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Global

Global Securitized Products Monthly

Volatility Is a Constant, Underscoring Superior Securitized Products Value

- **Agency MBS** — We recommend a modest underweight on the basis. Global bond yields have rallied back to the lowest levels of the year and we think it could continue due to the looming uncertainty of Brexit vote. Servicer hedging needs settling down, higher supply and MM's incentive to add IG bonds over MBS are arguing for modest underweight on the basis.

- **Non-Agency MBS** — We continue to prefer securities less levered to improving home prices as we expect HPA to remain around +4.6% in 2016. We expect technicals to be mixed, with RMBS 2.0 and SFR issuance declining while CRT and NPL/RPLs will be slightly higher and flat, respectively. We do not anticipate material new additional regulation to be passed in 2016.

- **Consumer ABS** — Buying short, amortizing and high quality assets that roll down the curve is the optimal strategy for thwarting market volatility, in our view. ABS spreads remain cheap to the corporate market and to the 1YR spread range. The 1–5YR Citi BIG index corporate spreads to swaps range from negative 5bp to +104bp while selected ABS spreads range from swaps + 38–150bp.

- **CMBS** — As private-label primary supply looks light in the near term, investors may look towards other CMBS sectors for opportunities. Secondary supply has been running in the $700-800 million daily average range for the past year. Agency CMBS adds another $300 million per day to that amount, though the daily average spiked to over $600 million this quarter. New supply in Agency CMBS remains robust. Also, CMBX offers access to exposures that may not be available in the cash market.

- **CLO** — Loan price stability is a greater focus for CLO buyers. Our analysis shows that bid depth and credit quality explain ~60% of variation in portfolio spread, but many portfolios choose less liquid names to increase the portfolio spread and improve CLO “arbitrage”. More liquid, lower spread portfolios were more likely to preserve portfolio prices better during the sell-off.

- **Europe** — European ABS supply spiked as investors prepared for the Barcelona ABS conference. UK RMBS dominates much of the YTD issuance. We discuss some of the challenges GBP originators face with non-GBP liabilities, and some of the impact on UK RMBS in a Brexit scenario.

Global Securitized Products

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

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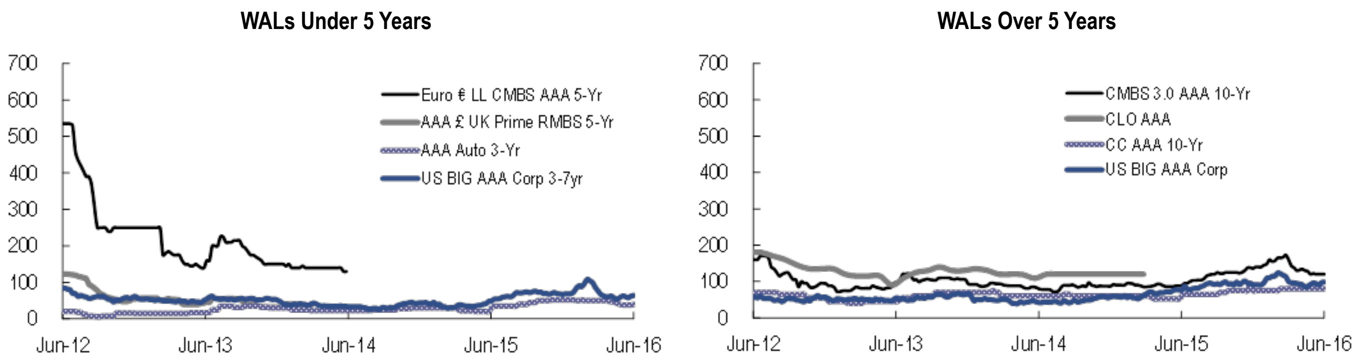
Securitized Products Overview

Figure 1. Selected Securitized Products Sectors — Spread Performance, June 12 – June 16



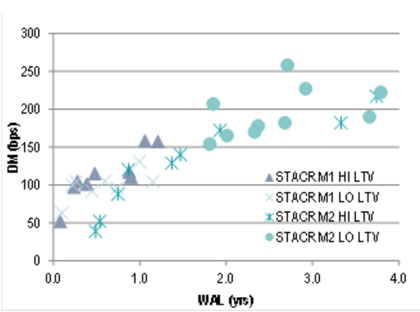
Source: Citi Research

Bring on the Noise Because Short WAL Investing Is Inherently Defensive

The ABS market well appreciates that Brexit, Fed policy, upcoming US elections and economic complexity represent significant uncertainties for the investing outlook. But our thesis remains that buying short, amortizing and high quality assets that roll down the curve is the optimal strategy for thwarting market volatility. It also helps that many securitized spreads remain cheap to the corporate market and to the 1YR spread range. Short WAL sectors our strategists like currently include generic cards and autos at the IG level. Selected generic ABS spreads range from swaps + 38–150bp, are cheap to the 1YR range and to the corporate market. Dealer floorplan ABS strikes us as attractive at swaps + 65bp. At swaps + 55bp, the longest auto lease ABS senior classes (about a 2.5YR WAL) pick up 19bp to prime auto loan ABS.

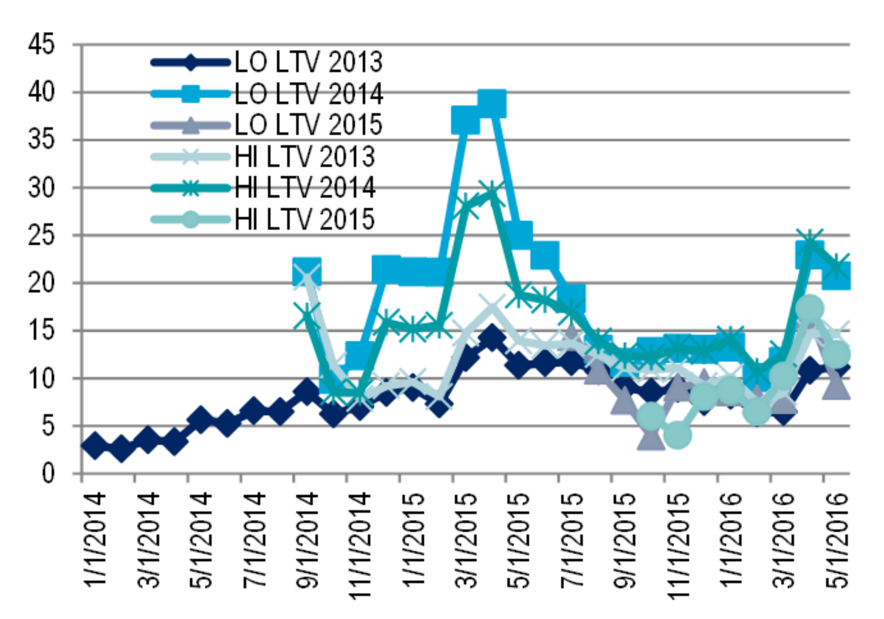
Certain other securitized short WAL products are worth consideration. Agency RMBS is generally expensive and has mostly longer WALs, but 15YR mortgages would probably benefit from a flight to quality in a rate selloff. In the non-agency RMBS sector, the GSE-issued credit risk sharing transactions (CRT) provide short WAL opportunities. In particular, we like the M2 bonds issued under Freddie Mac's STACR program. These second-pay classes are well-enhanced, have more curve roll down than the M-1s and pick up 50–100bp to the M-1s (Figure 2). Within the M-2 sector, we feel investors should consider those collateralized by high LTV loans given the higher prepayment speeds which support the short WAL (Figure 3). The primary risk with these high LTV loans is the potential for higher default rates eroding credit support.

Figure 2. CRT M2 Bonds See ~100bps of Curve Rolldown as M1s Pay Off



Source: Yield Book, Citi Research, 31 May 2016

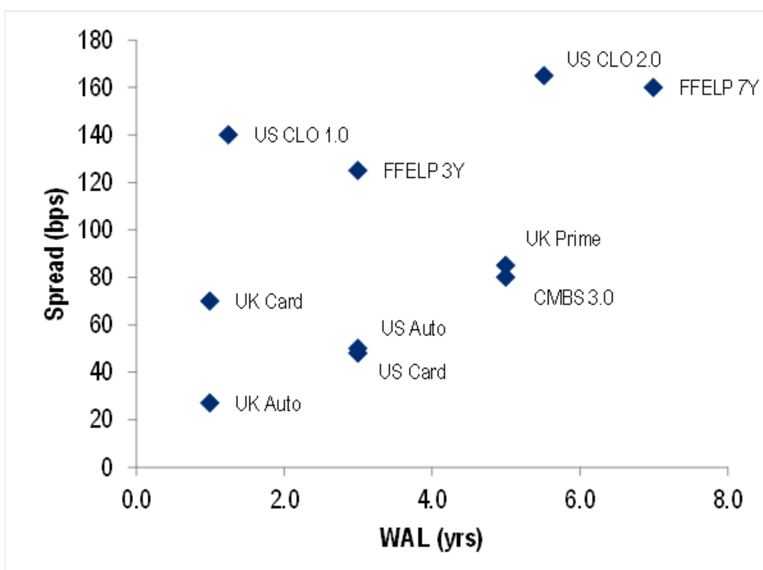
Figure 3. High LTV Collateral Prepayments Tend to be Higher



Source: Freddie Mac, 1010data, Citi Research

We like short-dated CLO 1.0 AAAs at L+140bp. At such level, CLO 1.0 AAA, with less than 2YR WAL offers significant spread pick-ups to comparable WAL triple-A products. We partially attribute the spread premium to lower liquidity for seasoned non-Volcker compliant deals.

Figure 4. Triple-A CLO Relative Value



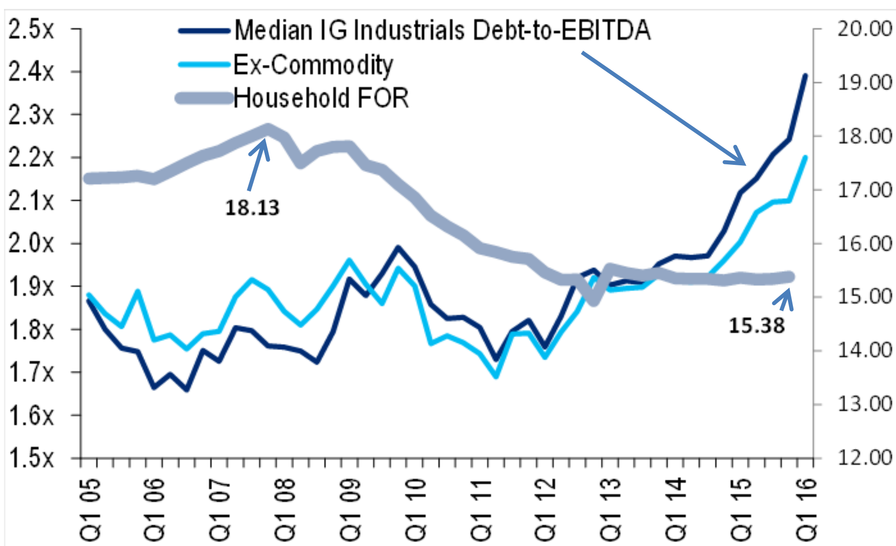
Source: Citi Research
*The benchmark for US CLO, US Card, US Auto, and FFELP is LIBOR; the benchmark for CMBS is swap; and the benchmark for UK Card, UK Auto, and UK Prime is GBP swap.

In CMBS, the triple-A 5YR spread at S+82bp is the most attractive across senior spreads. It currently picks up 3bp to its one-year average corporate differential. The class has been lagging other senior CMBS for a couple reasons. First, the class is exposed to extension risk, and is likely being priced at a longer WAL than five years. New deals are more susceptible to extensions given their low WACs and higher IO percentages. Second, class sizes have been very small, increasing liquidity risk. In 2016, A-2 tranches have averaged \$65.5 million versus \$81.5 million and \$136.7 million in 2015 and 2014, respectively. The five-year classes from recent deals JPMDB 2016-C2 and WFCM 2016-C34 were actually relatively large at \$160.4 million and \$100.6 million.

Corporate and Securitized Products Sectors are at Diametrically Opposite Points of the Credit Cycle

US consumer fundamentals are far superior to the corporate market, which has been aggressively re-levering for some time (Figure 5). Strategically, we prefer US consumer credit over corporate credit at this point in the credit cycle. US households continue to benefit from the de-levering that has taken place since the financial crisis while IG corporate leverage has meaningfully deteriorated during the same cycle. According to Citi's corporate strategy team, the median IG industrials' debt-to-EBITDA ratio has spiked from about 1.9 times in Q1 2005 to 2.4 times as of Q1 2016[1]. They also consider nonfinancial IG spreads to be too rich, stating that the "spread-per-turn of leverage in most sectors is less than normal, and in some cases much less than normal." For this analysis, they measured IG spreads against the average spreads for selected sectors in the 2010–2015 era.

Figure 5. IG Leverage Is Moving in the Wrong Direction … While US Consumers Repaired Balance Sheets: Household Debt Service and Financial Obligations Ratios Stand at the Lowest Level of the 1980–Present Era



Source: Federal Reserve Bank, Capital IQ, Citi Fixed Income Indices and Citi Research. Note: IG constituents exclude utilities

Securitized pools offer unique asset and geographical diversification that is largely unobtainable in corporate investing.

- In contrast, securitized pools offer asset and geographical diversification unachievable in the corporate market. US consumers have benefitted from a strong jobs market, rising home prices, financial asset and moderate income growth. US personal income gained 4.4% YoY in April 2016 and has averaged 4.5% YoY gains since January 2014. This and a reduction in household leverage

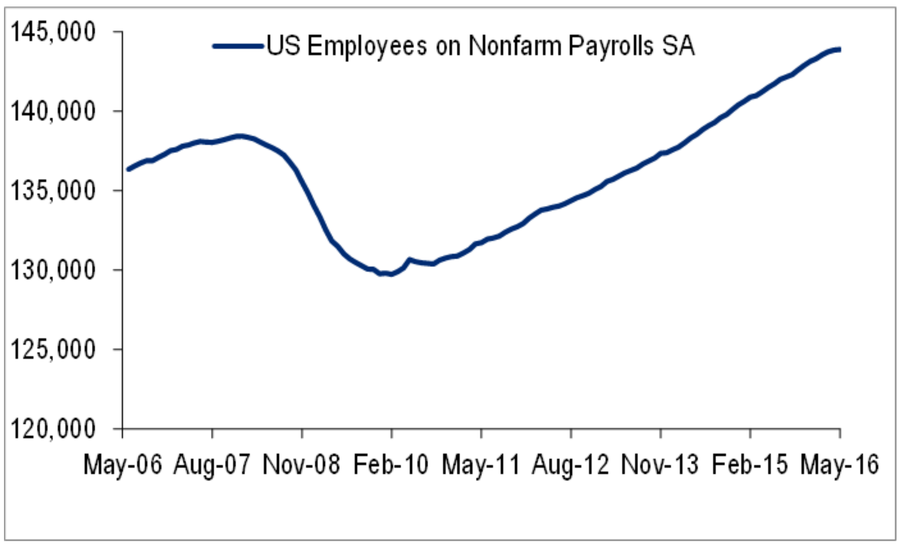
[1] Ways to "Take Advantage of the Current Environment", 10 May, 2016.

is equipping consumers with further spending capacity. US consumers have cut the financial obligations ratio from 18% in December 2007 to 15.34% as of December 2015 (Figure 5). This 15% reduction in indebtedness represents real financial progress for US households, even though there is income and asset distribution tiering and not all households have benefitted equally.

US Economics Latest Thinking: More Delay

Citi economists' latest view is that September is a more likely time for the next rate hike than June or July, based on the latest nonfarm payroll data and Chair Yellen's comments earlier this week. Whether or not the Fed resumes rate normalization soon hinges on their assessment of the May slowdown: is the slower payroll growth more pervasive, or an isolated temporary blip? In the near-term, the latest US jobs report (Figure 6) will likely spark renewed concerns over the strength of the recovery both for investors and FOMC participants. The US economy added just 38K jobs in May, well below consensus expectations of 160K and Citi's more measured 140K forecast. Net revisions totaled to –59K. The May print derailed market expectations of a June or July rate hike, priced into rates products, and raised questions regarding the robustness of the Q2 rebound. (Although we do note that employment is a lagging indicator, and may reflect 1Q's economic weakness). Nonetheless, the May payroll weakness was broadly based, even away from the telecom strike.

Figure 6. US Employees on Nonfarm Payrolls Total SA, thousands



Source: Bloomberg and Bureau of Labor Statistics

Citi's economists believe that a 116K 3-month average payroll gain may not derail a Fed hike later this year[2]. Without corroborating evidence of a more widespread pause, the May labor market slowdown is likely a temporary blip[3]. Chair Yellen faces the challenge of rebuilding and reinforcing the FOMC's faltering consensus regarding the timing of the next rate increase. Until last week's employment report, global and US economic developments had satisfied the preconditions for raising rates. However, the April minutes showed she did not lock in a consensus about

[2] US Economic Flash - Citi's Look Ahead: Chair Yellen Must Rebuild FOMC Consensus—What She Should Say Monday", by Bill Lee et al. 3 June 2016

[3] "FOMC Edition: Chair Yellen Delays Again" US Economics Flash, by Bill Lee, 6 June 2016.

timing. The FOMC members are divided on the robustness of the expansion. We stay with our September call, but remain vigilant for data revisions/ reversals.

Top Sector Recommendations

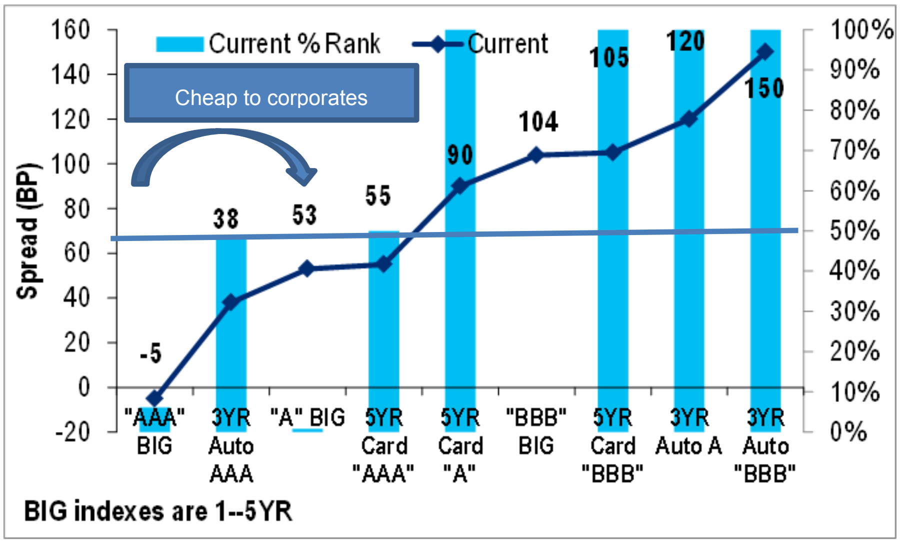
ABS Focus Sectors

Single-A and triple-B ABS sectors are at the 100th percentile of the 1YR range. Triple-As are fairly valued, by this metric, at the midpoint of the 1YR range while subordinates are attractive (Figure 7).

- **Dealer floorplan attractive**. Dealer floorplan ABS strikes us as attractive at swaps + 65bp. US auto manufacturers and dealers continue to prosper and this ABS sector has active turnover and is more on-the-run than off-the-run, in our view. The deals are very well structured and investors are well-protected, in our view.

- **Auto lease**. Auto lease ABS is a consistent performer and the collateral quality is very high quality. Auto lease structures possess residual value risk, but the structures compensate with credit enhancement. At swaps + 55bp, the longest senior classes (about a 2.5YR WAL) pick up 19bp to prime auto loan ABS.

Figure 7. Selected Citi BIG 1–5YR Indexes and ABS Spreads: Current Spreads to Swaps in BP and 1YR Spread Percentile



Note: Low = 0% and high = 100%. Source: Yieldbook and Citi Research

Off-the-run ABS sectors complement core ABS investments and spreads offer attractive pickups to generic ABS as Figure 8—Figure 9 show. Yet certain sectors exhibited fairly volatile performance during the February to March selloff. Installment loan senior 3YR ABS widened, for example, by 65bp in February (swaps + 195bp to 260bp). From February to April the sector widened another 90bp but has since reverted back to early 2016 levels (swaps + 205bp currently). Marketplace ABS widened last month on the startling news relating to one sector player. Nonetheless, that lender has not issued many term ABS deals; in fact, there are very few marketplace ABS transactions that have come to the term market.

Figure 8. Selected ABS Sector Spreads to Swaps, 3YR Triple-A Fixed-Rate, 6 June 2016

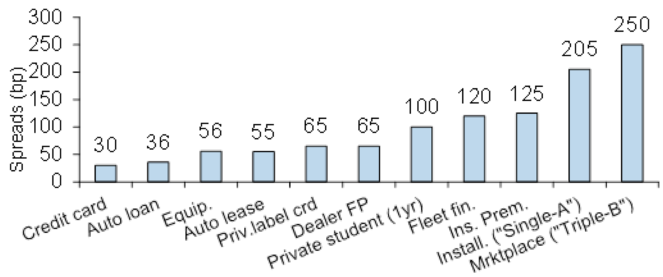
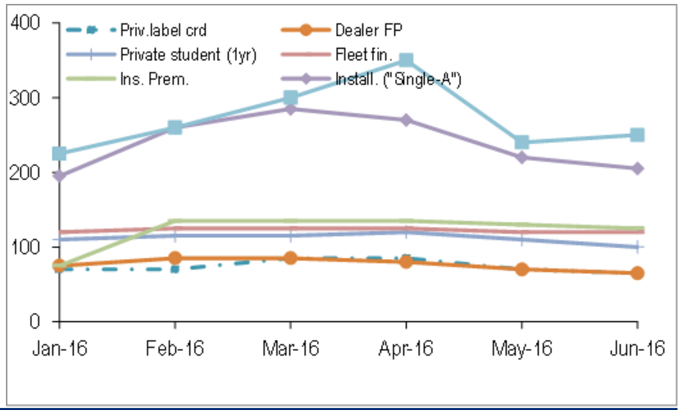


Figure 9. Selected ABS Sector Spreads to Swaps, 3YR Triple-A Fixed-Rate, Jan 2016–June 2016



CMBS: Looking for Supply

- Looking for Supply — As private-label primary supply looks light in the near term, investors may look towards other CMBS sectors for opportunities. Secondary supply has been running in the $700-800 million daily average range for the past year. Agency CMBS adds another $300 million per day to that amount, though the daily average spiked to over $600 million this quarter. New supply in Agency CMBS remains robust. Also, CMBX offers access to exposures that may not be available in the cash market.

Non-Agency RMBS: Legacy Slowdown, New Entrants

- In line with our expectations, 2015 returns slowed relative to last year's results. January total return for the market was negative for the first time in several years. Given the slowing HPA environment, we tend to prefer securities less levered to home prices. We also prefer securities that provide more carry (either from coupon or prepays) as we hold the view that prices will not appreciate as they have over the past years.

- We focused on the credit exposure of GSE credit risk transfer securities to various factors this month. For example, we examined jumbo vs. conforming balance home price appreciation expectations. We also examined the effect of low oil prices on the delinquency rates in CRT deals.

- **Neutral HPA investments**. We prefer securities which are less levered to home prices. Outsized returns will no longer come from improving default assumptions, but from external cash flow windfalls such as prepays from interest only mortgages and modified loan rate step-ups.

- **Cash and carry**. We also prefer securities which provide more carry (either from coupon or prepays) as we hold the view that prices will not appreciate as much as they have over the past years.

- **These Two Result in Higher Sharpe Ratios**: We've proven that these two characteristics, in combination, provide the strongest volatility-adjusted returns.

Agency MBS

- **We maintain a modest underweight on the basis.** Global bond yields have rallied back to the lowest levels of the year, and we think this trend could continue due to the looming uncertainty of the Brexit vote. In the short-term, servicer hedging needs could keep origination low but as rates settle down the higher supply should weigh on MBS as banks and overseas investors remain sidelined. Lower yields, and the initiation of ECBs corporate bond buying program could also incentivize money managers to add IG bonds over MBS. We recommend closing out the FN 3.5 trade at a loss the recent rally has elevated uncertainty as it increases the risk of outright selling from banks and the potential for a meaningful worsening in deliverables. At current rate levels, a call on the fly is more a function of rate views.

- **Rich spec valuations supported by carry, rates.** Specified pool payups have richened further since our update last month due to lower dollar rolls and higher prices. The recent rally in rates could fuel further outperformance in the sector if sustained. However, pools appear rich on nearly all our valuation metrics and we maintain our recommendation that investors limit further allocation into the sector unless they have a high-conviction view of a rate rally. We find more value in LLB-HLB versus lower payup stories in 3.5s, but not in 4.0s where LLB-HLB valuations have richened relatively more.

- **FHA MIP cut speculations resurface:** The MIP cut speculation resurfaced this week in a media report citing a research report that pegged the probability of another MIP cut at 60%. Although the incremental economic benefit of further MIP cut is minimal, improvements in FHA's operating cash flows and reserve levels in the 2015 actuarial report has provided the FHA ammunition to justify a further reduction should they want to do so. The risk will continue to hang over the markets for the remainder of the year.

- **Explaining the rise in the FHA refi index:** The unexpected rise of the FHA refi index since late April is likely driven by low rates and new MIP 4.0s originated in 2H 2015 becoming eligible for streamline refis. While the index points to high speeds for 4.0s of 2H 2015, investors should be aware that the FHA index could be noisy and less representative of FHA borrower speeds compared to the VA and conventional sectors due to lower retail and bank share in FHA.

- **When HARP is History:** HARP expires at the end of this year, but an analysis of FHFA data suggests that too few borrowers may remain eligible for the program by then for the expiry to have a large impact on aggregate pre-HARP speeds. On the other hand, the expiry of the streamline refi program should have a larger impact. We project that if HARP and the streamline refinance program are both allowed to expire, speeds could see a near-term decline of 3 CPR in 2006-07 vintages, 2 CPR in 2005/08 vintages, and 1 CPR in 2003-04 vintages.

- **Japan's MBS Purchased Highest since 2010:** March TIC data came out on Monday and indicated that foreign investors purchased $27.2bn agency MBS in March. After adjusting for paydowns, net purchases were $15.4bn, highest since November 2014. Japan, UK and Taiwan bought $11.7bn, $7.4bn and $4.3bn, respectively, leading to strong overseas demand. Japan's MBS purchases were the highest since 2010. Weekly data released by Ministry of Finance shows that Japan's foreign bond purchase slowed down to $2.5bn during the first week of May from $8-13bn of weekly purchases in the middle of April.

- **Prepay expectations on re-performing pool:** We review Freddie's R pool collateral characteristics and prepays as a reference to prepayment characteristics of Fannie's future issuance in the second half of 2016. Involuntary speeds of R-pools are typically 2-3 CPR higher than same vintage Gold cohorts. Voluntary speeds have been driven by HARP refinancing but the expiry of the program could slow down speeds on these pools more than pre-HARP cohort speeds due to lower borrower FICO scores and a potential lack of cross servicer solicitation. As such, the fundamental value of cashflows in reperformers appears to be better than seasoned pools at the margin but limited prepay experience, risk of elevated short-term re-defaults, non-deliverability into TBAs, and exclusion from benchmark indices could result in a discount on reperformers relative to fundamental value that we expect.

- **Specified pools underperform sharply.** Specified pool payups underperformed TBA hedges by 1 to 6 ticks over the past week. Early last week, we had sounded caution on the spec pool sector due to rich valuations and recommended that investors take profits and limit further allocation. The selloff in rates this week was unexpected, but tight valuations left little room for error and the sharp underperformance even as 10y Treasury yield remains in the YTD range, validates the risks to the sector. For the time being we maintain a cautious view on the sector, although risk-reward is clearly more balanced than last week after the recent underperformance.

Sector Relative Value and Allocation Recommendations

Our securitized products strategists have mixed views on the market, ranging from fairly bullish to neutral, and Figure 10 shows Citi strategists' recommendations for major structured products sectors on a scale of -3 (maximally bearish) to +3 (maximally bullish). The table also incorporates the strategists' most current thinking about value and presents one or two trade ideas.

Figure 10. Sector Relative Value and Asset Allocation Recommendations — Selected Sectors, June 2016

Sector	Strategist Recommendation	Spreads Relative to Long-Term Averages	Comments	Risk
CABS	0	Mixed	The market is cheap to IG corporates and we expect it to outperform corporates in the months ahead as ABS is still cheap relative to the 1YR range. Market weight with a mix of on- and off-the-run ABS.	An earlier-than-expected US slowdown or unexpected rate rise are sector risks Low gasoline prices have also benefitted consumers and we expect prices to begin rising later in 2016.
CMBS	0	Fair	We recommend extension-protected bonds. The seven-year AAB and front-pay last cash flow are good choices for bonds with WALs that should not extend in all but the most extreme refinance environments. On the flip side, investing in five-year A2s requires careful assessment of the cashflow growth potential for each of the five-year balloons in the pool.	All-in yields have dipped below 3%. Yield buyers may require a bit more spread to participate at current levels. Tighter spreads may ignite higher deal supply, perhaps leading a negative technical.
Agency MBS	-1	Modest Underweight	We recommend a modest underweight on the basis. Global bond yields have rallied back to the lowest levels of the year and we think it could continue due to the looming uncertainty of Brexit vote. Servicer hedging needs settling down, higher supply and MM's incentive to add IG bonds over MBS are arguing for modest underweight on the basis.	While Brexit polls seem to indicate that the 'remain' vote is leading, the 'exit' camp has been gaining momentum recently. The anxiety in the fixed income markets could continue to increase as we approach the polls if the surveys indicate continued support for the 'exit' camp.
Non-Agency MBS	+1	Cheap to Fair	We remain positive on non-agencies, but we recommend defensive positions such as shorter WAL Prime and seasoned Subprime Mezz paper. In GSE risk sharing deals, we see stronger value in the CAS/STACR M2/M3 classes.	Home prices are slowing, and could turn negative. This could adversely impact valuations broadly as well as affect investor appetite and dealer willingness to provide liquidity.
CLO	+1	Attractive	CLO mezz tranches offer attractive yields on loss-adjusted basis.	Fundamentals are slowly deteriorating, and we concern about market instability and weaker holders if macro volatility resumes.
European Securitized Products	+1	Cheap to Fair	Our overall tone is defensive. We do not expect to see an immediate rally partly because of supply fears in UK RMBS and overall volatility. Recommend short-duration trades as auto ABS, Euro CLO 1.0s or trades up the cap stack with good carry such as UK NC RMBS seniors.	Return of string risk appetite could lead our defensive strategy to underperform more aggressive strategies based around longer-duration assets Our credit strategists foresee a 40bp tightening in iTraxx crossover as a result of the corporate bond buying program and some of this can spill over to ABS.

Source: Citi Research

Relative Value Cross-Sector Table

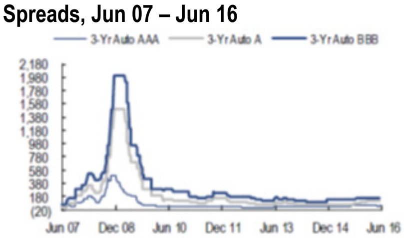
	Cash					Synthetic		
	Rating	**Coupon**	**WAL/Maturity**	**Current Spread**	**View**	**Current Spread**	**View**	**Comment**
US Securitized Products								
Agency — FN/FH	Agency	Fixed		38 LOAS	Modest underweight	NA	NA	We recommend a modest underweight positioning on the basis.
Agency — GN	Agency	Fixed		33 LOAS	Neutral	NA	NA	
Prime RMBS	PT- AAA	Fixed		200-250	Hold	NA	NA	We prefer short WAL Prime & seasoned Subprime Mezz paper. Higher collateral quality and structure is preferable given a pending slowdown in HPA.
Alt-A RMBS	AAA	Fixed		250-300	Hold	NA	NA	
Subprime RMBS	AAA	Floating		275-350	Hold	L80s(ABX 06-2 AAA)	NA	Subprime sector is more levered to a housing recovery; however, servicer selection is crucial.
CMBS 2.0/3.0	AAA	Fixed	10-YR	120 for 3.0	Hold	113 for AAA.9	NA	Value across WAL spectrum at senior level, particularly 3-YR and 7-YR. IO bonds are attractive with recent deal metrics.
	BBB-	Fixed	10-YR	650 for 3.0	Hold	600 for BBB-.9	NA	Credit curve has steepened. Offer an attractive carry.
Legacy CMBS	AAA	Fixed	Original 10-YR		Hold	80 for AAA.5	NA	Split-rated AMs offer 30-80bp of spread over triple-B corporate alternatives.
Credit Cards	AAA	Fixed	5-YR	50	Hold	NA	NA	We still like barbelling portfolios with a mix of on- and off-the-run ABS
	BBB	Fixed	5-YR	105	Hold	NA	NA	
	AAA	Floating	5-YR	75	Hold	NA	NA	
	BBB	Floating	5-YR	105	Hold	NA	NA	
Autos	AAA	Fixed	3-YR	40	Hold	NA	NA	
	BBB	Fixed	3-YR	150	Hold	NA	NA	
Student Loans	AAA	Floating	3-YR	125	Hold	NA	NA	FFELP spreads wider due to downgrade watch
	AA/A	Floating	10-YR	265	Hold	NA	NA	
CLO	AAA 1.0	Floating	<2-YR	140	Buy	NA	NA	CLO mezz tranches offer attractive yields on loss-adjusted basis.
	AAA 2.0	Floating	6-YR	165	Buy	NA	NA	
	AA	Floating	7-YR	228	Hold	NA	NA	
	A	Floating	7-YR	320	Hold	NA	NA	
	BBB	Floating	8-YR	520	Hold	NA	NA	
Euro CLO	1.0 Sen	Floating	2-YR	110	Buy	NA	NA	We suggest Euro CLO 1.0 senior tranches for a short-duration strategy and 2.0 junior mezz as a high beta-strategy
	AAA 2.0	Floating	6-YR	150	Hold	NA	NA	
	AA	Floating	7-YR	210	Buy	NA	NA	
	A	Floating	7-YR	313	Buy	NA	NA	

NA: Not available/applicable

Sources: Markit and Citi Research

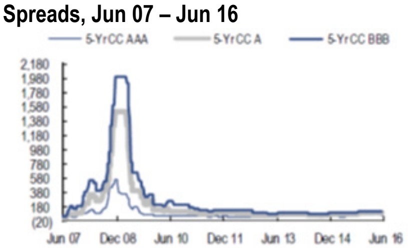
US Consumer ABS Markets

Figure 11. Fixed-Rate 3-YR Auto ABS Spreads, Jun 07 – Jun 16



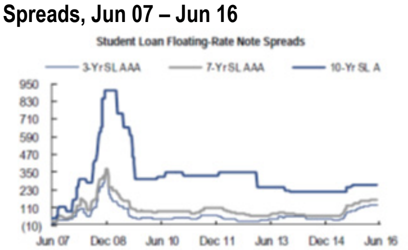
Source: Citi Research

Figure 12. Fixed-Rate 5-YR Credit Card ABS Spreads, Jun 07 – Jun 16



Source: Citi Research

Figure 13. Floating-Rate Student Loan ABS Spreads, Jun 07 – Jun 16



Source: Citi Research

Relative Value

- **Cheap to corporates.** Buying short, amortizing and high quality assets that roll down the curve is the optimal strategy for thwarting market volatility, in our view. ABS spreads remain cheap to the corporate market and to the 1YR spread range. The 1–5YR Citi BIG index corporate spreads to swaps range from negative 5bp to +104bp while selected ABS spreads range from swaps + 38–150bp.

- **"TRACE-ing" revelations.** TRACE secondary trading data reveals some expected and unexpected results. Only 137 out of almost 2,300 CUSIPS traded more than 20 times during the observed period. These CUSIPS (only 6% of total) account for almost 25% of total trading volume. Surprisingly, “other ABS” sectors account for 28% of trading volume.

- **Needless auto jitters.** We’ve had in uptick in queries about auto performance on the heels of a prominent banker calling US auto lending “a little stretched”. We agree that auto lending is not a systemic concern and point to FRBNY and Equifax data showing that auto loan originations for 660-or-less credit scores peaked in Q2 2006 at 47% and currently registers 35% of total originations as of Q1 2016.

- **Consumers & the credit cycle.** US households continue to benefit from de-levering while IG corporate leverage has meaningfully deteriorated, striking sharp contrasts in credit cycle positioning. The median IG industrials’ debt-to-EBITDA ratio has spiked from about 1.9 times in Q1 2005 to 2.4 times as of Q1 2016 while the household financial obligations dropped by 15% since Sep 2007.

Issuance

- **New issuance lags last year’s.** Year-to-date supply totals roughly $74 billion, compared to $98 billion for the comparable 2015 period. Auto ABS issuance, at $49 billion, comprises 66% of YTD 2016 supply, while credit cards, at $11 billion, comprise 15% of this year’s supply.

Consumer Credit Fundamentals

Consumer Credit Expands

- **Revolving credit expands.** US Consumer credit rose at a 4.5% annual rate in April. Revolving credit, consisting mainly of credit cards, increased at an annual rate of 2.0%, while non-revolving credit (installment and student loan debt) grew by 5.5%.

Labor Market Stalls

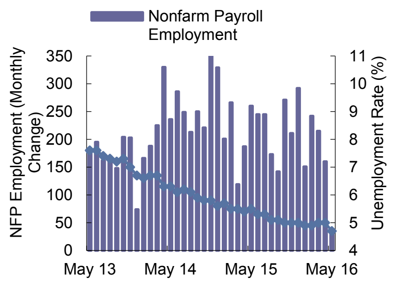
- **Labor market expands.** Non-farm payroll employment increased 38,000 in May (Figure 14). The number of long-term unemployed declined, registering 1.9 million in May and accounting for 25% of the unemployed. The unemployment rate was 4.7% in May.

- **Income, spending increases.** Personal income increased by $69.8 billion, or 0.4% in April, compared to $56.7 billion increase in March. Disposable personal income increased by $63.5 billion, or 0.5% in April, compared to $49.6 billion increase in March. Consumer spending increased in April by $119.2 billion, or

1%, following $3.7 billion increase in March. Private wages and salaries increased by $38.6 billion in April, compared to $30.7 billion increase in March.

- **Personal savings rate elevated.** Personal savings totaled $751.1 billion in April, compared to $809.4 billion in March. Personal savings as a percentage of disposable income registered 5.4% in April. It remains elevated compared to a 1.0% savings rate in early 2008.

Figure 14. Non-Farm Payrolls and Unemployment, May 13 — May 16



Source: Bureau of Labor Statistics

Consumer Confidence Uncertain

- **Confidence declines.** The Conference Board Consumer Confidence Index decreased in May. The index now stands at 92.6, down from 94.7 in April. The Present Situation Index decreased to 112.9 in May, from 117.1 last month. The Expectations Index decreased to 79.0 in May, compared with 79.7 in April. The Reuters/University of Michigan Consumer Sentiment Index decreased in June. It now stands at 94.3, down from 94.7 in May.

ABS Market Analysis

The Smoke, Mirrors and Reality of FFELP Prepayments

- **Bottom line.** FFELP prepayments are running from negative to about 5–10%, depending on the measurement method, but overall there has been little change in "big picture" prepayments and recent CPR history is unlikely to influence rating agency conclusions, in our view.

- **What could move the needle.** More aggressive conversion to the Direct Loan program to take advantage of better repayment terms and debt forgiveness could positively influence student loan prepayments. But the conversion would have to be massive to make any real difference because of the persistently large amount of loans in deferral, forbearance, and IBR, averaging from 40–45% of the pool.

- **Navient actions to date.** Navient has demonstrated the ability and willingness to continue to financially support deals. Navient's plan includes four strategies which equips the trusts to avoid hitting legal final maturities: 1) loan buyouts; 2) calling deals; 3) providing a credit facility to the trusts; 4) maturity extensions.

Fresh Consumer Data Reaffirms Mostly Positive Themes

- **Don't mess with Texas.** Low gas prices have sustained positive consumer ABS credit performance and adversity in oil-producing states matters very little to auto ABS pools for several reasons: 1) pools are heterogeneous and geographically diversified, 2) credit enhancement is robust, protecting bondholders, and 3) the Texas economy is pretty well-diversified.

- **Stable subprime buckets.** Subprime auto loan origination as a share of total US auto loan origination has been flat-to-down since Q1 2009, according to FRBNY's new Q1 2016 consumer loan origination data. The number of new credit inquiries (a measure of consumer credit demand) dropped by 5% from the prior quarter.

- **Shrinking dealer inventories.** ABS primary dealer inventories shrank by half YoY, from roughly $16 billion to $8 billion, with auto loans registering the steepest decrease of 75%, according to FRBNY Primary Dealer data. Auto loan ABS inventory registered roughly $0.6 billion in May 2016, only one-quarter of the inventory level one year ago (nearly $2.5 billion).

Agency MBS

- **We maintain a modest underweight on the basis.** Global bond yields have rallied back to the lowest levels of the year and we think this trend could continue due to the looming uncertainty of the Brexit vote. In the short-term, servicer hedging needs could keep origination low but as rates settle down the higher supply should weigh on MBS as banks and overseas investors remain sidelined. Lower yields, and the initiation of ECBs corporate bond buying program could also incentivize money managers to add IG bonds over MBS. We recommend closing out the FN 3.5 trade at a loss the recent rally has elevated uncertainty as it increases the risk of outright selling from banks and the potential for a meaningful worsening in deliverables. At current rate levels, a call on the fly is more a function of rate views.

- **Rich spec valuations supported by carry, rates.** Specified pool payups have richened further since our update last month due to lower dollar rolls and higher prices. The recent rally in rates could fuel further outperformance in the sector if sustained. However, pools appear rich on nearly all our valuation metrics and we maintain our recommendation that investors limit further allocation into the sector unless they have a high-conviction view of a rate rally. We find more value in LLB-HLB versus lower payup stories in 3.5s, but not in 4.0s where LLB-HLB valuations have richened relatively more.

- **FHA MIP cut speculations resurface:** The MIP cut speculation resurfaced this week in a media report citing a research report that pegged the probability of another MIP cut at 60%. Although the incremental economic benefit of further MIP cut is minimal, improvements in FHA's operating cash flows and reserve levels in the 2015 actuarial report has provided the FHA ammunition to justify a further reduction should they want to do so. The risk will continue to hang over the markets for the remainder of the year.

- **Explaining the rise in the FHA refi index:** The unexpected rise of the FHA refi index since late April is likely driven by low rates and new MIP 4.0s originated in 2H 2015 becoming eligible for streamline refis. While the index points to high speeds for 4.0s of 2H 2015, investors should be aware that the FHA index could be noisy and less representative of FHA borrower speeds compared to the VA and conventional sectors due to lower retail and bank share in FHA.

- **When HARP is History:** HARP expires at the end of this year, but an analysis of FHFA data suggests that too few borrowers may remain eligible for the program by then for the expiry to have a large impact on aggregate pre-HARP speeds. On the other hand, the expiry of the streamline refi program should have a larger impact. We project that if HARP and the streamline refinance program are both allowed to expire, speeds could see a near-term decline of 3 CPR in 2006-07 vintages, 2 CPR in 2005/08 vintages, and 1 CPR in 2003-04 vintages.

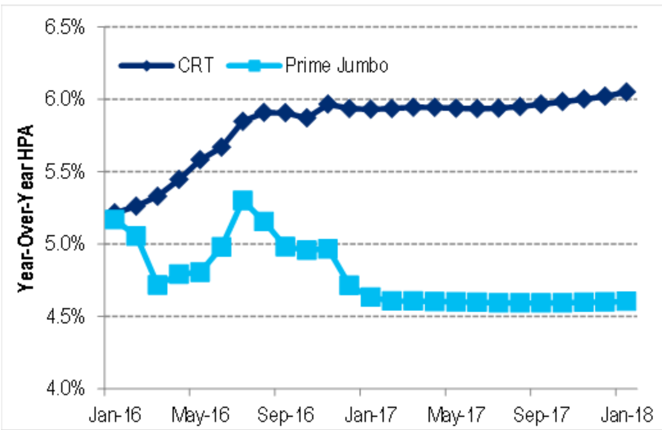
- **Japan's MBS Purchased Highest since 2010:** March TIC data came out on Monday and indicated that foreign investors purchased $27.2bn agency MBS in March. After adjusting for paydowns, net purchases were $15.4bn, highest since November 2014. Japan, UK and Taiwan bought $11.7bn, $7.4bn and $4.3bn respectively, leading to strong overseas demand. Japan's MBS purchases were the highest since 2010. Weekly data released by Ministry of Finance shows that Japan's foreign bond purchase slowed down to $2.5bn during the first week of May from $8-13bn of weekly purchases in the middle of April.

- **Prepay expectations on re-performing pool:** We review Freddie's R pool collateral characteristics and prepays as a reference to prepayment characteristics of Fannie's future issuance in the second half of 2016. Involuntary speeds of R-pools are typically 2-3 CPR higher than same vintage Gold cohorts. Voluntary speeds have been driven by HARP refinancing but the expiry of the program could slow down speeds on these pools more than pre-HARP cohort speeds due to lower borrower FICO scores and a potential lack of cross servicer solicitation. As such, the fundamental value of cashflows in reperformers appears to be better than seasoned pools at the margin but limited prepay experience, risk of elevated short-term re-defaults, non-deliverability into TBAs, and exclusion from benchmark indices could result in a discount on reperformers relative to fundamental value that we expect.

Non-Agency MBS

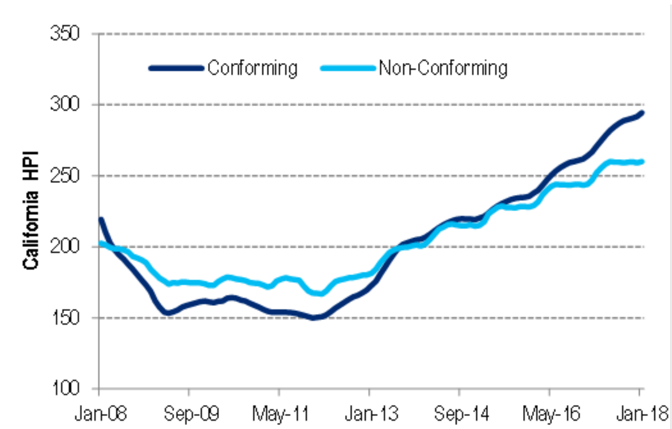
- **Implications of Slowing High-End HPA**— We identified a trend in regions with strong recent HPA, where the top third of the price range has begun to underperform the bottom third as affordability declines. This regional trend has materialized at an aggregate level in California, where affordability has become a major headwind (Figure 16). From this divergence in performance, we expect a CRT to experience more HPA than prime jumbo 2.0. Upon considering alternative HPA scenarios, we tend to see some value in Prime Jumbo 2.0 given the flatter potential S-curves and continued OAS pick to comparable agency jumbo bonds.

Figure 15. We Forecast Much Stronger HPA for CRT vs. RMBS 2.0



Source: CoreLogic, Citi Research

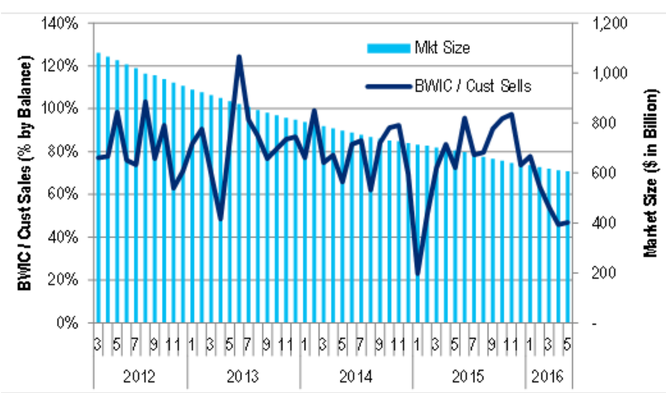
Figure 16.Culprit is Disparity in Conforming v. Non- Conf. in CA



Source: CoreLogic, Citi Research

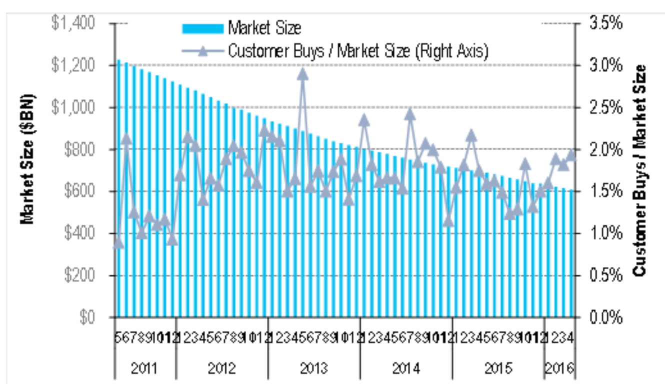
- **Paradigm Shift in Non-Agency Trading?—** In this publication, we analyzed trading data we have access to and highlighted the trend that fewer bonds are trading through the standard "bid wanted in comp" auction process (BWIC, Figure 17). This is certainly a sign of illiquidity. Another sign is smaller primary dealer balance sheets. But, on the other hand, we still note that market turnover remains in a stable range (Figure 18). It's hard to draw the definitive conclusion of lower liquidity quite yet.

Figure 17. BWICs Becoming Less Important in Non-Agency



Source: CoreLogic, FINRA, Citi Research through 5/13/2016

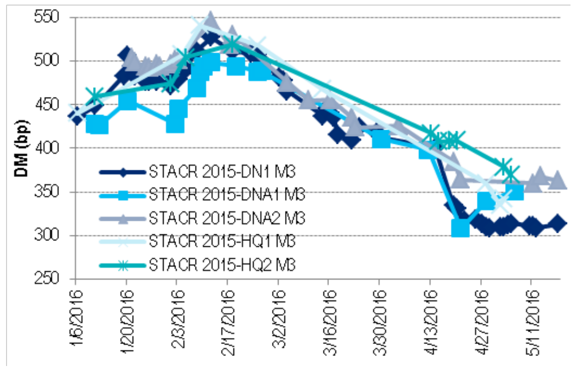
Figure 18. Non-Agency Market Turns Over Consistently



Source: CoreLogic, FINRA, Citi Research

- **Potential Rating Upgrades in CRT —** On April 19, Moody's upgraded the ratings on the M1 tranches of CAS 2015-C02 as well as the M1, M2 and M3 tranches of STACR 2015-DN1. We took the opportunity to analyze current credit characteristics of all bonds and identify which are eligible for rating upgrade. The relative value implications are clear. Bond spreads tend to tighten ~25bp relative to peers when an upgrade occurs (Figure 19).

Figure 19. STACR 2015-DN1 M3 Outperformed By ~20bp Post Moody's Rating Upgrade

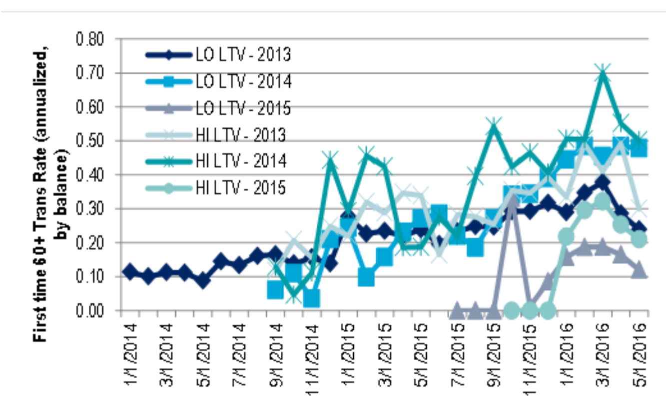


Source: Citi Research as of May 18, 2016, FINRA, Fannie Mae, Freddie Mac

- **How Ocwen Affects Valuation —** In several meetings, investors highlighted their concern of Ocwen as a loan servicer for securitizations. Armed with this intelligence, we explored our databases to see if bonds serviced by them actually do trade cheaper. After performing a statistical analysis that controlled for various credit factors, we found that prime/Alt-A collateral securities do tend to trade ~3.7 points cheaper. We also discovered no real difference in subprime bonds, likely the result of that fact that Ocwen is such a large presence in that sector.

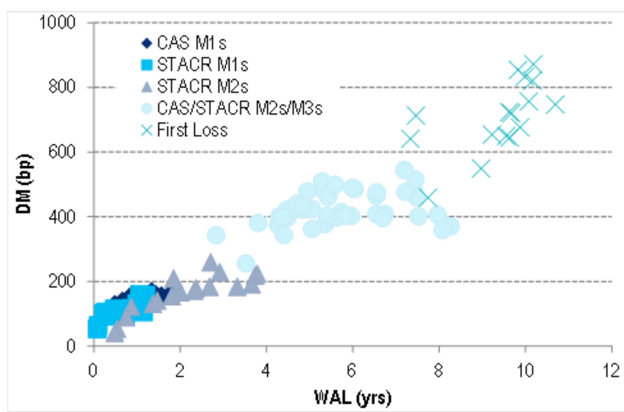
- **CRT Performance Update —** We continued to highlight GSE-issued credit risk transfer (CRT) securities. Figure 20 shows delinquency roll rates have improved in recent months. We also highlighted relative value within the sector, Figure 21 shows spreads by average life for bonds divided into major subsectors.

Figure 20. STACR 60+DQ Roll Rates by Vintage/LTV



Source: Fannie Mae, Freddie Mac, 1010Data, Citi Research

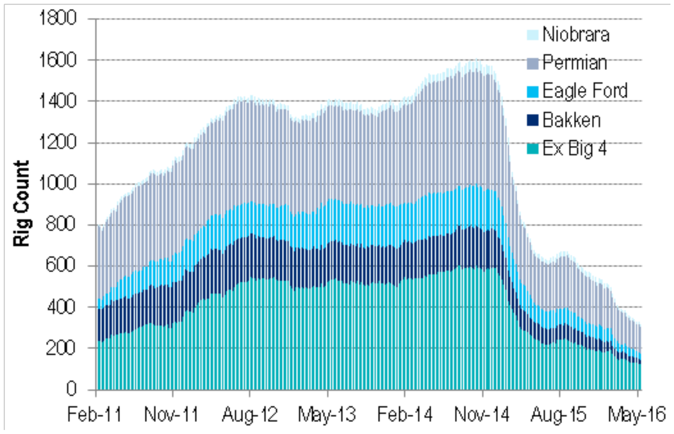
Figure 21. CAS 60+DQ Roll Rates by Vintage/LTV



Source: Citi Research, The Yield Book as of May 31, 2016 (DM=Discount Margin; WAL=Weighted Average Life)

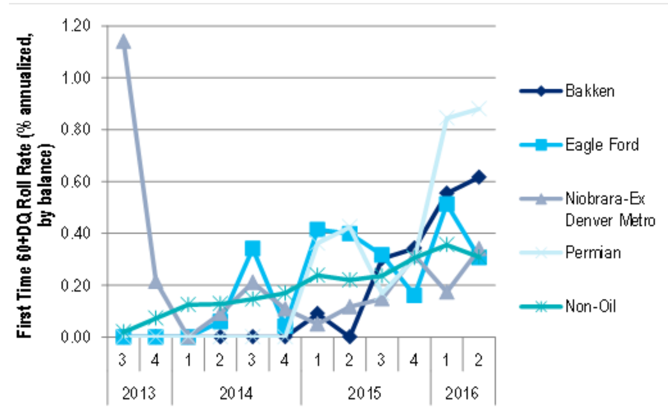
- **Deep Dive on Oil Exposure in CRT —** Along with our regular coverage of the CRT universe, we dug further into the credit performance of loans in oil producing regions. This analysis was born from concern over the continued decline of rig counts across the country (Figure 22). We did find increasing delinquency roll rates of mortgages in certain regions (Figure 23), but feel the overall cumulative defaults won't be materially impacted now that oil is expected to rise again.

Figure 22. Rig Count Over Time By Oil Producing Regions



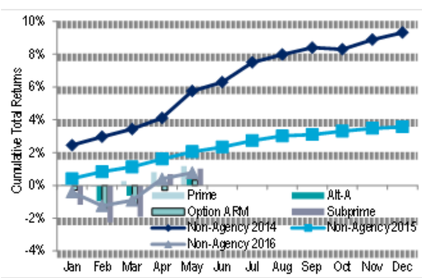
Source: Citi Research, Haver Analytics

Figure 23. Some Credit Deterioration in Bakken/Permian, Niobrara Outperforms



Source: Freddie Mac, 1010data, Citi Research as of May 2016

Figure 24. Non-Agencies Stabilize After Rebound Month



Source: Citi Research, CoreLogic, Intex, ABSNet, IDC

- **Non-Agency Total Returns —** Non-Agency total returns remained in positive territory in May, following a strong rebound month across the board in April. Overall, returns were 0.37% in Prime, 0.43% in Alt-A, 0.62% in POA, and 0.33% for Subprime. Cumulative returns remain modest at 78bp overall (Figure 24).
- **Foreign holdings of Non-Agencies —** The Treasury recently released its annual report on foreign holdings. One table in the report breaks out combined RMBS/CMBS holdings by country as of Q2 2015. It was interesting to see holdings in Switzerland and Luxembourg rise by a measurable amount (Figure 25).

Figure 25. Foreign Holdings of Long-Term Corp Asset-Backed Securities ($ in Billion)

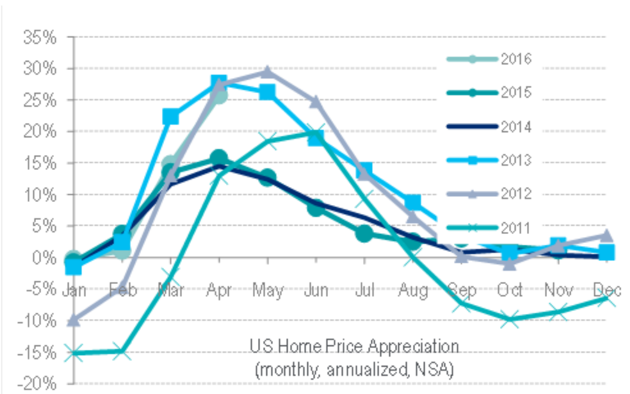
	Q2 2014			Q2 2015		
	Total	Mortgage Backed	Other	Total	Mortgage Backed	Other
Cayman Islands	102	85	17	96	81	15
Luxembourg	39	16	23	47	21	26
Ireland	43	21	23	37	17	20
Canada	27	23	3	32	26	5
Belgium	24	4	20	24	5	19
United Kingdom	26	15	11	23	12	11
Bermuda	19	11	8	23	13	10
Switzerland	12	6	6	21	15	6
Germany	30	10	21	19	3	16
Japan	12	5	7	13	4	9
Rest of World	63	32	30	77	41	36
Total	**396**	**228**	**169**	**412**	**240**	**172**
Of which: Holdings of Foreign Official Institutions	22	10	12	21	9	12

Source: US Treasury, Citi Research

Housing Data Update

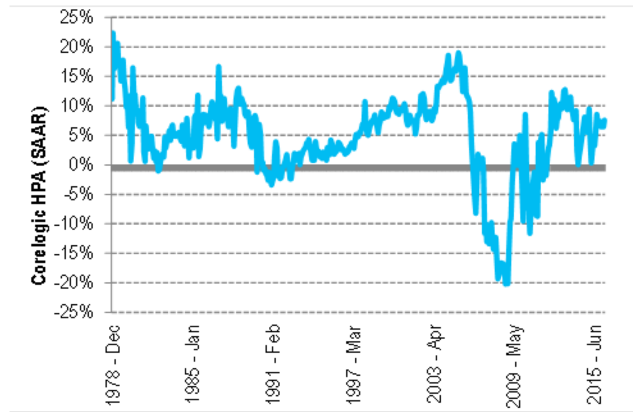
- **April HPA Accelerates —** Single-family properties nationwide saw a 6.2% price increase year-over-year on an unadjusted basis and 7.57% month-over-month on an adjusted and annualized basis. This constitutes an acceleration of HPA in both instances, and we remain skeptical of the uptick given the tendency for downward revisions in subsequent months. Overall, we continue to anticipate 4.5-5% HPA nationally.

Figure 26. HPA At High-End of Historical Range, For Now



Source: Citi Research, CoreLogic

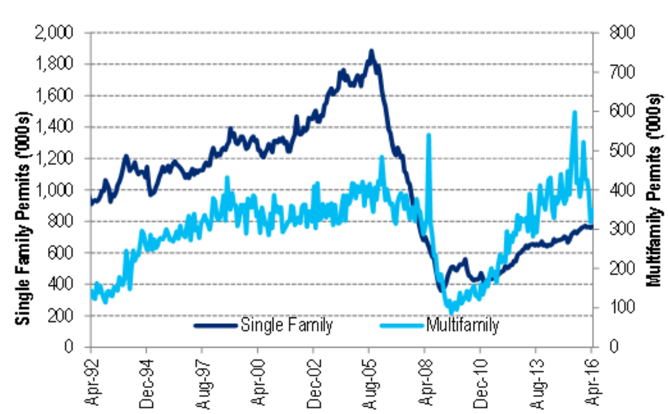
Figure 27. CoreLogic HPA Accelerating on Adj. Basis



Source: Citi Research, Haver, CoreLogic

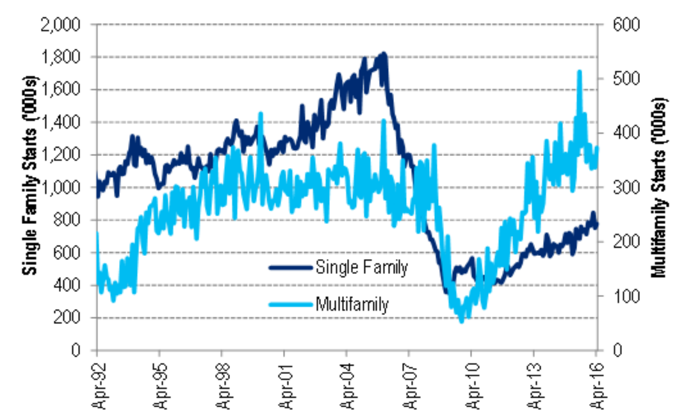
- **Starts and Permits Rise, But Weakness in Multifamily —** Starts and Permits rose month-over-month on a seasonally adjusted and annualized basis (SAAR), with permits up from 1,099K to 1,172K units and starts up from 1,077K to 1,116K. The longer run time series of single- and multi-family starts and permits (Figure 28 and Figure 29) show how multi-family construction has pulled back recently.

Figure 28. Single Family Permits Slow Recovery, Multifamily Correcting



Source: Census Bureau, Citi Research

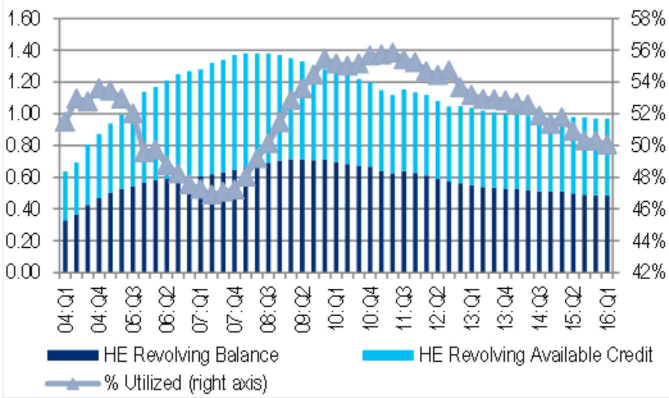
Figure 29. ...The Same Applies to Starts



Source: Census Bureau, Citi Research

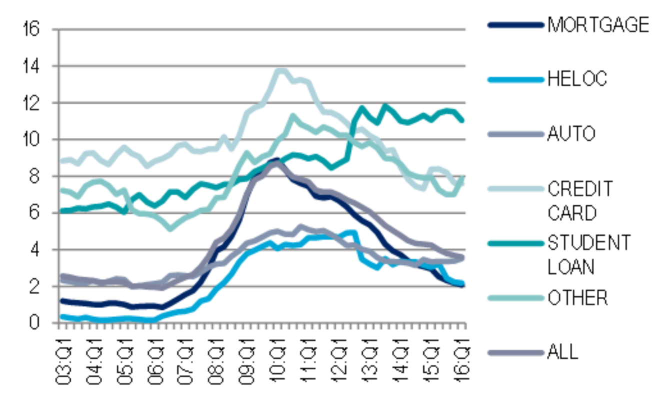
- **Quarterly Household Credit Report** — The Fed recently released its household credit report, which has a significant amount of housing-related data. For example, HELOC utilization is now down to ~50%, and mortgage delinquencies rank among the lowest across various personal debt types (Figure 30 and Figure 31).

Figure 30. HELOC Utilization is ~50% ($ in trillion)



Source: New York Fed Consumer Credit Panel/Equifax

Figure 31. Mortgage Serious Delinquencies (%90+ days) Among Lowest



Source: New York Fed Consumer Credit Panel/Equifax

US CMBS

Ahead of Foreign CRE Investors' Next Move, Some CMBS Angles to Consider

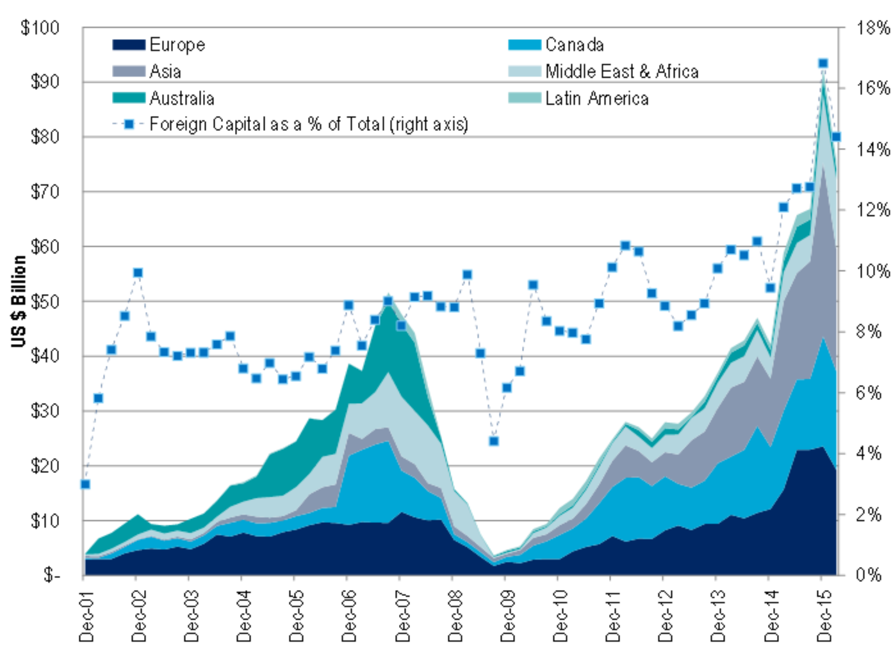
- **Uncertainty ahead.** We view foreign investments in US commercial real estate as joining the list of factors with some uncertainty ahead that CMBS investors should track. Clearly no longer just limited to trophy office and hotel properties in a handful of gateway cities, foreign investments may now be playing a dominant role in secondary markets and across multiple property types. As such, foreign investors' activities could have direct relevance for CMBS.

- **Mixed views**. There are mixed views over the ability of foreign investment to remain a powerful tailwind for CRE properties. This is perhaps similar to concerns over frothy valuations of unicorns, or the sustainability of the tech boom. Cheap oil is one key headwind. Stricter capital controls in China may be another factor.

- **The constructive view.** Quite a few factors still suggest foreign investments are unlikely to abate. The US stability compared to geopolitical volatility in some foreign investors' home countries likely remains an important motivation for investment decisions. A recent US tax reform alleviating taxation on real estate for foreign investors could be another incentive.

- **Relative cap rates.** Some international investors may be looking at US real estate as a spread play. As Treasury yields came in, cap spreads have headed back towards historically wide levels. Nationally, cap spreads at 537bp are 220bp higher than pre-crisis levels. Across regions, spreads are 133-272bp wide to where they had been pre-2009. If Treasury yields do go higher, cap spreads have much room to tighten before the cap yield begins to be impacted.

Figure 32. Foreign Capital Invested in US CRE



Source: RCA and Citi Research

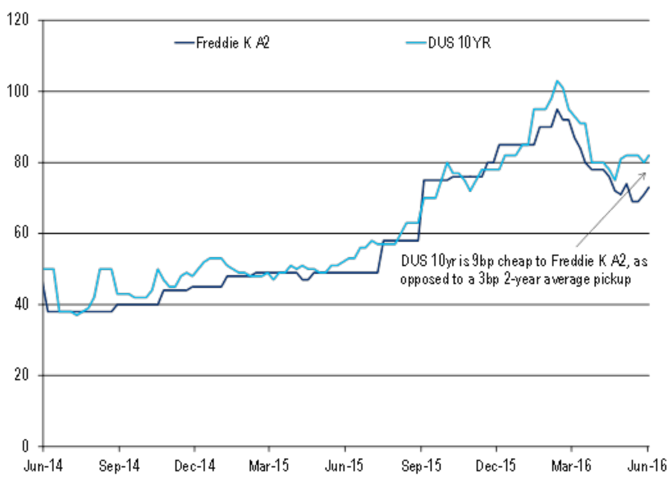
Market Developments

Market Color

- **Looking for supply.** As private-label primary supply looks light in the near term, investors may look towards other CMBS sectors for opportunities. Secondary supply has been running in the $700-800 million daily average range for the past year. Agency CMBS adds another $300 million per day to that amount, though the daily average spiked to over $600 million this quarter. New supply in Agency CMBS remains robust. Also, CMBX offers access to exposures that may not be available in the cash market.

- **DUS picks up spread to K.** DUS 10YR spreads remain 9bp wide to Freddie K A2 levels (Figure 33). The two GSE-guaranteed sectors diverged in early May. This spread relationship is somewhat surprising given the relative supply technicals. Freddie K issuance is up by nearly 100% year-over-year through May to $22.2 billion (Figure 34). In contrast, Fannie DUS is down 13% to $18.3 billion for the same time period.

Figure 33. Agency CMBS Spreads (bp)



Source: Citi Research

Figure 34. YOY Percent Change in YTD Issuance ($ Billions)

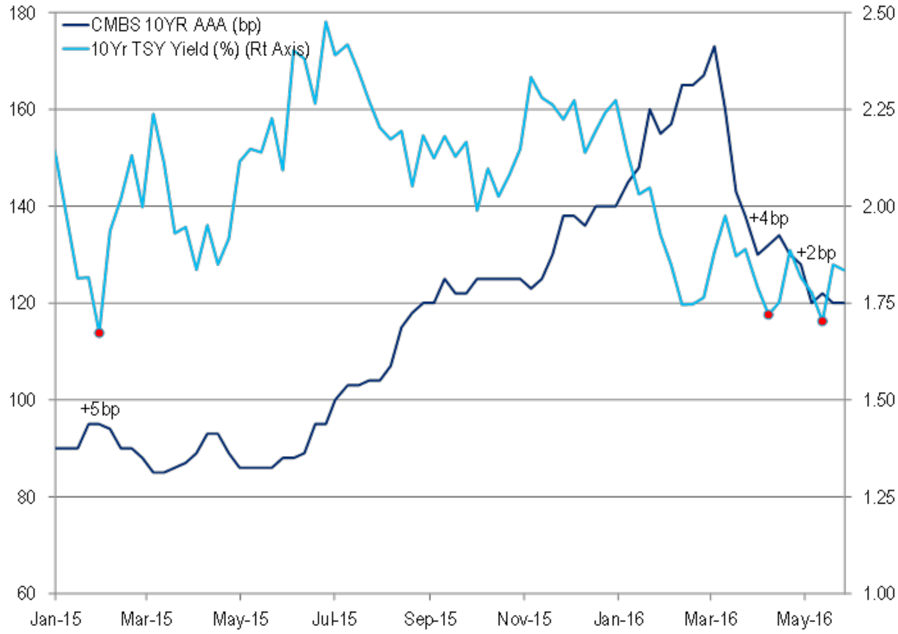
	2015 Jan - May	2016 Jan - May	Change
Private Label			
Conduit	23.1	18.5	-20%
SASB/Large Loans	18.2	6.8	-63%
Pooled Floaters	0.8	0.3	-61%
Other	0.3	0.5	52%
Agency CMBS			
Fannie DUS	20.9	18.3	-13%
Fannie GeMS/ACES	7.2	4.7	-35%
Freddie K	11.1	22.2	99%
Ginnie MF Pool	7.7	5.4	-30%
Ginnie PL REMIC	6.9	7.1	3%

Source: Commercial Mortgage Alert, Fannie Mae, Freddie Mac, Ginnie Mae and Citi Research

Spreads Tug of War: Supply vs. Yield

- **Will spreads widen on lower yields?** With a light June pipeline, CMBS spreads transparency will be somewhat murky. The weak employment number of just 38k jobs could be a catalyst to nudge spreads wider. Treasury yields dropped 10bp to 1.7% after the announcement on Friday morning. CMBS spreads tend to widen on lower yields, as some investors have yield targets on asset purchases. The previous three times 10YR Treasury yields fell below 1.75%, CMBS spreads widened +5bp, +4bp and +2bp, respectively (see red points in Figure 35).

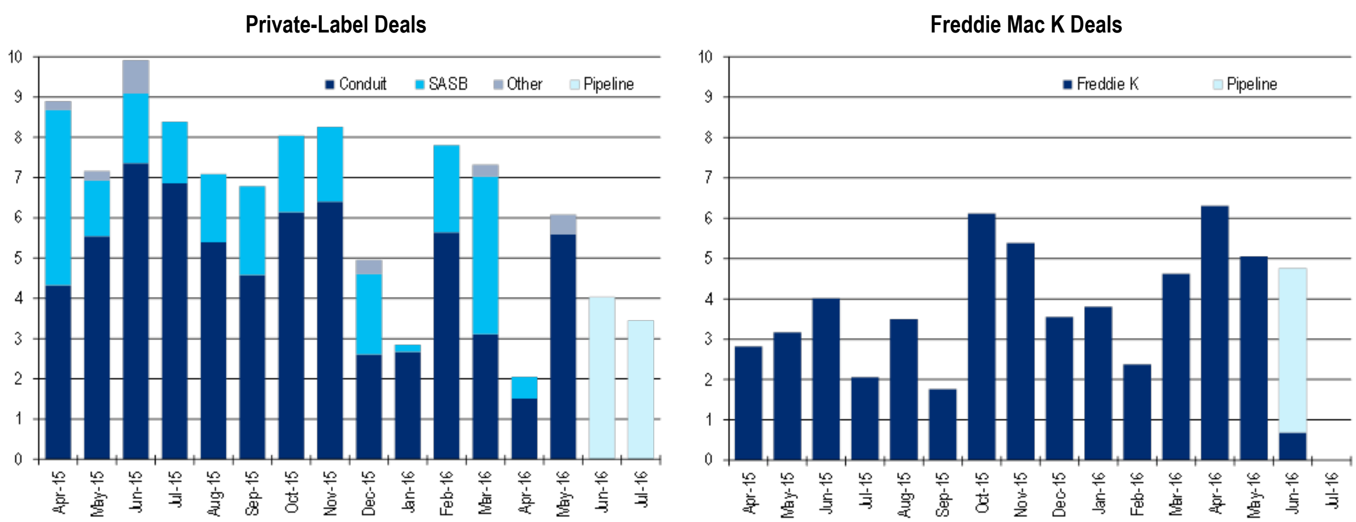
Figure 35. Spreads Tend to Widen as Yields Drop below 1.75%



Source: Citi Research

- **Light supply should neutralize impact**. Yet, we expect spreads could remain flat at this stage. The limited supply anticipated over the next couple months should be a technical positive. Just $4 billion is in pipeline for June, followed by an even lower $3.5 billion in July (Figure 36, left chart). The scarcity of deals this year has been an impetus for tightening the past couple of months. The $6 billion of volume in May, including seven conduits, brings year-to-date issuance to $26.1 billion, down 38% year-over-year. Conduit supply is at $18.5 billion, down 20% from a year ago. SASB remained at just $6.8 billion, down 63%, as no deals priced in May.

Figure 36. CMBS Supply ($ Billions), Apr '15 – Jul '16F



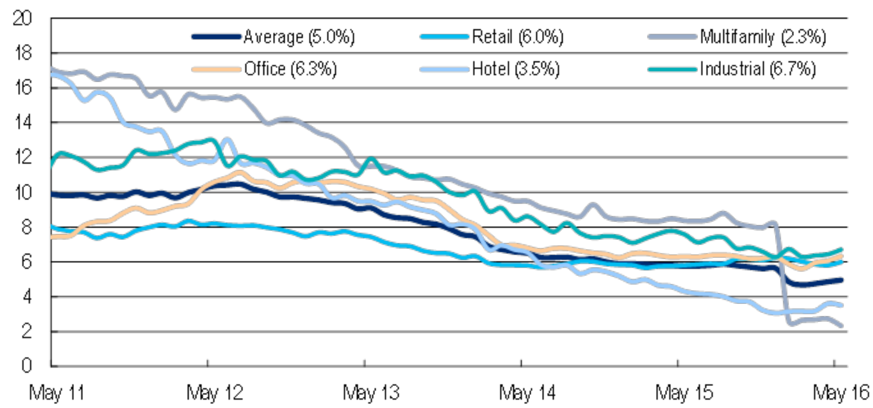
Source: Bloomberg LP, Commercial Mortgage Alert, Freddie Mac and Citi Research

Collateral Update

Delinquency Climbs Back to 5.0%

The CMBS delinquency rate climbed 10bp to near 5% in May (Figure 37), with the delinquent balance increasing $243 million to $21.2 billion. Non-performing balloons and foreclosures are up about 18bp YoY, reaching 0.54% and 1.32%, respectively. The REO rate remained at 2.66% this month, but it is lower by 1.04% over the past year. The overall conduit balance continues to contract, with $3.8 billion of runoff in May.

Figure 37. CMBS Fixed-Rate Delinquency Rate Percentage, May 2011 – May 2016



Source: Trepp and Citi Research

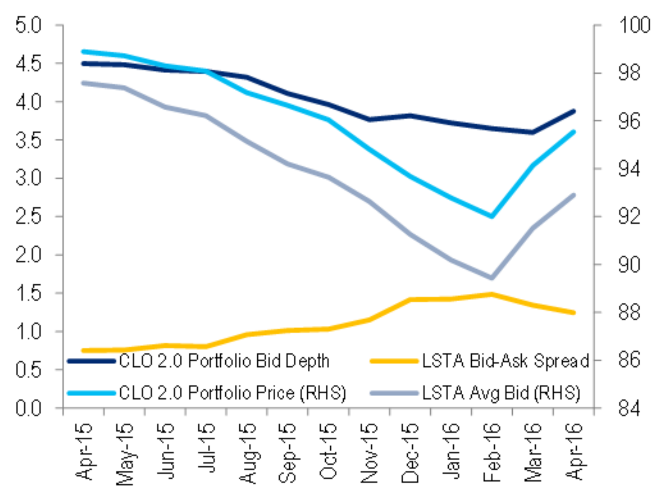
CLO

CLOs hurt by loan price drops

The first quarter of the year was a difficult one for loans and CLOs. In the first two months of the year, LSTA/LCD Leveraged Loan Index (LLI) saw its average bid price decline further from $91.3 to $89.4 and its discounted spread to maturity widen by 42bp. On top of the sharp price decline, LLI average bid-ask spread widened $1.4 as the liquidity dried up in the sell-off (Figure 38). In the CLO space, collateral liquidity condition as measured by bid depth also fell below 3.7 when market condition deteriorated and portfolio price declined to $92.

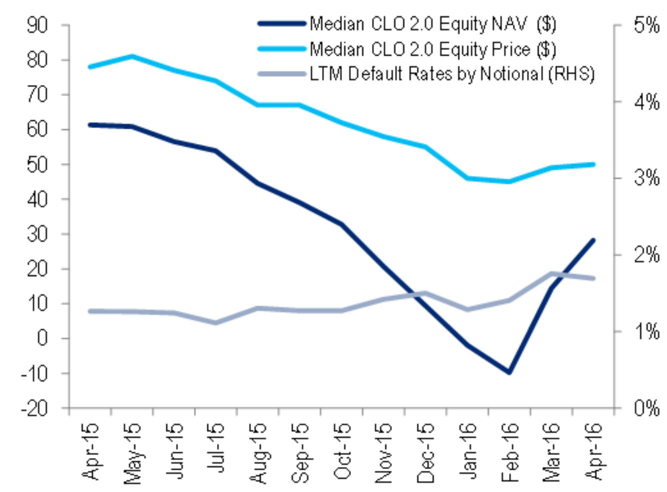
These loan price drops did not coincide with a spike in defaults but nevertheless had a sharp impact on junior CLO tranches. CLO 2.0 debt tranche spreads widened 18-475bp over the first two months and CLO 2.0 equity saw its median price drop from $55 to $45 (Figure 39). With the collateral price weakness, median CLO 2.0 equity NAV also reached a low of -10% at the end of February.

Figure 38. Price and Liquidity



Source: Citi Research, Intex, LPC, LSTA, as of 4/30/2016
*Bid depth represents the number of bid prices received by LPC on a given day.
*Unit for LSTA Bid-Ask Spread, LSTA Avg Bid, and CLO 2.0 Price is $.

Figure 39. Collateral Price Slump Hurt Equity Tranche Valuation



Source: Citi Research, Intex, LPC, LCD, as of 4/30/2016

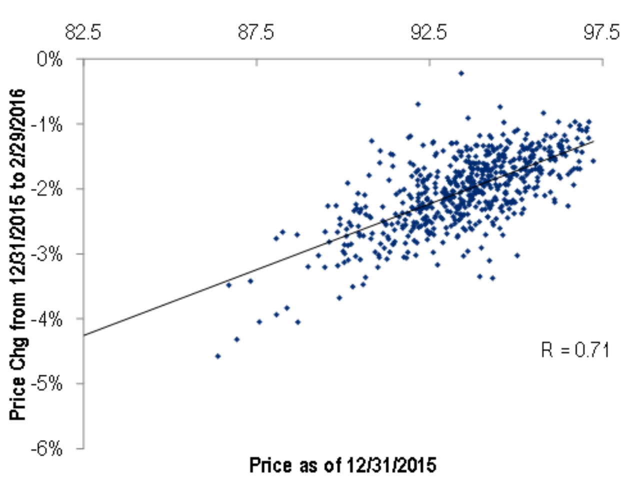
The impact of market movement and liquidity in loan prices should make CLO buyers conscious of the type of portfolio that managers are buying. Although CLOs are primarily a “pass-through” cashflow-based product where the performance of tranches is linked to realized loan cashflows, portfolio price volatility (and illiquidity) is painful for mark-to-market CLO buyers.

In the rest of this note, we first explore the factors that help explain obligor liquidity, secondly, we confirm whether CLO managers are being compensated for the liquidity risk, and finally, we explore the impact of liquidity on CLO manager performance. We conclude that CLO managers take liquidity risk in their portfolios (in the same way they take credit risk), but that they get compensated for taking the liquidity risk.

Conservative CLO buyers: stay big and clean

Low dollar-priced loans showed the highest beta during the loan market sell-off – they fell much more than par loans (Figure 40). The other interesting fact is that the highest-quality, largest-issuer loans enjoy the most liquidity (Figure 41). Here, we define issuer rating as the S&P's corporate family rating on the issuer and issuer size as all outstanding loan obligations from the issuer.

Figure 40. CLO Portfolio Price vs. Price Change in Sell-off



Source: Citi Research, LPC, Intex, LCD, as of 3/31/2016

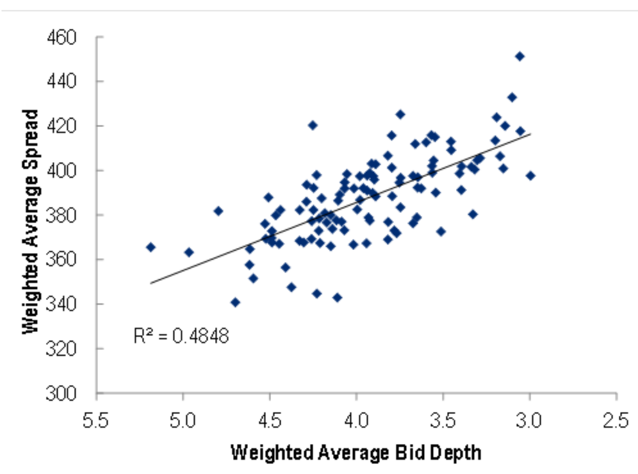
Figure 41. Average Issuer Bid Depths by Issuer Size and Rating Quartiles

Issuer Size \ Issuer Rating	Top	2nd	3rd	Bottom
Top	5.3	4.4	4.0	3.6
2nd	3.9	3.0	2.7	2.8
3rd	2.6	2.0	2.1	2.0
Bottom	1.8	1.7	1.6	1.6

Source: Citi Research, LPC, Intex, LCD, as of 3/31/2016

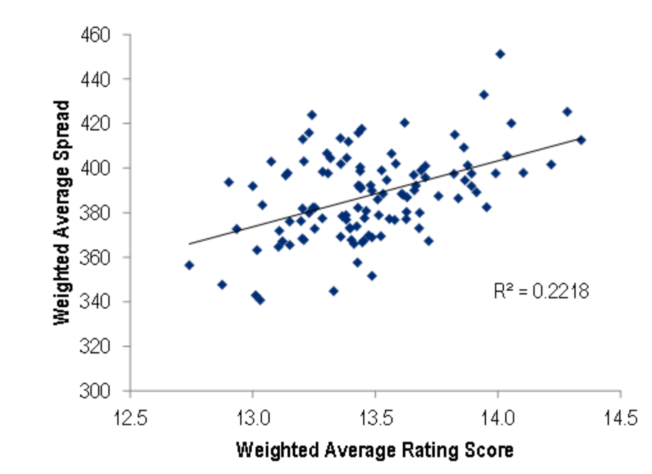
Relatively liquid loans, in theory, may not be suitable for CLOs as they may not benefit from wide spreads and generate the cashflows that CLOs require to pay market returns for debt and equity holders. Liquid portfolios, in fact, are mean as far as spreads go (Figure 42). Loan buyers as CLOs do however get cleaner portfolios; not surprisingly, cleaner portfolios, as measured by rating score, offer less spread. Although liquidity and rating score are not strongly correlated with each other (correlation of -36%), the combination of bid depths and rating scores (mirroring liquidity and credit risks) helps us explain ~60% of variation in portfolio spreads.

Figure 42. WAS vs. Weighted Average Bid Depth by Managers



Source: Citi Research, LPC, Intex, LCD, as of 3/31/2016
*WAS stands for weighted average spread.

Figure 43. WAS vs. Weighted Average Rating Score by Managers



Source: Citi Research, LPC, Intex, LCD, as of 3/31/2016
*S&P's corporate family ratings are converted into rating scores, where we use a score of 6 for A, 12 for BB, and 18 for CCC.

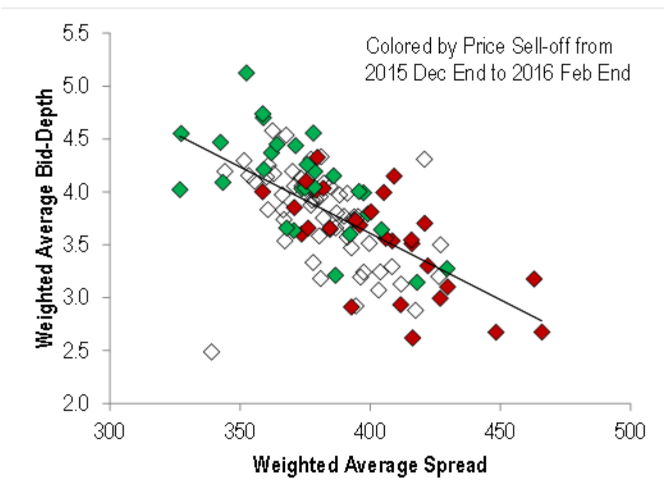
That is not to say that managers should choose credits along our optimum "fitted" line in the above two figures. The graphs demonstrate that many managers will choose to reach for yield to buy less liquid and/or worse-quality names. After all, CLOs are managed products and the manager can try to show their 'alpha' in a variety of ways. However, the first part of the year gave some insights on how loans perform during a volatile period. In particular, lower-spread, cleaner-name portfolios did much better for debt investors through preserving par.

… but liquid and clean (and expensive) won

Most investors will steer away from volatile products unless returns can be substantial in a significant number of scenarios. In a CLO product, where returns are capped (as with most credit products), the sell-off illustrated that such a strategy worked and managers with liquid portfolios did better.

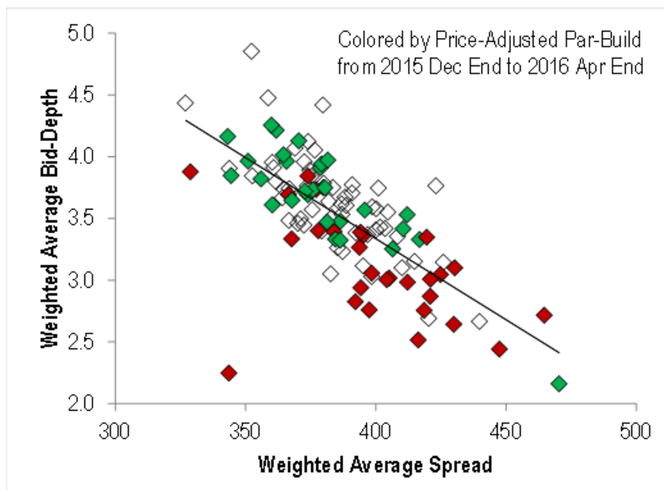
We use price-adjusted par build to measure the performance of a manager's portfolio. When we average across different portfolios of the same managers and rank various managers, we find that more liquid, lower WAS portfolios were more likely to preserve portfolio prices better during the sell-off (Figure 44) and outperform in price adjusted par-build terms throughout the sell-off and recovery cycle (Figure 45). What is clear from the second figure is that less liquid loans did not outperform so much during the recovery that their overall performance was better than liquid and expensive loans.

Figure 44. Liquid and Clean Portfolios Outperformed in Sell-off



Source: Citi Research, LPC, Intex
*Managers in top quartile for price change during the sell-off between 2015YE and end of 2016 February are in green, while those in the bottom quartile are in red.

Figure 45. Liquid and Clean Portfolios Outperformed Throughout the Sell-off and Recovery Cycle



Source: Citi Research, LPC, Intex, LCD, as of 4/30/2016
*Managers in top quartile for price-adjusted par-build between 2015YE and end of 2016 April are in green, while the bottom quartile are in red.

Regulation favors liquid

We suspect that proposed mutual fund regulation is going to put even more focus on loan liquidity, although all loans will be broadly affected. The proposed SEC Mutual Fund Liquidity Rule[4] strengthens open-end mutual fund (funds buy 21% of institutional loans in primary market currently) liquidity risk management programs to be able to meet shareholder redemptions. The rule requires each fund to prepare a risk management program that would: i) assess and manage the fund's liquidity risk; ii) classify and monitor each portfolio asset's level of liquidity, based on the

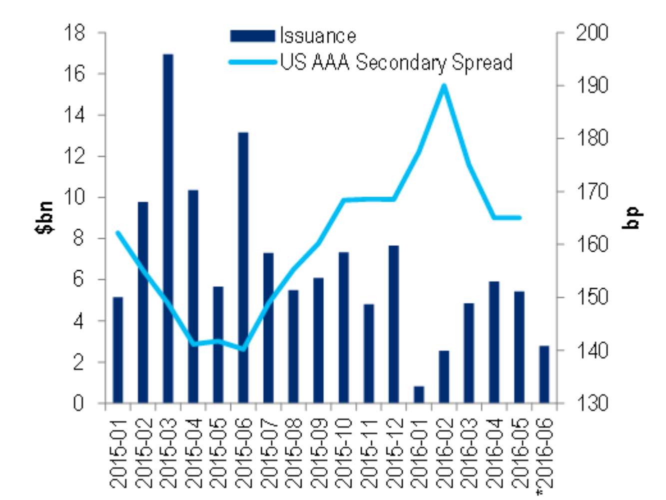
[4] http://www.leveragedloan.com/the-secs-mutual-fund-liquidity-rule-what-it-says-and-what-it-might-mean/

days it would take to convert the asset to cash; and iii) designate a minimum amount of portfolio liquidity. Issues for funds to consider in assessing their risk are the liquidity of individual loans and settlement times. The rule requires managers to determine how quickly loans can be converted into cash which is a challenge in a market where the gap between the time that loan sales settle—a median 12 days—and mutual fund investor redemptions that must be met in three days. According to the LSTA, managers have developed techniques to manage their portfolios by a combination of cash and securities (T+3 settlement) holdings as well as securing a line of credit from banks to ensure access to liquidity. More liquid loans with a higher bid depth should clearly appeal more in such an environment.

CLO issuance picks up

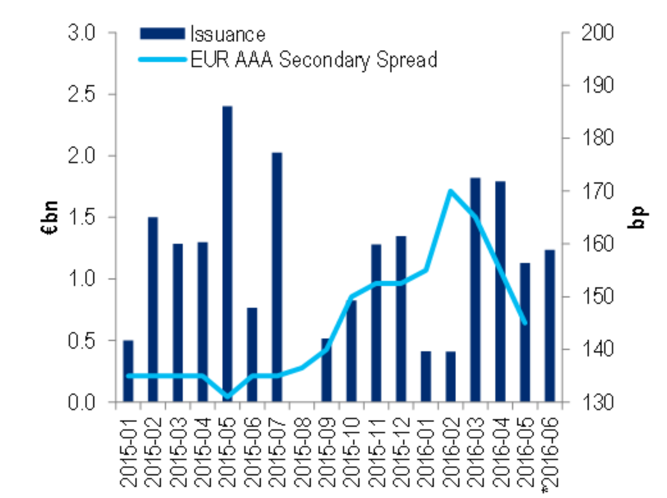
After the quiet January and February with subdued issuance of $3.4bn, US CLO primary market finally saw some sights of improvement as the average monthly issuance from March to May increased to ~$5.4bn. With the pick-up in primary activity, YTD US CLO issuance has reached $22bn, which, however, is still down 57% compared to the volume from same period last year (Figure 46). One positive catalyst is the tightening of secondary AAA spread from investors sourcing high quality papers in a market with limited supply. Such spread tightening would likely encourage more CLO managers to bring deals to the market if macro environment remains supportive.

Figure 46. USD CLO Issuance and Secondary AAA Spread



Source: Citi Research
*Monthly issuance for June 2016 is as of June 10, 2016

Figure 47. EUR CLO Issuance and Secondary AAA Spread



Source: Citi Research
*Monthly issuance for June 2016 is as of June 10, 2016

Though CLO issuance volume in Europe was also negatively affected by the broader credit market sell-off, the primary activity has come back at a much faster pace than its US peer. YTD EUR CLO issuance has reached €6.8bn, which is slightly below the €7.0bn mark achieved in same period last year (Figure 47). The latest EUR CLO deal printed its AAA tranche at E+128, which is the tightest level in 2016. Such tightening of new issue AAA spread partially reflects the benefit of a zero floor on Euribor, which enhances the discount margin by 15-20bps at current Euribor rate. Along with the strong recovery in primary side, EUR CLO 2.0 AAA secondary spread also narrowed significantly to E+145bp after reaching the high of E+170 in February.

European Securitized Products

Issuance spike pre-Barcelona, and pre-EU referendum

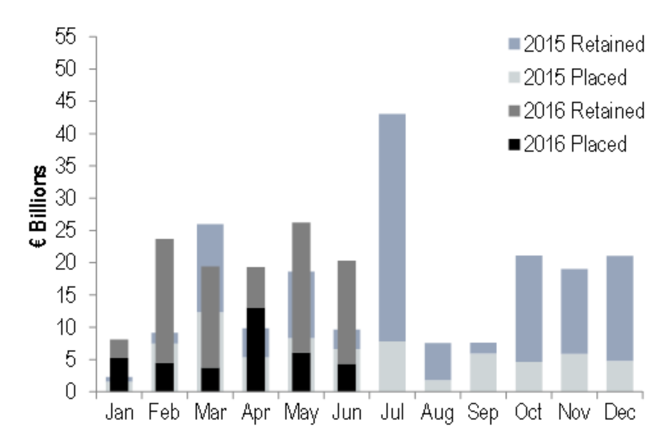
The European ABS market saw €2.5bn publicly sold in euro bonds last week, a high weekly number, as investors prepared for the Euro ABS conference in Barcelona. Deals included two Dutch RMS deals (Delta Lloyds and Obvion) and Italian consumer ABS from Intesa Sanpaolo and Agos Ducato.

Most of the YTD issuance (Figure 48) has been in RMBS though, and an overwhelming majority of that from the UK. The most recent was a legacy mortgage securitization of loans originated by GMAC-RFC, which collapsed in 2013. The loans were previously securitized into Alba 2012. The senior tranches were sold at a discount margin of 185bp, while the second-pay priced closed to 350-bp DM. Other tranches were retained.

Other RMBS deals (Figure 49) included a prime RMBS deal from TSB Bank. Whether due to negative supply technical or fears of a “Brexit” scenario, when compared with TSB's deal last November, spreads were similar to the earlier deal but the bonds had a much shorter average life. The Duncan Funding 2016-1 deal was backed by a £3.75bn pool of mortgages originated or acquired by TSB Bank and its predecessors. Elsewhere in RMBS, TwentyFour Asset Management's mortgage fund securitized a buy-to-let mortgage pool in a deal called Malt Hill No. 1. The fund had bought the pool from Coventry Building Society late last year.

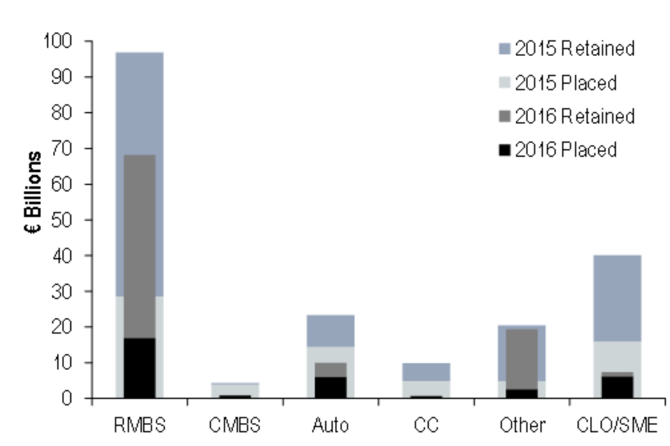
Another RMBS, from Santander UK, offers valuable insights. The deal offered sterling and US dollar notes With the UK RMBS market seeing considerable supply, and a positive macro environment, many non-UK investors would like to see USD and GBP (or even JPY) tranches. However, there are technical difficulties in creating non-GBP liabilities as we see in the next section.

Figure 48. Placed and Retained Issuance by Month, 2015–2016 (€ billions)



Source: Concept ABS, IFR, Informa and Citi Research

Figure 49. Placed and Retained Issuance by Sector, 2015—2016 (€ billions)

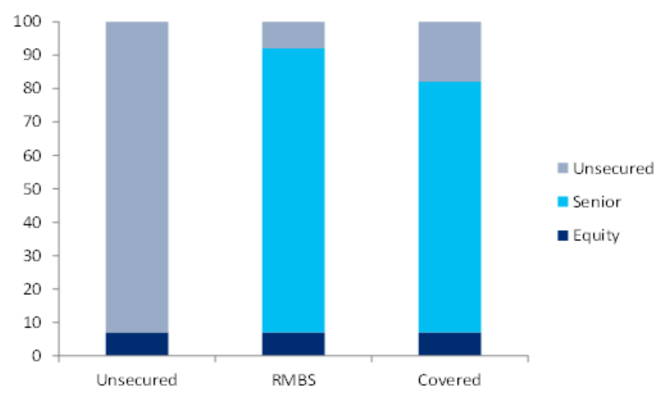


Source: Concept ABS, IFR, Informa and Citi Research

Swapped ABS expensive funding source

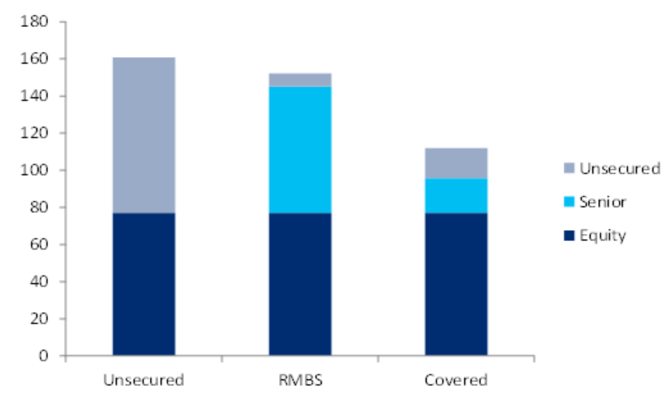
ABS is an expensive funding source for most issuers when we compare the relative economics of unsecured and covered bonds versus RMBS. We use typical assumptions as stated in the figure title to compare the overall funding mix for a pool of prime residential mortgages on a bank balance sheet (Figure 50). Using typical market-level debt and equity spreads and our assumed capital structure shows that covered bonds are the cheapest funding source for a single-A type bank issuer (Figure 51). Concerns by unsecured bank investors about growth in asset encumbrance is a major reason why banks may choose to do less secured, especially covered bond, issuance despite attractive spreads today.

Figure 50. Capital structure assuming 7% required equity, 25% covered bond overcollateralization, and 15% subordination senior RMBS



Source: Citi Research

Figure 51. Total (excluding swap and collateral) costs, assuming 11%, 90bp, 80bp and 25bp for equity, unsecured, RMBS, and covered bonds



Source: Citi Research

Note we have excluded swap and collateral considerations in our liability calculations. That is not because they are small, but can be large and uncertain. Costs arise from margin requirement as well as counterparty downgrades. The latter will include collateral posting, replacement of swap counterparties, and replacement of bank account providers. The trigger levels at which the swaps and account banks need to be replaced vary among the agencies. We believe Standard & Poor's is currently the most onerous based on their exclusion from recent UK prime RMBS deals which included cross-currency swaps.

However, these costs increase when having to consider swapping cashflows in or between the same or different currencies. Interest rate management is an increasing part of the UK mortgage market with a higher proportion of residential loans that are fixed. Moreover a competitive lending environment is also benefiting borrowers, making them opportunistically prepay loans. Prepayments can be volatile as borrowers look for coupon resets to refinance more cheaply. There will also be differences among shelves that lead to CPR differences which will depend on type of borrowers in the pool, property LTVs, and loan reset dates. A typical interest rate swap that covers prepayment risk may cost approximately 10bps. If the liability that is hedged is a bullet (for example, in a mastertrust) the risk for the counterparty in managing the cashflow mismatch between the two legs of the swap is lower.

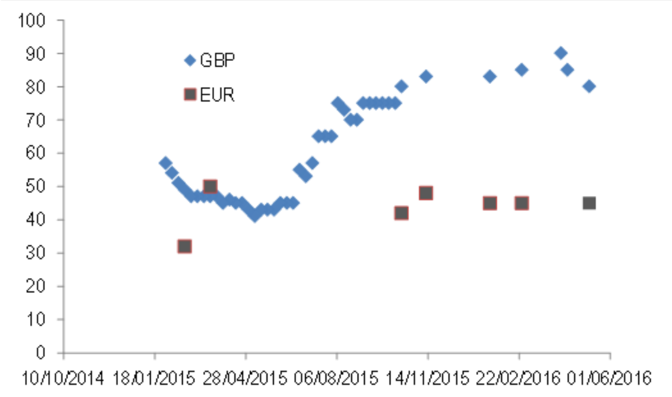
If matching single currency fixed and floating legs is a problem, the need to match two currencies is magnified. This is why we rarely see UK RMBS issued with EUR liabilities, and in the few instances we have they are almost 50bp tighter than GBP denominated tranches (Figure 52). Moreover the difference has been growing. Part of the difference relates to the cross-currency basis swap which has remained steady at around 30bps, but there is also a cost to protecting EUR tranches from negative Euribor[5]. The combination of the basis swap and the drag is shown in Figure 53. As rates have become increasingly negative, the cost of creating EUR debt has worsened. Finally, swap counterparties have to take into account the "balance guarantee" element where the duration of the GBP mortgages and the EUR liabilities do not match. Such prepayment risk can add 15-30bps to a plain

[5] In recent senior RMBS, floor is put at total coupon, rather than Euribor, being zero.

vanilla cross-currency basis swap. Some of the prepayment risk is structurally mitigated by making the EUR tranches callable, but the deal and the counterparty is exposed to the risk that the tranches are not called by the sponsor.

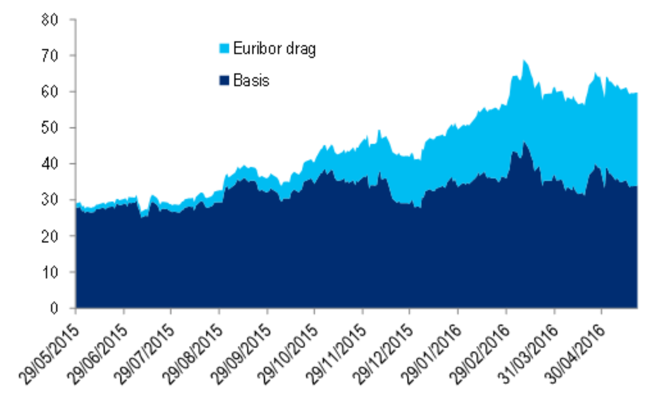
While any form of funding will require market risk management, the rating agency criteria on RMBS tranches combined with the higher liability cost (versus covered) puts RMBS in a more challenging position.

Figure 52. Spreads of GBP and EUR tranches of UK prime RMBS, bps



Source: Citi Research

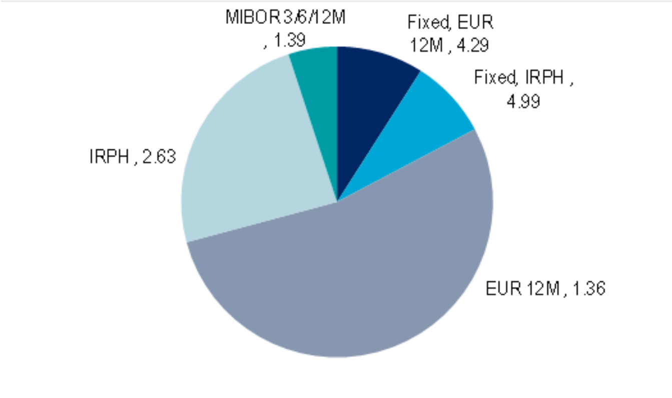
Figure 53. GBP-EUR basis swap and drag from negative 3M Euribor, bps



Source: Bloomberg, Citi Research

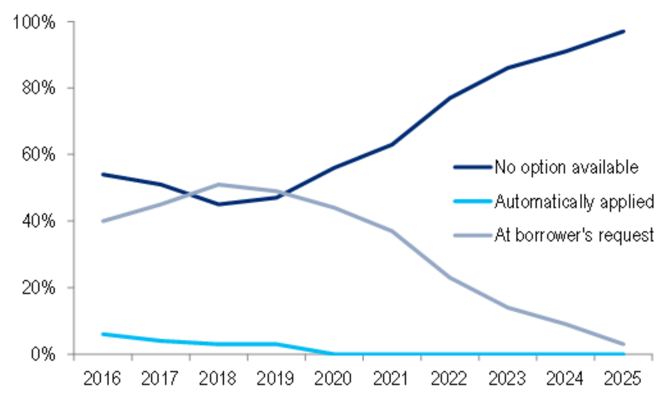
In peripheral RMBS, non-standard loans create further difficulties. Peripheral mortgages often present a bigger challenge (though there is no GBP-EUR swap at least!) by virtue of the heterogeneous mortgages on bank balance sheets, and options that lenders sometimes give borrowers. The recent Spanish RMBS deals from UCI (union de Creditos Inmobiliarios) illustrate the problem. The mortgages are linked to a variety of interest rate indices (Figure 54) which will have a basis between themselves and the 3M Euribor which the notes pay. Second, the borrowers have options which can lead them to periodically reduce payments. The 'joker' option allows borrowers annually to capitalize the interest portion of one of the monthly payments in the first three years. Moreover, if interest rates rise quickly, borrowers can cap their payment to a multiple of CPI. As Figure 55 shows it takes nearly ten years for all the options in the pool to expire.

Figure 54. Mix of interest rate indices, along with weighted interest rate, in UCI PRADO 2 portfolio. For loans with initial fixed rate, indices are applicable once fixed rate period has finished



Source: Offering materials, Citi Research

Figure 55. Percentage of loans in UCI PRADO 2 portfolio with option limiting interest payment based on comparison of CPI and increase in scheduled payment. Six percent of loans also have "joker" option.



Source: Offering materials, Citi Research

As UK RMBS grapples with EU Referendum

Whether it is eligibility for liquidity coverage ratios (LCR) or for the much-publicised but yet-to-be-delivered “simple-and-transparent” (STS) logo, life outside the European Union is not good for UK RMBS. Few non-UK banks, in our view, relied on UK RMBS to meet LCR targets (Is UK ABS vulnerable to LCR-ineligibility risk?) but one less source of support for the asset is still discouraging. Likewise, STS securitisations must conform to other criteria such as LCR which also raises the question whether deals originated outside the EU (such as a post-Brexit UK) are qualified. The answer may not be straightforward because the EBA in a July 2015 presentation contemplated high-quality securitisation deals (which may not mimic STS exactly) could be originated outside the EEA. As it stands, STS is a European concept, and, though, the Bank of England has mentioned a similar concept, there is no requirement that any approach following a Brexit would be the same as that of the EU. Finally, we note that, even inside the EU, the EBA proposals and measures are not always aligned with what is finally drafted by the European Commission to be presented to the European Parliament. An example is the type of securities that are eligible for purchase under the ECB asset purchase program (ECB’s Bitter Prescription for ABS - .. but EBA’s Second Opinion More Palatable).

A similar picture – neutral to slightly negative – prevails for the post Brexit rate environment which is likely to influence UK RMBS performance. Our macro-strategy team believes only one-third of a Brexit outcome is reflected in markets, but that Governor Carney et al seem to be open-minded on whether a win for ‘Remain’ or ‘Leave’ would involve monetary tightening/ stimulus (Weekly Views and Trade Ideas – Brexit Playbook). In our strategists’ opinion, though, Brexit likely means higher long end yields, a Remain win likely causes premia to dissipate. In the exit scenario (not the base case) the expected sharp devaluation of GBP may further exacerbate inflation expectations. The BoE is hence unlikely to cut, and may even have to be less dovish on the back of inflation. At the long end, yields likely rise along with a wider bout of UK asset selling. However, in the base case Remain scenario, the BoE will likely sound less dovish than currently priced. Overall, the view is a more hawkish outlook for front end UK rates than the market is pricing (UK – Reflation moves into second gear).

Higher rates can have two effects – a slowdown in the high prepayments rates that we have observed, and higher defaults as mortgages become less affordable. Historical analysis of CPR versus rates is not especially useful as GBP rates have been low for some time, combined with an increasingly mortgage lending environment. Regulation has made owning loans for banks a higher return-on-capital investment than owing RMBS feeding the competitive environment. Many of the mortgages originated after the financial and Euro sovereign crisis still have high coupons (as evidenced by pool average coupons) and are likely to see significant CPR rise around reset dates, even in scenarios of moderate rises in front-end rates. Default risk is less of a concern as current low-rate mortgages are likely to remain affordable even after a couple of percentage points rise in borrowing costs.

Finally, a “Brexit” scenario has a specific impact on Euro CLOs which are managed vehicles with managers often based in UK and “passporting” their management regulatory (MiFID) license in other European countries. According to legal experts[6], existing CLO managers who satisfy retention rules by being MiFID-registered sponsors with UK registration may face challenges in accessing the broader EU

[6] See for example https://www.dechert.com/files/Uploads/Documents/FSG/OnPoint%20-%20Brexit%20-%20What%20does%20it%20mean%20for%20asset%20managers%20-%20March%202016.pdf

market. As such and post Brexit, UK managers would, in EU parlance, become “third country firms” and would cease to benefit directly from the various passporting regimes. However, the UK’s existing EU-based laws should be fully equivalent to those of the EU. Therefore the UK would be well placed to take advantage of EU Gateway Hubs (such as Dublin, Luxembourg and Malta) and concessions available to third countries, as many non-EU countries already do. In any case, there is a two-year negotiating period during which managers without access to the Hubs can put such arrangements in place.

Data Appendices

Figure 56. Securitized Products Spreads Summary

	Current	Last Week	Chg.	Last Month	Chg.	Last Qtr	Chg.	Last Year	Chg.
US Consumer ABS									
AAA Fixed CC 5-YR	50	55	-5	55	-5	70	-20	35	15
AAA Fixed CC 10-YR	80	80	0	80	0	80	0	55	25
A Fixed CC 5-YR	90	90	0	90	0	90	0	70	20
BBB Fixed CC 5-YR	105	105	0	105	0	105	0	90	15
US CMBS									
CMBS New Issue Spreads to Swap									
AAA 3yr	48	48	0	48	0	75	-27	70	-22
AAA 7yr	80	80	0	80	0	86	-6	85	-5
AAA 7yr	122	122	0	122	0	140	-18	138	-16
AAA 7yr (ASB)	110	110	0	110	0	122	-12	130	-20
AAA LCF	120	120	0	120	0	138	-18	140	-20
AAA Junior	150	150	0	150	0	170	-20	160	-10
AA	200	200	0	200	0	245	-45	200	0
A	350	350	0	350	0	400	-50	300	50
BBB-	650	650	0	650	0	700	-50	540	110
Senior IO	265	265	0	265	0	275	-10	235	30
Subordinate IO	265	265	0	265	0	275	-10	235	30
Agency MBS									
30-YR Current Coupon LOAS (bp)	37.9	37.2	0.7	36.7	1.2	33.0	4.9	23.2	14.7
30-YR Current Coupon ZV (bp)	88.5	84.8	3.7	83.9	4.7	86.5	2.0	71.8	16.8
30-YR Current Coupon Yield (%)	2.5	2.5	-0.1	2.5	-0.1	2.7	-0.3	3.0	-0.6
Citi Mortgage Index Effective Duration (YRs)	3.1	3.1	0.0	3.2	-0.1	3.1	0.1	4.0	-0.9
Prime-Jumbo Non-Agency (Loss-Adjusted Yields)									
2007 AAA Fixed 30-YR PT	4.75%	4.75%	0.00%	4.75%	0.00%	4.75%	0.00%	4.50%	0.25%
AltA Non-Agency (Loss-Adjusted Yields)									
2007 AAA Fixed 30-YR PT	5.00%	5.00%	0.00%	5.00%	0.00%	5.00%	0.00%	4.50%	0.50%
ABX 06-2 (Price)									
PEN AAA	87.83	87.83	0.00	88.17	-0.34	88.00	-0.17	88.22	-0.39
LCF AAA	82.00	82.00	0.00	81.88	0.12	80.13	1.87	81.64	0.36
AA	52.00	52.00	0.00	56.00	-4.00	60.05	-8.05	60.67	-8.67
A	67.33	67.33	0.00	67.92	-0.59	68.50	-1.17	64.91	2.42
BBB	6.75	6.75	0.00	8.17	-1.42	8.25	-1.50	8.20	-1.45
BBB-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
US CDO									
CLO 1.0 Spreads to Libor									
AAA 1.0 (< 2 yrs)	140	140	0	145	-5	178	-38	105	35
AAA 2.0	165	165	0	165	0	190	-25	145	20
AA 2.0	228	233	-5	233	-5	280	-53	198	30
A 2.0	320	330	-10	335	-15	400	-80	295	25
BBB 2.0	520	530	-10	530	-10	645	-125	390	130

Source: Citi Research

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The Expected and Unexpected, September 10, 2015
Moody's Extends FFELP Comment Deadline, September 3, 2015
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Primary Dealer Survey Surprises, April 22, 2016
Game of Homes, April 22, 2016
Stairway to Liquidity: Proposed Improvements to the CRT Market, April 15, 2016
Living Out the Drought: CRT Liquidity, April 8, 2018
Loss-Adjusted Par, CRT Monthly Update, April 1, 2018
HPA Sensitivity of Legacy RMBS, March 24, 2018
Scratching the HPA Surface & The Thrill of the Chase, March 18, 2016
Disruptive Cashflows Revisited, SFR Roundup, March 11, 2016
Conference Notes, Jumbo Prepays, NA TROR, March 4, 2016
Prep Your Brain, Read Me on the Plane, February 24, 2016
Watt Wants Capital from Capitol Hill, Prepay Projections, February 19, 2016
Citi of Love: CRT & Oil, Negative Rates, and SFR, February 12, 2016
The Blue Steel of CRT Data, February 5, 2016
HAMP Up and Call Me Maybe, January 29, 2016
HPA: Coming to a State Near You, January 22, 2016
Keep Your Housing Eye on Me, January 15, 2016
Kick off the Year with CRT Data, January 7, 2016
A Very Merry Mortgage Credit Weekly, December 23, 2015
FHFA 2016 Scorecard, December 17, 2015
CRT Data Pack, December 10, 2015
SFR Consolidation, Total Returns, December 4, 2015
2016 Mortgage Credit Outlook, November 19, 2015
TGI CRT, November 12, 2015
Let's Look at the Bright Side in RMBS 2.0 , November 6, 2015
Haunted Housing, Spooky CRT, October 30, 2015
Technically Speaking, October 23, 2015
NPL/RPL Securitization Performance Review, October 16, 2015
Non-Agency and Housing 2020, October 9, 2015
September Total Returns: Legacy, Rental, CRT, October 2, 2015
We Got You Covered With This CRT Umbrella, October 2, 2015
HQA1 Summary, SFR Tinder—Are More Matches Coming?, September 25, 2015
HAMP Step-Up Review, September 18, 2015
CRT Ratings Upgrade, RPL Credit Perf, Rel Val Update, September 11, 2015
Cool Off With a Tall Glass of Non-Agency Data, September 2, 2015
Housing and Remittance Update, August 28, 2015
Upside and Downside in Lower Credit Sectors, August 22, 2015
The Prepay Periscope: Trade Ideas in Legacy RMBS, August 14, 2015
Freddie Senior/Sub Deal, CRT Performance Update, August 8, 2015
Fannie Actual Losses, Housing, SFR Risk Update, July 31, 2015
Re-remics in Review, Regional Variations in Housing, July 24, 2015
Risk Layered CRT Performance, SFR Refi Potential, July 17, 2015
Single Family Rental Securitization Primer, July 10, 2015
CRT Performance Update, Total Returns, Remit Review, July 1, 2015
Implications of Front-End Risk Sharing, Servicing Update, June 26, 2015
Rate and Credit Exposure in Non-Agency Sectors, June 19, 2015

A Look at Prime IO Resets, June 12, 2015

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US Structured Credit

Global Structured Credit Focus: Loan liquidity trumped spread in CLO sell-off, June 6, 2016

Citi EUR CLO Scorecard: May 2016, May 17, 2016

Citi US CLO Scorecard: May 2016, May 11, 2016

Global Structured Credit Strategy Focus: Be Aware of What You Add, May 5, 2015

Global Structured Credit Strategy Focus: Introducing Citi US CLO Scorecard, April 12, 2016

Alert: Global Structured Credit Strategy Flash - CLO Managers Divided on Valeant, the Biggest Obligor, March 16, 2016

Global Structured Credit Focus: Can CLO Mezz Be Even More Attractive?, February 26, 2016

FI Credit Presentations: CLO Primer, February 10, 2016

Global Structured Credit Focus - Will Old Credit Cycles Run over New CLOs?, February 4, 2016

Global Structured Credit Flash - FRTB: Lowered and diversification helps, but double-count, January 19, 2016

Global CLO Outlook: Time to Reflect on Credit Risk*, January 6, 2016

Who Moved My CLO Equity NAV? Six Case Studies & One Trade, December 3, 2015

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Collateralized Loan Obligations: A Simple Guide for Investors, November 17, 2015

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Global Structured Credit Strategy: When the Tide Is No Longer Rising, September 30, 2015

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CLO Risk Retention Survey Results Mirror Market Evolution, July 9, 2015

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Global Structured Credit Strategy: Expanding Global Investor Base Improves CLO Liquidity, April 22, 2015

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CLO Regulation Update - First of two one-year CLO Volcker extensions now official, December 19, 2014

US Structured Credit Outlook 2015: A year for managers and portfolios, December 18, 2014

Who Should Manage My CLO After Risk Retention, November 7, 2014

Post Risk Retention CLO World - Will Europe and Non-CLO Buyers Help US Loans, October 21, 2014

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The Fed's Volcker Postponement - Getting Banks Back into Triple-As, April 8, 2014

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European Securitized Products

European Securitized Products Weekly: Loans lift Euro CLOs, but regulation and “Brexit” challenge, June 14, 2016

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European Securitized Products Weekly: A non-conforming RMBS view on Brexit, May 11, 2016

Citi EUR CLO Scorecard: April 2016, April 25, 2016

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Euro CMBS 2.0 vs 1.0: Baby Steps Towards Greater Buyer Confidence, May 14, 2015

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Euro Commission on Solvency II and LCR - Some More Reasons for Banks and Insurers to Buy ABS*, October 10, 2014

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Draghi's €1tn Bazooka Should Turbo-Charge ABS, September 5, 2014

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Play Defense with ABS, August 15, 2014

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Focus on CMBS Recovery and New Efficient UK RMBS, May 2, 2014

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ECB and BoE on Euro ABS Recovery - Doctor is there, but only some will get treated, April 14, 2014

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European Securitized Products Weekly: Will the ECB At Last Take SMEs Off The Shelf?, April 4, 1014

European Securitized Products Weekly: Will NPL Trickle Turn to Flood? Regulators, Stock Markets Decide, March 31, 2014

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Spotlight on ABS Liquidity as Investors Flock to Loan Portfolios, February 21, 2014
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Sound but Little Substance from Volcker and ECB, February 7, 2014
Recent Upside Stories in CLO 1.0 and Spanish RMBS, January 31, 2014
Slow Start but Regulation Hints at Further Rally, January 24, 2014
European ABS 2014 Outlook - The Times They Are a-Changin', January 10, 2014
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LCR May Further Change Sovereign-Covered-RMBS Balance, November 1, 2013
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UK Credit Card ABS Update - April 2013 UK Credit Card Index Update, May 29, 2013
Securitized Products Strategy - RMBS Resilience Post Co-op Downgrade, May 10, 2013
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