary from private equity indicated that sponsors are not anticipating many large deals in 2013. In fact, they agreed that only one or two $10 billion deals were possible in the next year. It's possible they are sandbagging how much activity they expect, but the low level is consistent with their focus on monetizing last cycle's deals as well as their reluctance to lower return thresholds below 20%. We would expect LBO volume to add to net supply, but do not anticipate a wave of large deals in the coming year.

Dividends

The number of dividend deals grew in the second half of 2012 as both private equity and public companies issued debt to return value to shareholders before the favorable tax rates on dividends expire. Consequently, some issuance was pulled

[1] According to Citi Leveraged Finance

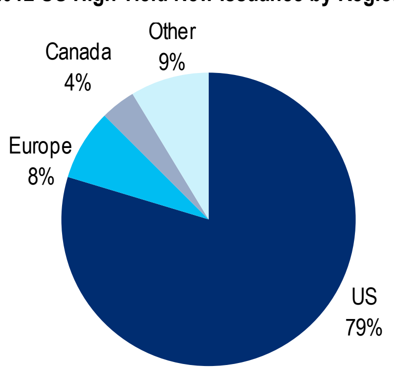
forward from future years. Dividends comprised 15% of loan (again this overstates the amount of new supply because the bulk of the deals are used to repay existing term loans) and 5% of bond issuance proceeds year-to-date. Sponsor dividend recaps reached a record $60.6bn versus the previous high of $40.5bn in 2010. Although we expect the market to continue its strength in 2013, we do not expect dividend volume to be as high next year given this year's pull forward.

Fallen Angels and Rising Stars

Movement between high yield and investment grade has led to a net shift of $25bn out of the high yield market in 2012. The decline in autos was largely driven by Ford's upgrade to investment grade, which resulted in $24bn migrating out of the high yield market. The downgrade of ArcelorMittal added $12bn of paper to high yield, but the overall supply shift between rising stars and falling angels was negative for high yield. We would note that the Citi High Yield Index only includes North American issuers, so the addition of MTNA is not accounted for in the sector changes discussed above.

In contrast to 2012, we anticipate fallen angel "supply" to outweigh rising star activity. As we look at potential fallen angels there are no consistent themes. The list includes a mix of sectors like telecom, steel, retail, etc and mix of reasons for a potential downgrade. The rising star list is a bit light post the Ford upgrade. There are some larger financial names but they may need another year or two to achieve upgrades.

2012 US High Yield New Issuance by Region



Source: Citi Research

Non-US Issuers

Market instability in Europe has led non-US issuers to take advantage of the open US markets as 20% of 2012 high yield new issuance came from non-US domiciled issuers. We would expect foreign issuance to be somewhat lighter in 2013 as the European markets benefit from periods of relative stability and companies choose to issue in Euros. However, foreign issuers with significant US operations will likely continue to raise money in the US debt markets. Other companies may continue to raise US dollar debt because they view the dollar as the more stable currency longer term.

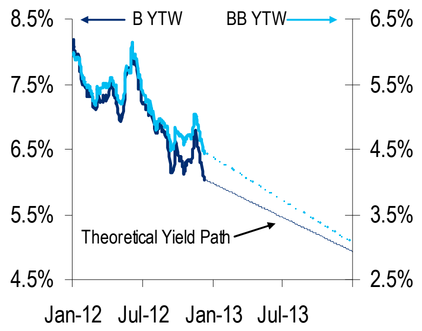
One important consideration is that the majority of foreign issuance is 144a for life, which may limit the demand for the paper. Some foreign-based assets are subject to UCITS directives which treat 144a's as pure privates and restrict the basket of all unlisted securities to 10%.

Bond-for-Loan Trend

The high yield market has grown in size over the past few years, partially driven by bond-for-loan refinancing. With loan primary markets silent, the high yield market was the only option for some companies. This trend should slow in 2013 as borrowers take advantage of the new capital entering the loan market. The ability to issue covenant-lite loans that have little call restrictions should be appealing to many credits. We expect the amount of bond-for-loan refinancing to drop from the $80bn issued this year.

Theme #2: High-Beta Rally

Where BB and B Yields Need to Go to Keep Pace with Steady CCCs



Source: Citi Research

In our overview we detailed how if we were allocating capital across a number of asset classes, we would make sure to gain exposure to the ends of the risk spectrum. That would include investing in assets with the capacity to rally if conditions and the economy normalize and leaving the bulk in safe assets that would be resilient in any major sell off. High yield is not the perfect asset class to accomplish this completely, but it has some paper that meets the former category.

On a relative basis, it was a banner year for low-beta, high-quality bonds. For most of 2012, double-B paper nearly kept pace with the broader market's rally as the belly of the Treasury curve added to 2011's gains. We believe 2013 will be a period for adding high-beta exposure for a number of reasons.

- First, double-B bonds are unlikely to benefit from additional Treasury gains and may even suffer from a modest pull back.
- As we highlighted in September, the 560bps carry advantage for triple-C's becomes significantly more important when double-B yields are well below 5% than when they were close to 7%. The yield on the BB-Rated and B-Rated indices have fallen to all-time lows of 4.42% and 6.01%, while the CCC-Rated Index at 10.00% is still 150bps above the all-time low set in June 2007.
- If we assume the market is steady and triple-C returns approximate their yield, then the rest of the market would need price gains to match the triple-C performance. Those gains would result in yields declining to new all-time lows of 3.1% and 4.9% for the double-B and single-B segments. This significant price appreciation to offset triple-C's carry advantage is unlikely given callablility.

Ratio of CCC to BB YTW

Source: Citi Research

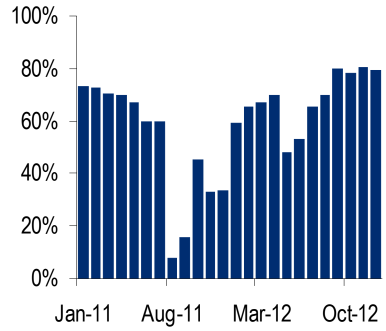
The yield ratio between the CCC-Rated and BB-Rated Indices is 2.3, near the all-time high. Although it's not the only measure we use, we think it's valuable because it indicates how much triple-C exposure a manager would need to combine with cash in order to replicate the double-B yield. In other words, the higher the ratio the fewer triple-C credits needed in the hypothetical triple-C/cash portfolio.

What about the effect of defaults? Clearly the lower part of the market will experience the most defaults, even in a low-default environment. To gauge the effects on defaults, we looked at 2012 total returns by rating category and found that 7% of the triple-C par defaulted. But it is too simplistic to calculate a default loss (i.e. drag on total return) by multiplying 70% (roughly default loss) by 7% and concluding that triple-C's lost 4.9pts from default. First, prices reflected the distress and the bonds that eventually defaulted in 2012 averaged a $47 price at the beginning of the year. Therefore, the market value percentage is a much lower at 4.4% (it's not half of the par percentage because the average triple-C traded at $84 at that time). Second, the lower price means that when valuations fall to recovery rates it doesn't require a 70% fall but rather a 50% drop (assuming a $23.5 recovery). In conclusion, the default drag is more like 2.2 points, a fraction of the yield pickup.

To take our analysis one step further, most managers know it's not the actual default that is painful but rather the price action before the default. Looking at 20-point+ losers in 2012 we find that triple-C's had the largest share of big decliners (2.9% by market value). Single-B decliners were only 1.4% of the market value of that rating category. On average the 20-point+ decliners fell 30pts, thereby subtracting another 44bp from the triple-C yield advantage. There's no guarantee that 2013 will play out like this year but back-of-the-envelope estimates overstate the default risk in the lower part of the market.

Theme #3: Navigating Negative Convexity

Loans Trading above $99



Source: Citi Research

Average Statistics of Repriced Loans

	Coupon	LIBOR floor	Price	Yield
1st Lien Loan	L+465	1.30%	100.58	6.05%
2nd Lien Loan	L+920	1.40%	100.49	10.97%

Source: Citi Research, represents 12 issuers who repriced 1st liens in 2012

As valuations reach new record heights, we anticipate negative convexity becoming a bigger factor in 2013. Consistent with what we've stated before, carry and call protection become even more important in such an environment and therefore managing the negative convexity risk will be a critical component to relative performance.

While true for high yield bonds too, this factor is considerably more significant for leveraged loans and therefore we focus our attention on that market. The lack of call protection permits issuers to take advantage of a hot market or strong fundamental performance and reprice outstanding loan. We roughly measure the amount of negative convexity in the loan market as the percentage of loans in our Loan Tracker that trade above $99. 80% of the loans in our Tracker are trading above $99, which is the highest level since we began the Tracker in early 2011. There are ways, however, of mitigating the drag from negative convexity.

- We would caution investors against buying loans above $101, despite the one-year $101 soft-call for many new issue loans. As we highlighted in August (The Soft Call Curse), the yield to maturity (or to some shorter call) for loans trading above $101 will amortize the $1+ premium over a long period (usually 5-7 years). However, short-term returns will likely be lower because the value of the call protection dissipates faster than the standard yield-to-maturity calculation indicates. In other words, a loan with 6-months of call protection could move from $101.25 to $100.5 over the course of a few months rather than a few years (as the yield-to-maturity calculation would do). With 26% of our Leveraged Loan Tracker trading above $101, we would recommend that investors be aware of the pitfalls of the soft call and closely monitor potential repricing candidates.

- The upside to repriced 1st-lien loans is that the same issuer's 2nd lien loan should look more attractive. The 2nd-liens are typically issued with more substantial call restrictions and therefore are less likely to be repriced (only 4 out of the 12 repricings we analyzed saw the 2nd lien reprice along with the 1st lien). Once the 1st lien is repriced, the 2nd lien benefits for two reasons. Not only does the debt service cost fall, but the spread between the two increases for the same leverage difference. On average, the 2nd lien loans of these issuers yield 5% more than the repriced 1st lien loans and we see potential for this differential to tighten, particularly for 2nd liens with significant call protection.

- Only 26% of our Leveraged Loan Tracker trades below par, so the opportunities to benefit from the pull to par have diminished dramatically. However there are still a number of non-distressed term loans that trade in the $95-99 range. We believe the market is open to address maturities and refinancing potential exists. Additionally, there is a CLO bid for discounted loans from many managers. These managers are seeking to preserve their OC cushions and with so many loans trading above $101, the appeal of discounted loans increases. Given CLO managers preference for high-quality loans[2], they will need to buy discounted paper in order to balance out the $101+ loans.

[2] CLOs have triple-C baskets but they typically leave those for rating transitions rather than to purchase current triple-C loans.

Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Research product ("the Product"), please contact Citi Research, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

Guide to Citi Research High Yield Ratings: Coverage in the Citi Research High Yield universe is assigned a relative return based rating. Depending on the issuer under analysis ratings may be applied to either some or all of the issuer's debt securities, bank loans or other instruments. These ratings and their definitions are:
Guide to Citi Research High Yield Issue Ratings:
Buy (1): The analyst expects the six-month total return of the rated debt security or instrument to exceed the market value weighted average total return for the analyst's sector or comparable sub-index of the Citi High Yield Market Index
Neutral (2): The analyst expects the six-month total return of the rated debt security or instrument to be in line with the market value weighted average total return for the analyst's sector or comparable sub-index of the Citi High Yield Market Index
Sell (3): The analyst expects the six-month total return of the rated debt security or instrument to be below the market value weighted average total return for the analyst's sector or comparable sub-index of the Citi High Yield Market Index
Guide to Citi Research High Yield Sector/Issuer Portfolio Weightings:
Overweight: Over the next six months, the recommended sector or issuer is expected to outperform the returns on the relevant index or benchmark based on valuation and methodology provided below;
Marketweight: Over the next six months, the recommended sector or issuer is expected to perform in line with the returns on the relevant index or benchmark based on valuation and methodology provided below;
Underweight - Over the next six months, the recommended sector or issuer is expected to underperform the returns on the relevant index or benchmark based on valuation and methodology provided below;
Under Review: Citi Research has suspended the investment rating for this issuer because there is not a sufficient fundamental basis for determining an investment rating. The previous investment rating is no longer in effect for this issuer and should not be relied upon. To satisfy regulatory requirements, we correspond ‘under review' to Hold in our ratings distribution table. However, we reiterate that we do not consider ‘under review' to be a recommendation.
For purposes of complying with ratings-distribution-disclosure rules, a Citi Research High Yield rating of Overweight is considered to correspond to a Buy recommendation; Marketweight and Neutral to a Hold recommendation; and Underweight to a Sell recommendation.
Valuation and Methodology: In Citi's High Yield Credit Research we assign a rating (Buy, Neutral or Sell) that, depending on the company under analysis, may be assigned to some or all of the company's debt securities. The rating is based on our credit view of the issuer and the relative value of its securities, taking into account the ratings assigned to the issuer by credit rating agencies and the market prices for the issuer's securities. Our credit view of an issuer is based upon our opinion as to whether the issuer will be able to service its debt obligations when they become due and payable. We may assess this by analyzing, among other things, the issuer's credit position using standard credit ratios such as cash flow to debt and fixed charge coverage (including and excluding capital investment). We also analyze the issuer's ability to generate cash flow by reviewing standard operational measures for comparable companies in the sector, such as revenue and earnings growth rates, margins, and the composition of the issuer's balance sheet relative to the operational leverage in its business.

NON-US RESEARCH ANALYST DISCLOSURES
Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Inc	Michael H Anderson; Julie Pearson; Lili Yang

OTHER DISCLOSURES

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities

transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Research does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of Citi Research to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

Important Disclosures for Morgan Stanley Smith Barney LLC Customers: Morgan Stanley & Co. LLC (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Research research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to Citi Research research reports.
Important disclosure regarding the relationship between the companies that are the subject of this Citi Research research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.
For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.
This Citi Research research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of Citi Research. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in **Australia** through Citi Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations,

and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A, Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 100-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02. The Product is made available in Korea by Citibank Korea Inc., which is regulated by the Financial Services Commission and the Financial Supervisory Service. Address is Citibank Building, 39 Da-dong, Jung-gu, Seoul 100-180, Korea. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) ("CGMM") to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to 'wholesale clients' only as defined by s5C(1) of the Financial Advisers Act 2008 ('FAA') through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. ("CGMSPL"), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold//Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gasset, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different Citi Research ratings distribution, in percentage terms for Investments in each sector covered is made available on

request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority.

Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to Citi Research's Products can be found at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product.

With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs) and other product that is made available through other distribution channels only to certain categories of clients to satisfy legal or regulatory requirements, Citi Research concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual Citi Research analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. Citi Research simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by Citi Research analysts to clients may vary depending on various factors such as the client's individual preferences as to the frequency and manner of receiving communications from analysts, the client's risk profile and investment focus and perspective (e.g. market-wide, sector specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.

Citi Research product may source data from dataCentral. dataCentral is a Citi Research proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST