

Global Structured Credit Strategy

Risk-on again, but use rally to rebalance

- **Conventional CLOs have never defaulted** — The recent Moody's study of defaulted CLOs (40 out of 4,118 tranches, none based on conventionally-structured, majority-loan portfolio deals) proves the robustness of the product.
- **Healthy issuance crimped by loan shortage** — CLO primary issuance has now surpassed \$22bn despite a slower summer, but new net loan issuance suitable for CLOs (and not merely refinancings) can become a challenge for new CLOs.
- **Investors should follow loan funds in buying mezz** — With higher CLO 2.0 coupons, the possibility of capital gains through bonds being called at par, and relative value versus loans, CLO mezz is attracting several loan funds.
- **US insurance companies remain active in CLO 2.0s** — Older vintage secondary supply, especially in senior mezz bonds, is substantially down, but companies have been active in the CLO 2.0 market with different rating preferences.
- **Recent equity prices good for primary, investors should rebalance equity portfolios** — The last two weeks has seen some secondary equity yields collapse to the low-teens and should be supportive of new CLO issuance. Reinvestment variations among older deals should make investors question return assumptions.
- **Glimmer of hope for Euro primary issuance** — With yield-investors still shying away from peripheral debt, structured credit is looking relatively attractive for yield. Wider loan spreads, more amendment fees and gradually-falling liability costs should help the prospects for new CLO issuance.

Ratul Roy

+1-212-723-6043

ratul.roy@citi.com

Anindya Basu

+1-212-723-6453

anindya.basu@citi.com

With thanks to

Daniel Choi

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Citi Research is a division of Citigroup Global Markets Inc. (the "Firm"), which does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Contents

CLO Default Exceptions Prove Rule	3
Tranches which defaulted – 40 out of 4,118	3
Issuance at \$22bn but few good loans	3
Loan funds and insurers see CLO value	4
New issue CLO mezz for loan funds	4
Good time to buy mezz	4
Insurance companies stick to CLOs	5
Rating appetite across insurers differs	5
Lower mezz secondary supply favor new deals	5
CLO Equity at 11% IRR – but mind details	6
Price appreciation supportive of primary	6
Investors should use rally to re-balance	6
Glimmers of hope for Euro CLO new issue	6
Appendix	7
Appendix A-1	11

CLO Default Exceptions Prove Rule

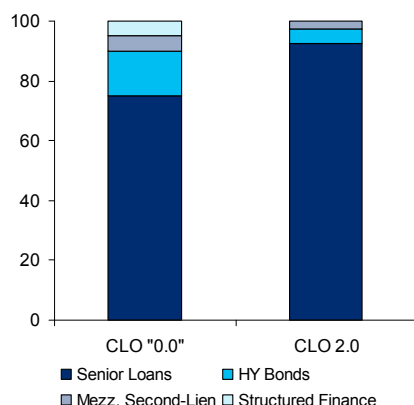
Tranches which defaulted – 40 out of 4,118

Figure 1. CLOs that defaulted, with reason for default

Impairment Type	No of CLOs	No of Impaired Tranches	Highest Initial Rating of Impaired Tranche
Realized principal losses at maturity	14	32	Baa2
Distressed exchange	4	7	A2
EoD because of a market value feature	1	1	Ba2
Other tranches likely to suffer principal losses	12	19	A2
Total	31	59	A2

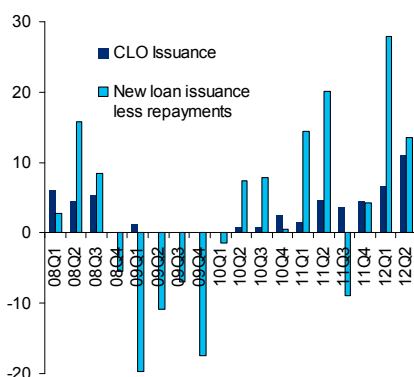
Source: Citi Research

Figure 2. Bucket sizes in pre-2003 CLO "0.0" versus CLO 2.0



Source: Citi Research

Figure 3. Loan issuance rubs against CLO issuance, \$bn



Source: S&P LCD, Citi Research

Most investors believe that CLOs have never defaulted and the recent Moody's study¹ of defaulted CLOs proves that this is correct. Investors are generally thinking of the vast majority of CLOs which consist of predominantly senior secured bank loans, such as all CLO 2.0s and the overwhelming majority of CLO 1.0s. The defaulted deals, 31 out of the 719 broadly syndicated US arbitrage cash flow CLOs rated by the agency between 1 January 1996 and 16 May 2012, are the exceptions that prove the no-default rule because they were neither CLO 1.0s nor CLO 2.0s.

First, tranches from only 14 deals (32 tranches) suffered principal losses at maturity. All 14 closed between 1997 and 2001; the highest initial rating of any of the impaired tranches was Baa2. Most had invested heavily in high-yield bonds whose value deteriorated significantly in the stressful credit environment between 1999 and 2002. These first-generation CLOs which we call CLO "0.0" preceded the vast universe of CLOs done between 2004 and 2007 (CLO 1.0). They allowed maximum high yield bond exposure (low recoveries on which led to unexpectedly high losses) to typically 25% of the asset pool, with a few with even higher bucket sizes. In contrast, today's CLO 2.0s have a 90-95% allocation for senior loans (Figure 2).

Other defaults were mostly technical in nature, or occurred because of problems in documentation. Four CLOs cancelled mezz notes, an action which Moody's considers to be a form of default, while another deal was affected because it had a market-value feature in the calculation of its OC-based EOD trigger.

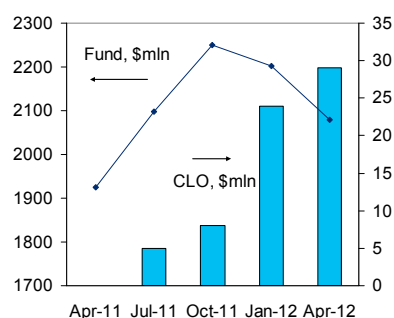
Finally, 19 tranches (only four of which were rated originally investment grade) from 12 other deals have a high likelihood of ultimate principal loss according to Moody's – five of the 12 are from the same CLO "0.0" universe above, with substantial high-yield bond buckets. Four of the remaining seven were more recent (2002-2007 deals) but also had unique structural features. Overall, it is impressive that only 40 of the 4,118 rated CLO tranche universe suffered actual losses, and 19 are rated Ca or C, implying a significant likelihood of loss.

Issuance at \$22bn but few good loans

CLO primary issuance has now surpassed \$22bn despite a slower summer. Demand, especially for junior tranches and equity, bodes well for issuance for the remainder of the year. However, the key will be the target returns for equity holders. Senior spreads are wider than at the beginning of the year (see the last [Global Structured Credit Strategy](#)) with the possibility of further widening, driven by macro-headlines. At the same time, loan issuance is becoming somewhat of a constraint; in fact, many funds are buying CLO mezz. Figure 3 compares the increase in loan demand as measured by the formation of new CLOs, compared with net new loan issuance (total issuance less repayments). CLOs, moreover aren't the only source of new demand, there are new funds also needing loans. Moreover, not all loans are suitable. For example, Q1 2012 initially looks like a quarter of healthy issuance, but the reality differs somewhat. Gross issuance (including refinancings) was \$69bn, but of this amount \$3bn was triple-C quality; \$3bn had only one rating and \$4.3bn had no rating (there are often limits in new deals on loans that need implied ratings). Moreover many large issuances skewed the volume since about \$28bn consisted of facilities that were higher than \$700 million. Single-obligor concentrations in new deals mean that only some of the new large loan deals can be used in new CLOs.

¹ Losses in US Cash Flow Tranches are Infrequent, CLOInterest, Moody's, 25 July 2012

Figure 4. CLO and fund size of Nuveen (Symphony) Floating Rate Income Funds



Source: Company statements, Citi Research

Figure 5. CLO Holdings of two typical floating-rate funds

Blackrock Floating Rate Income Trust, 30 Apr 2012		Nuveen Floating Rate Funds, 30 Apr 2012	
ARES 2005-10A B	2005	Flatiron CLO Ltd 2011-1A E	2011
Canaras Summit 2007-1A B	2007	Fraser Sullivan CLO Ltd E	2011
Chatham Light 2005-2A A2	2005	LCM Ltd Partnership 10A D	2012
Flagship 2006-1A B	2006	LCM Ltd Partnership 10A E	2012
Franklin 6A B	2007	Madison Park Funding 12-8A D	2012
Fraser Sullivan 2012-7A C	2012	Madison Park Funding 12-8A E	2012
Gannett Peak 2006-1X A2	2006	Race Point CLO 2011-5A E	2011
Goldentree VI 2012-6A D	2012	Race Point CLO 2012-6A E	2012
Greyrock 2005-1X A2L	2005		
Landmark Ltd. 2006-8A B	2006		
MAPS Fund 2005-1A C	2005		
Race Point 2012-6A D	2012		
Symphony Ltd. 2012-9A D	2012		
T2 Income Fund 2007-1A B	2007		

Source: Company statements, Citi Research

Loan funds and insurers see CLO value

New issue CLO mezz for loan funds

One outcome of the slowdown in net new issuance of loans is the bigger inclusion of CLO bonds in floating-rate funds. Shortage of collateral is not the only reason why managers are increasing their allocation to CLOs (Figure 4). As we pointed out in [A CLO Debt 2012 Update](#), the relative value between CLOs and the underlying loans should appeal to credit funds. For new issue mezz (single A down to senior equity) the attractions are the higher coupons and the possibility of capital gains should new issue spreads tighten further and the CLOs are optionally redeemed (CLO mezz is typically issued at a discount). Moreover, without sacrificing yield, mezz investors get subordination below their tranches to provide some protection against idiosyncratic defaults.

For older CLO deals with lower-coupon mezz than CLO 2.0 deals, the possibility of price appreciation exists too if they were purchased at a discount. Many CLOs are redeeming early as deals start delevering. Though the price rally of CLO tranches has reduced the discount between unsecuritized loans and securitized CLOs considerably, CLO debt is still cheap to loans. CLOs suffer from at least two poor technicals – first, a smaller investor base than loans; and second, financial and regulatory disincentive for many to hold this asset. This is perhaps why funds such as the Blackrock fund have both CLO versions (Figure 5); the Nuveen fund, in contrast, only has CLO 2.0 bonds.

Good time to buy mezz

It isn't just the shortage of good quality loans that makes us recommend new issue CLO mezz. With US default rate expectations that are low from the agencies as well as Citi ([Default Rates to Climb Rapidly in Q3 and Q4](#)), we think the high coupon and subordination of CLO 2.0 mezz should be attractive for real-money accounts. We also think that technicals are favorable, with many investors looking for yield shut out, because of internal guidelines, of several markets such as corporate and sovereign European debt.

Some of the technicals actually favor the low coupon CLO 1.0 variety. First, many are amortizing or are actively being called ([CLO Call - or Extension – Candidates](#)). The incentive to call deals earlier, and disincentive to continue reinvestment after the end of the reinvestment period, may be further boosted if ongoing discussions around FATCA (Foreign Account Tax Compliance Act) regulations adversely affect CLO 1.0s. (Under the regulations, loans in non-compliant CLOs, which are nearly all CLO 1.0s, will have tax withheld at source without information being disclosed to the US tax authorities on US account holders). The US LSTA is engaged in discussions with the authorities to find ways of exempting pre-FATCA CLOs). Secondly, regulated European investors, such as insurance companies, have an incentive to buy older deals as they likely will not fall under European risk-retention regulations.

For these reasons, we think that it is a good time for real-money investors to look at CLO single-As and triple-Bs.

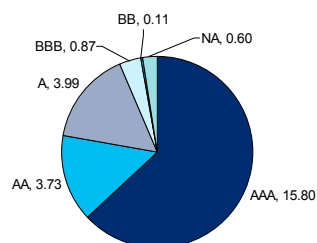
Figure 6. 15 largest CLO insurance company CLO holders (\$ mil)

Newer CLOs		Pre 2008 CLOs	
MassMutual	779	MassMutual	3662
Prudential	725	Hartford	2349
New York Life	469	Allstate	1704
AIG	355	AIG	1699
Liberty Mutual	304	Metlife	1627
Hartford	298	Prudential	1390
Metlife	233	New York Life	1251
Midland National*	221	Midland National	692
Loews	195	Fidelity & Guar	521
Nationwide	156	Sammons*	423
American Equity	145	CNO Financial	386
Sammons*	126	Liberty Mutual	311
Genworth	80	Goldman Sachs	310
Tokio Marine	52	Phoenix Life	253
Wilton Reass.	51	Genworth	252

*Guggenheim family of companies

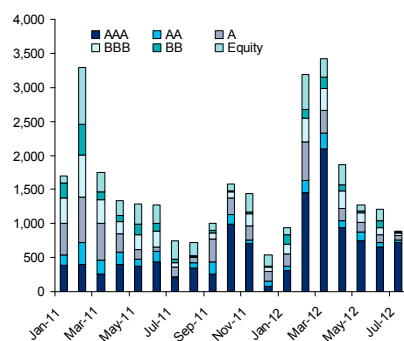
Source: Bloomberg, Citi Research

Figure 7. CLO Holdings by original rating of 88 insurance companies, \$ billion



Source: Bloomberg, Citi Research

Figure 8. CLO BWIC Volumes



Source: Citi Research

Insurance companies stick to CLOs

Despite the spread widening, we feel that insurance companies continue to be actively involved with CLOs, as they did in 2011. If anything, anecdotal evidence indicates smaller insurance companies may be getting more actively involved in the new issue market. The reasons are relative value – CLO senior bonds with their high subordination and low regulatory capital are looking attractive to corporate bonds and many other securitized assets. It is true that there is an uptick in the Moody's 12-month trailing default rate, but the overall outlook is still benign for credit. Moreover, inflows have boosted the need to put money to work.

Looking through the list of names in Figure 6, we see some interesting variations. Mass Mutual and AIG have been active in both CLO 1.0s as well as newer 2008 and later CLOs. On the other hand, Allstate was active in CLO 1.0 investments, but does not appear to be engaged in the primary CLO 2.0 market. At the other end of the spectrum, Nationwide, was not among the largest 15 holders of pre-2008 CLOs, but is an active participant in the new issue market today.

Rating appetite across insurers differs

Insurance companies do not see value at the same part of the capital structure. Looking at the total universe of insurers in Figure 7, we see that investors are focused on the senior, and senior mezz parts of the CLO capital stack. However, if one drills down into the holdings of different companies, we see striking differences. The seven largest holders (MassMutual, Hartford, Prudential, AIG, Metlife, New York Life and Allstate) each have portfolios that exceed \$1.5 billion, but it is only Hartford, Prudential and New York Life that are almost exclusively focused on the triple-A part of the capital stack. AIG is much more present in the single-A universe, whereas Allstate's holdings are more balanced among triple, double and single-A bonds.

Some of the reason for the dispersion may be to do with internal yield (and current coupon) requirements and also with internal risk measurements. We think regulatory capital is less of an issue as NAIC capital requirements are similar for single-A and more senior ratings. Looking forward, we think the need for yield will favor CLO 2.0 senior mezz investments. Lack of secondary supply in CLO 1.0 mezz is another reason why newer deals will be more prominent.

Lower mezz secondary supply favor new deals

Despite some of the advantages of CLO 1.0 that we have mentioned, the choice of investing in older mezz tranches may be curtailed by lack of supply. Secondary volumes are down (Figure 8) with many positions now squared away with many real money investors. There are legacy bank owners still holding these bonds, but the rating upgrades (particularly of US deals) combined with central bank liquidity injections have made it much less onerous for capital and liquidity purposes. The recent rally in equity (see next section) is supportive of the new issue pipeline, which should bring a new supply of CLO mezz for investors looking for yield.

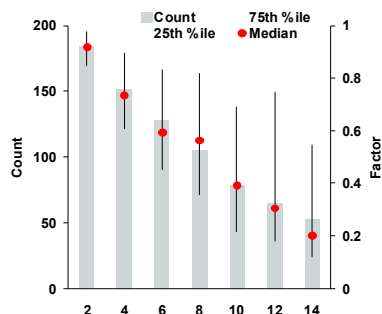
Figure 9. Recent CLO Equity

Date	Bond Cover	Talk	IRR
8/9/12	AIMCO 2006-AA SUB	91.59 H80s	12.9
8/9/12	CSAMF 4A SUB	DNT M60s	N/a
8/9/12	FIRST 2004-II PREF	44.61 LM40s	12.3
8/9/12	GOLD5 2007-5A SUB	97.5 MH80s	10.9
8/9/12	GULF 2005-2A SUB	57.5 LM60s	19.5
8/9/12	WHTHR II PREF	44.76 MH40s	16.8
8/9/12	BAKRST 2006-1 PREF	DNT H60s	N/a
8/14/12	MDPK 2006-2A INC	L140s 140ar ea	11.3
8/14/12	SJVR 2007-1A SUB	DNT M90s	N/a

Assumptions: 2 CDR, 20 CPR (0 after reinvest period ends); 70 recovery, loans with a 375bp spread and 450bp floor based on Libor floor

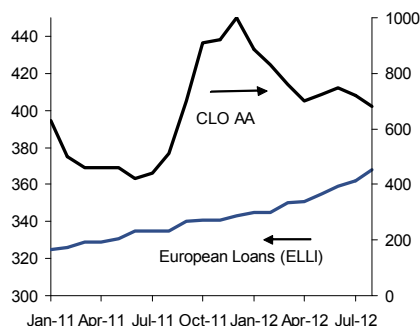
Source: Intex, Citi Research

Figure 10. Triple-A amortization, qtr after end of reinv period, vertical line shows difference between 25th and 75th percentile



Source: Intex, Citi Research

Figure 11. Euro CLO AA and Loan spreads, bps



Source: Citi Research

CLO Equity at 11% IRR – but mind details

Price appreciation supportive of primary

The success of a couple of recent equity BWICs is testament to the appetite for the product by investors looking for yield (Figure 9). Two bonds stand out in particular – one a CSAM-managed Madison Park 2006 deal (whose cover price was in low 140s area) and the other a Goldentree - managed 2007 bond (where the cover price was almost 10 points higher than the initial price talk). A few did not trade, however. Whichever way you look at it, the targeted yields, with the assumptions shown on the figure, are quite a few points below where yields were a couple of months ago. We think the drop in yields in performing secondary 2006-2007 vintage equity should lead to a comparable, if not equal, drop in yield that primary investors demand. This should then support the arbitrage which, combined with the demand for mezz debt from real money investors, should boost the new issue pipeline. The question that we find most challenging is what existing investors should do in light of the rally. Outright selling is difficult given lack of attractive yield opportunities elsewhere, but we think investors should rebalance their positions.

Investors should use rally to re-balance

The pricing of these positions, we believe, is based on several supportive assumptions. Even if, as we ourselves expect, defaults were to stay low, there are other risks to equity holders as we highlighted in our earlier equity study [CLO Equity – Strong Cashflows Continue](#). A bull-market will lead to repricing of loans, with the possible erosion of the benefit of Libor floors as interest rates rise with improving fundamentals (some of the rate rise can benefit CLO equity from an absolute return perspective, though). Incentive fees are due. There will also be an increasing likelihood of deals getting called and portfolio amortizations, meaning lower leverage and higher liability costs. The expected returns in Figure 9 are reasonably sensitive to the loan prepayment rates and the amount of reinvestment during and after the reinvestment period. In our view, investors should only pay the best prices for deals where there is evidence that documentation allows deals to stay outstanding for a longer period (see Figure 10 for evidence of the dispersion in senior amortization rates across deals; for more details, see [Life after reinvestment – CLO 1.0 resurrected](#)). In all other cases constraints such as weighted average life tests, if rigorously documented and applied, will limit reinvestment and lead to lower cashflows for equity holders. Where there is some uncertainty, investors should sell high dollar-price equity and buy discounted mezz bonds (CLO 1.0 or 2.0) which will benefit from CLO calls, or, alternatively, lower dollar-price equity from more seasoned deals with support from collateral market value if the deal is liquidated.

Glimmers of hope for Euro CLO new issue

It has been tried before, and so no over-promises. Nonetheless if we continue to see the demand for yield from European buyers, the aversion to peripheral country and corporate debt, and the realization that CLOs have performed, we think a new arbitrage Euro CLO may appear sooner than the bears imagine. Combine this with wider Euro loan spreads (benefiting from amendment fees and Euribor floors, though not as attractive as the US) and gradually tightening senior CLO spreads, the (still negative) arbitrage is not looking quite as dispiriting. Many European investors are shut out of the US market because of the lack of qualifying risk retention that European regulators demand, and so a Euro deal will be welcome news to many (and not just to us dealers!).

Appendix

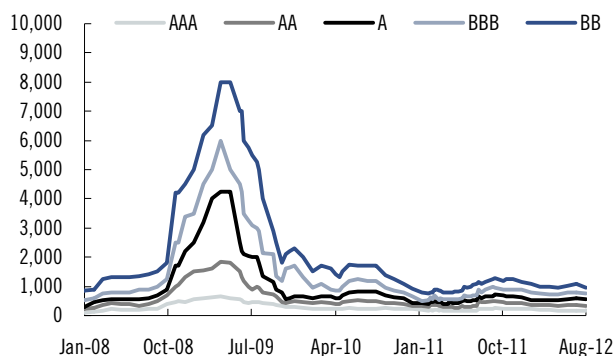
Cash Flow CDO Market

Figure 12. Secondary Cash Flow CDO Spreads/Prices

Collateral Type	AAA	AA	A	BBB	BB
US HY CLO 1.0 (Spreads) – 1-Aug-12	170	325	550	750	950
US HY CLO 1.0 (Prices) – 1-Aug-12	Mid 90s – High 90s	Mid 80s – High 80s	Mid 70s – Low 80s	High 60s – Mid 70s	High 60s – Mid 70s
US HY CLO 2.0 (Spreads) – 1-Aug-12	153	305	406	613	834
US HY CLO 2.0 (Prices) – 1-Aug-12	High 90s – Par	Mid 90s – High 90s	Low 90s – Mid 90s	Low 80s – High 80s	Low 70s – Low 80s
Euro HY CLO (Spreads) – 1-Aug-12	280	680	880	1400	2100
Euro HY CLO (Prices) – 1-Aug-12	Mid 90s – High 90s	Mid 70s – Low 80s	Mid 60s – Mid 70s	High 40s – High 50s	Mid 40s – Mid 50s

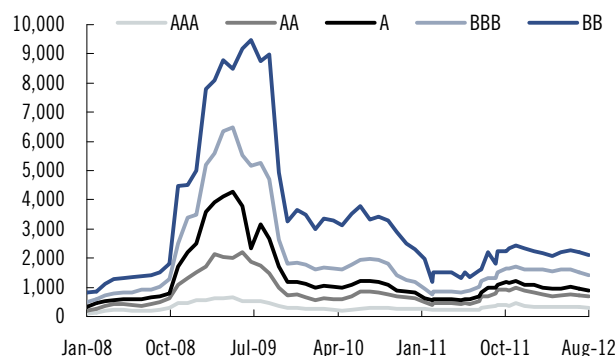
Source: Citi Investment Research and Analysis

Figure 13. US CLO Tranche Spreads



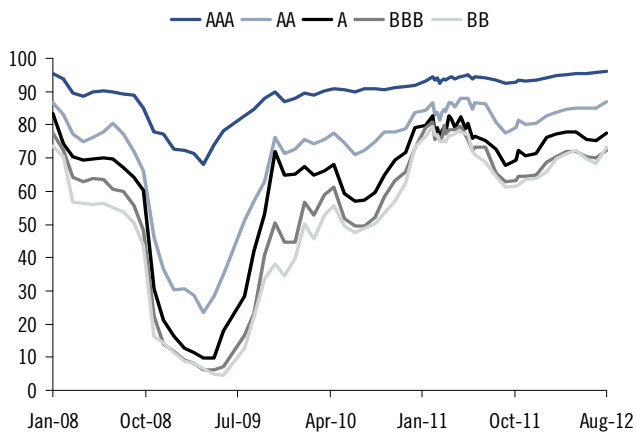
Source: Citi Investment Research and Analysis

Figure 14. European CLO Tranche Spreads



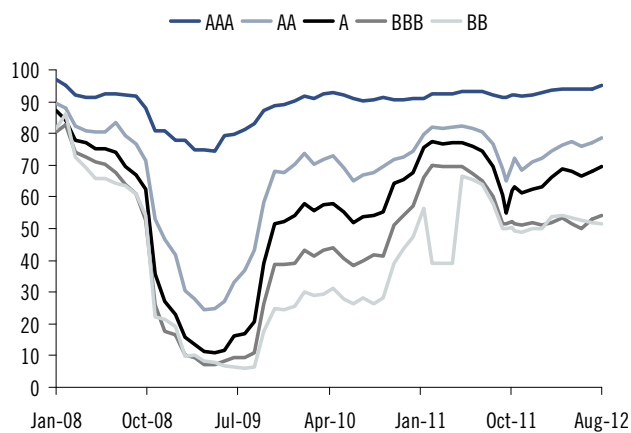
Source: Citi Investment Research and Analysis

Figure 15. US CLO Tranche Prices



Source: Citi Investment Research and Analysis

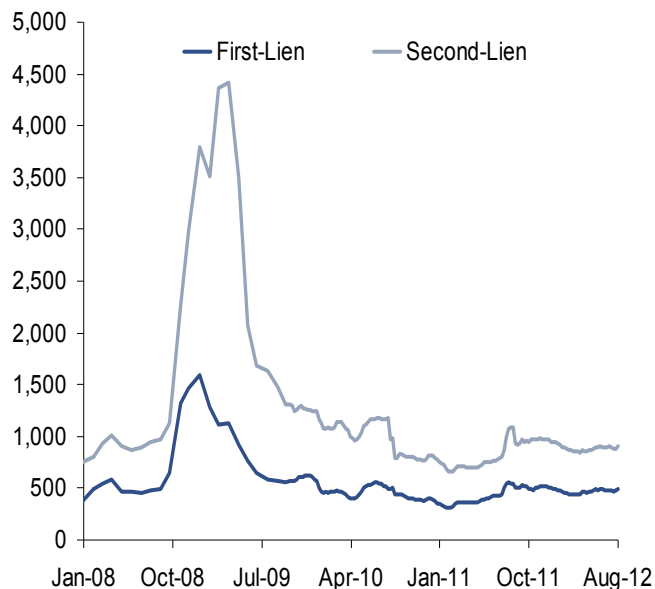
Figure 16. European CLO Tranche Prices



Source: Citi Investment Research and Analysis

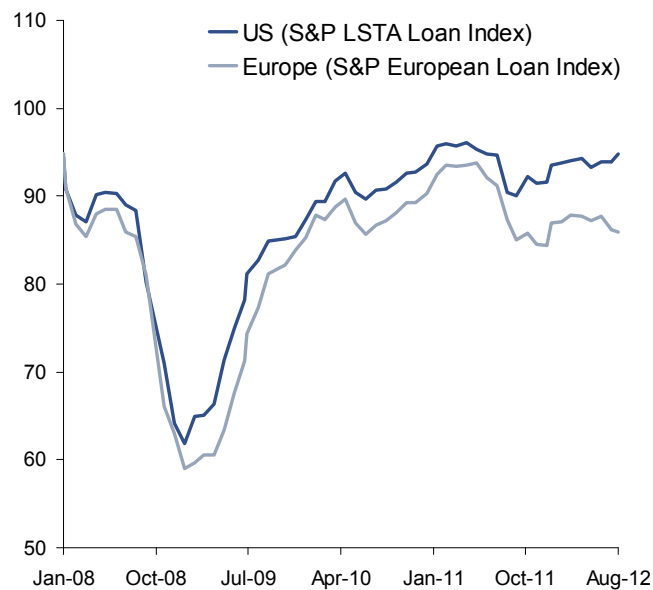
CLO Collateral

Figure 17. Avg First and Second-Lien Secondary Spreads to Maturity



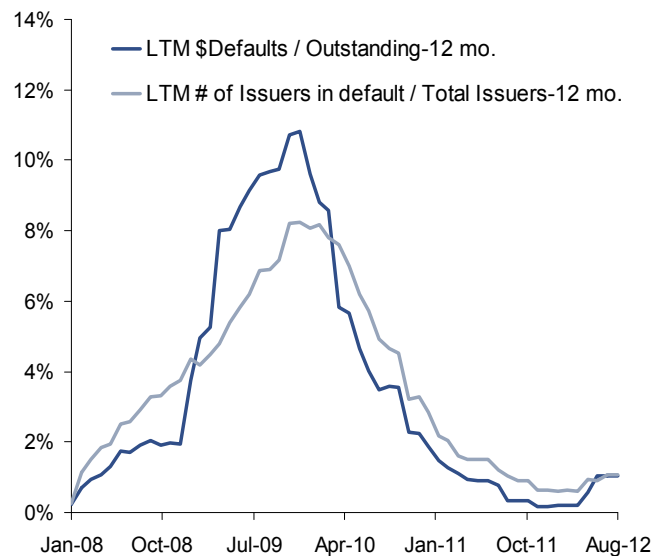
Source: S&P

Figure 18. Weighted Average Bid



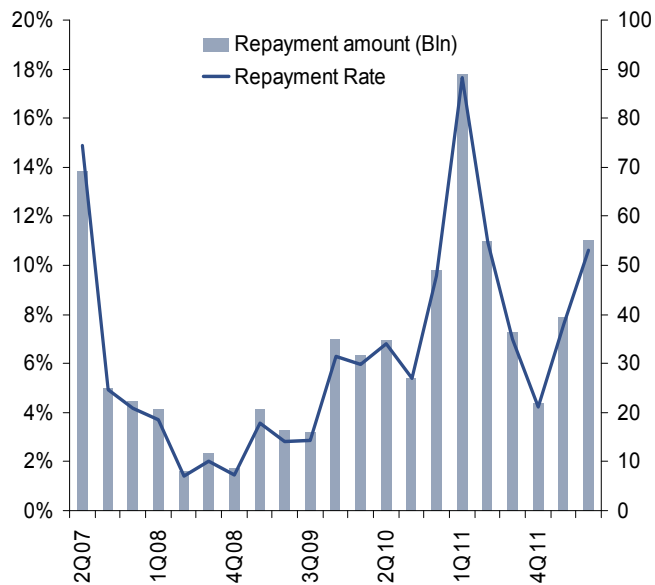
Source: S&P

Figure 19. US Lagging 12mo. Default Rate by Principal and # of Issuers



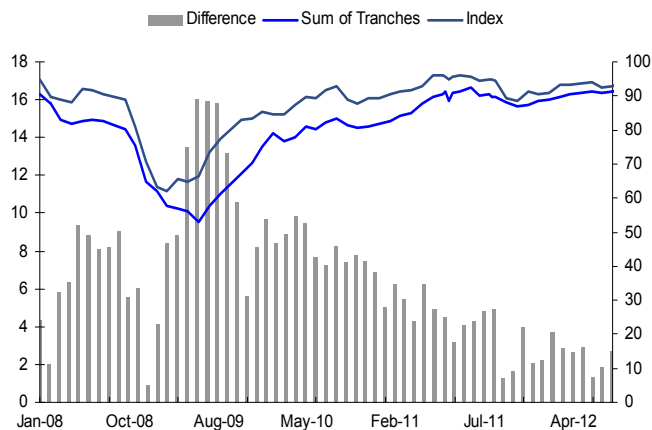
Source: S&P

Figure 20. US Quarterly Repayment Rate and Repayment Amount



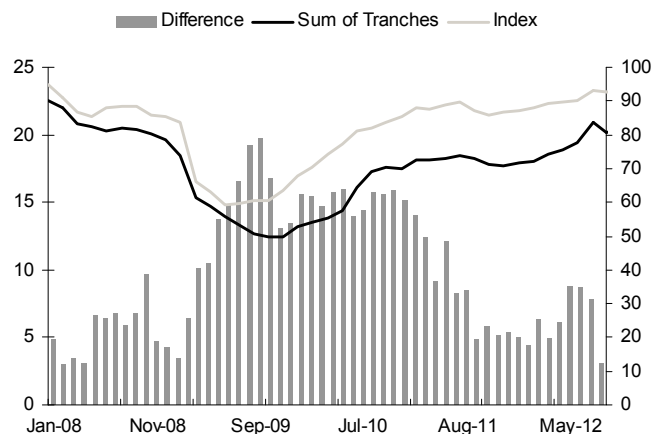
Source: S&P

Figure 21. Collateral/Tranche Arbitrage (US Deals)



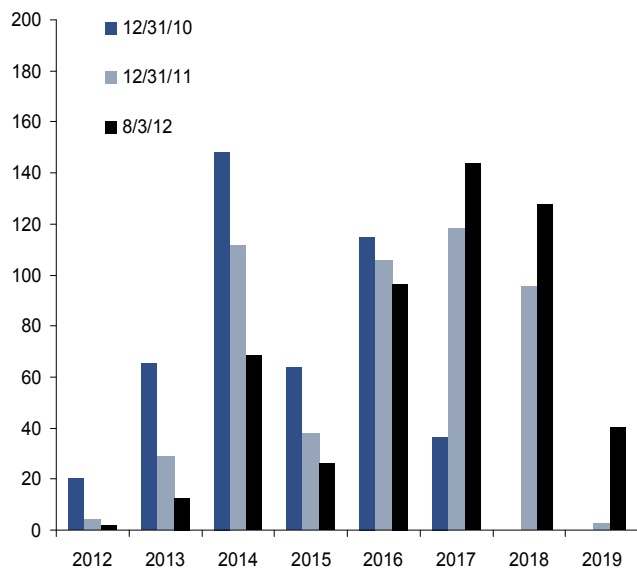
Source: Citi Investment Research and Analysis

Figure 22. Collateral/Tranche Arbitrage (EUR Deals)



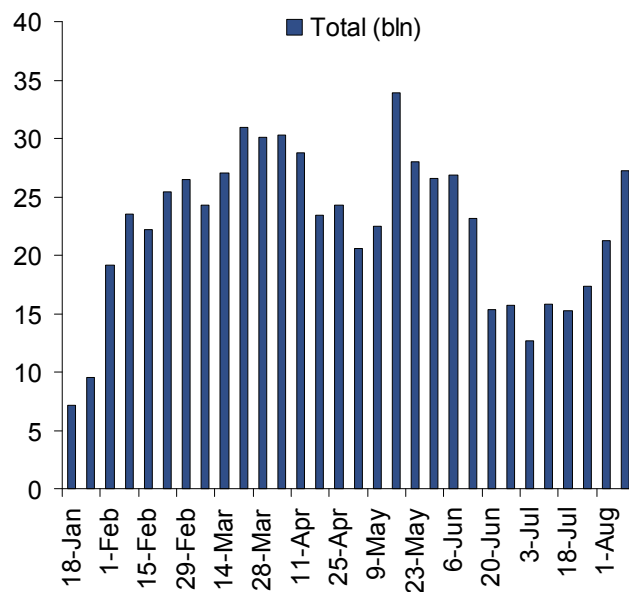
Source: Citi Investment Research and Analysis

Figure 23. US Loan Distribution by Year of Maturity



Source: S&P

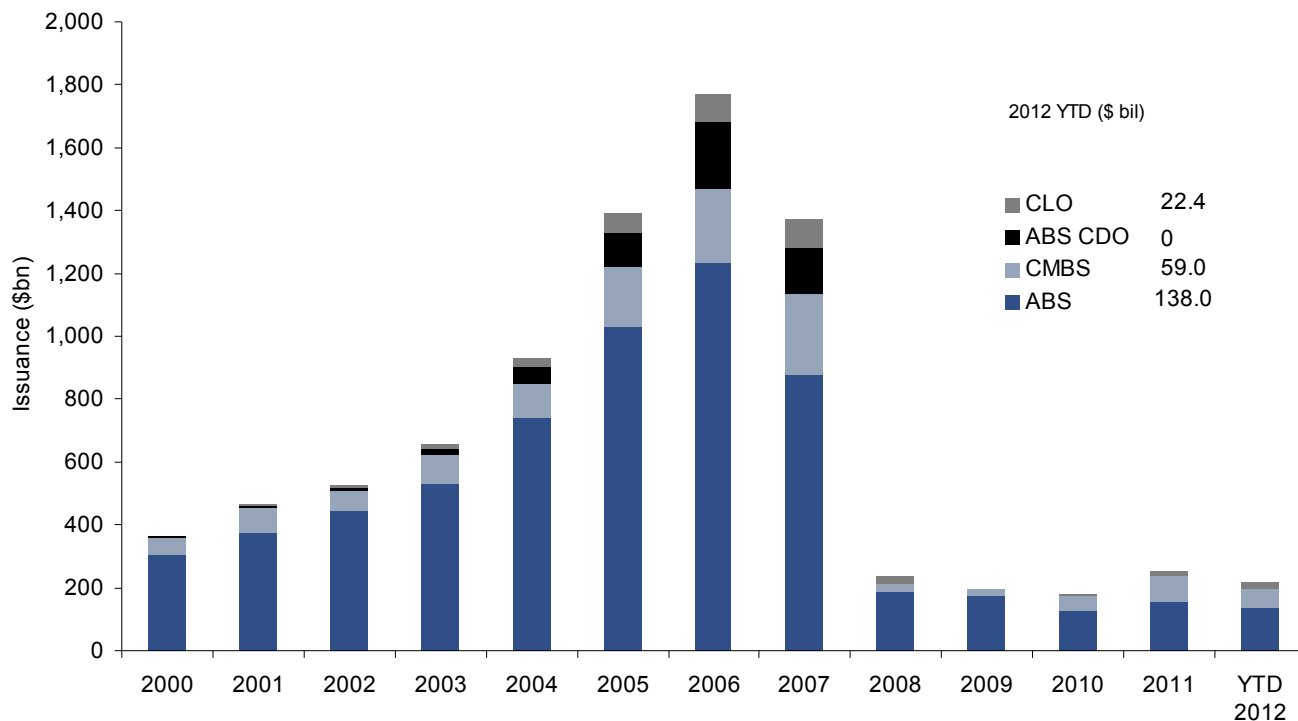
Figure 24. US Institutional Loans Launched to Market (Rolling 30-Days)



Source: S&P

Securitized Products Issuance

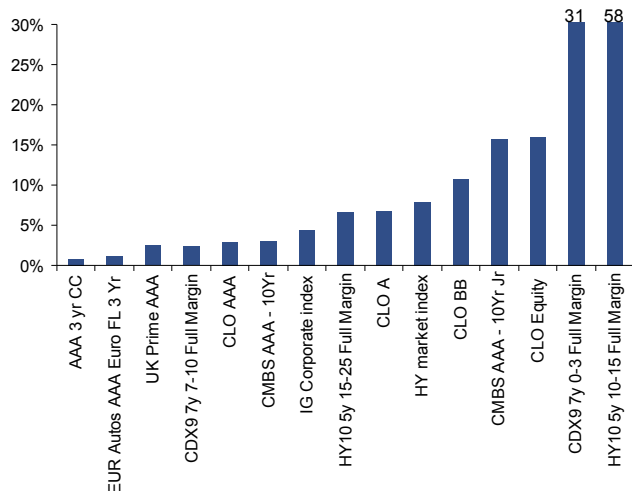
Figure 25. Year-to-Date CDO Issuance and Securitization Market Historical Issuance (\$bn)



Source: Bloomberg, Citi Investment Research and Analysis

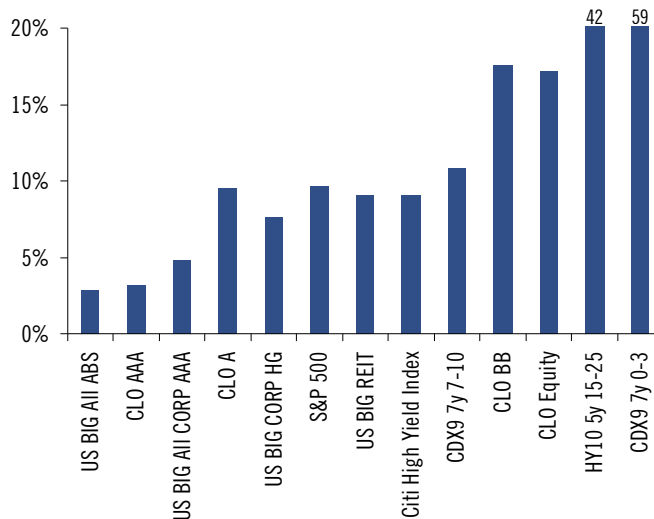
Securitized and Non-securitized Products Returns

Figure 26. Simple Yield



Source: Citi Investment Research and Analysis

Figure 27. Total Returns, YTD 2012



Source: Citi Investment Research and Analysis

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.

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

Ratul Roy; Anindya Basu

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 110-180, 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?companyCd=A03030&pageDiv=02>. 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.

© 2012 Citigroup Global Markets Inc. Citi Research is a division of Citigroup Global Markets Inc. Citi and Citi with Arc Design are trademarks and service marks of Citigroup Inc. and its affiliates and are used and registered throughout the world. All rights reserved. Any unauthorized use, duplication, redistribution or disclosure of this report (the "Product"), including, but not limited to, redistribution of the Product by electronic mail, posting of the Product on a website or page, and/or providing to a third party a link to the Product, is prohibited by law and will result in prosecution. The information contained in the Product is intended solely for the recipient and may not be further distributed by the recipient to any third party. Where included in this report, MSCI sourced information is the exclusive property of Morgan Stanley Capital International Inc. (MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, disseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI, Morgan Stanley Capital International and the MSCI indexes are services marks of MSCI and its affiliates. The Firm accepts no liability whatsoever for the actions of third parties. The Product may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the Product refers to website material of the Firm, the Firm has not reviewed the linked site. Equally, except to the extent to which the Product refers to website material of the Firm, the Firm takes no responsibility for, and makes no representations or warranties whatsoever as to, the data and information contained therein. Such address or hyperlink (including addresses or hyperlinks to website material of the Firm) is provided solely for your convenience and information and the content of the linked site does not in anyway form part of this document. Accessing such website or following such link through the Product or the website of the Firm shall be at your own risk and the Firm shall have no liability arising out of, or in connection with, any such referenced website.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST
