

## CMBS Weekly

### Some Concerns But Mostly Upbeat at CREFC

- **Upbeat Tone** — Optimism continues to grow for the commercial real estate finance sector, as was evident at the CREFC conference. But even with rising optimism, one of the main takeaways from this conference was that market players are most concerned about the “unknown” unknown.
- **Key Themes** — Some themes that we took away from the conference include the ongoing search for yield and the interest in alternative assets, the concern over sufficient B-piece buyer demand, negative convexity of premium bonds, the need to hold the line over collateral quality, and nearing regulatory rulings.
- **B-Piece Buyer Concentration** — Despite a growth in the number of B-piece buyers since the market re-emerged in 2010, only a handful of buyers dominate it. The top two B-piece buyers accounted for about 60% of the market in 2012.
- **Focus on Risk Retention Rules** — Regulatory uncertainty emerged as a key concern amid the generally optimistic tone of the conference. The single biggest concern was risk retention rules. We discuss the latest expectations in the report.
- **Keep an Eye on Collateral Quality** — Aggressive underwriting remains a key concern for investors. While loan quality is not yet perceived to have reached 2006 levels, there are visible trends to keep an eye on. In the agency sector, we show that Freddie K deals have a growing tail of low debt yields and more generous interest only terms.

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

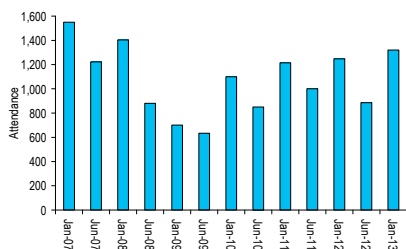
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## Some Concerns But Mostly Upbeat at CREFC

Figure 1. CREFC Conference Attendance



Sources: CREFC and Commercial Mortgage Alert

Macro volatility in the markets remains moderate for now, but sentiment at the biannual CREFC conferences continues its ups and downs. This past week market participants gathered in South Beach for the January CREFC conference, pleasantly arriving to near perfect weather. Attendance was up about 6% year-over-year, reaching 1,320, as optimism continues to grow for the commercial real estate finance sector (Figure 1). The swings in market sentiment at these conferences tends to match the near-term direction of spreads. The rise in optimism at this year's conference coincides with a strong rally that has the 2007-vintage dupe at 85bp, tighter by 155bp since midyear.<sup>1</sup>

But even with rising optimism, one of the main takeaways from this conference was that market players are most concerned about the "unknown" unknown. There are a few "known" unknowns such as the pending regulatory announcements, the potential for rising rates, and the concern over deteriorating collateral quality. But the unexpected surprise was foremost on the market's list of concerns.

Here are some themes that we took away from the conference.

- **Ongoing search for yield.** The quest for yield is leading to a rising interest in alternative assets. The mezzanine market certainly seemed to be of interest to many participants. CRE CLOs are expected to increase this year, building on the Arbor and Redwood deals from last year. While not new, CMBS IOs came up at many discussions that we held, as investors have been actively participating in both the new issue private-label and Freddie K IO markets.
- **Sufficient B-piece buyer demand.** As the market continues to grow market participants wondered if a limited B-piece buyer base could stifle such growth. B-piece buyers will be dealing with several challenges, notably new risk retention requirements.
- **Premium erosion.** Premium bond prices are sure to begin heading toward par as WALs continue to shorten. The degree of negative convexity is a concern, as the trek to par is unlikely to be linear. With some 2005 dupers already beginning to pay down, or close to it, investors are concerned about the impact on their yields. The low rate environment is certainly enticing borrowers to lock in rates on new loans even if they have to pay defeasance costs to get out of their current loan. Long open windows on previously extended loans are also a concern. For example, GGP pre-paid off a few loans in 2012, including Ala Moana.
- **Holding the line on collateral quality.** Market participants like to gauge how current loan quality compares to past vintages. While our qualitative assessment would be that the market is at a late 2004/early 2005 stage, some suggested that certain deals may already resemble 2006 vintage aggressiveness.

Beyond the private-label deals, investors were concerned about the direction of quality in the agency deals, particularly the Freddie Ks. Many investors suggested a steady trend in lower debt yields and a rise in partial term interest only loans. Interestingly, at the Agency Investors Forum panel discussion both Fannie and Freddie stated they were holding the line in conservative underwriting, and "have not moved an inch." Given the disparity in views we took a look at these collateral trends in the Freddie K deals.

<sup>1</sup> For comments regarding sentiment at the past two conferences see "CREFC Brings Out Deep-Rooted Trust Concerns Across Industry," *CMBS Weekly*, June 15, 2012 and "Singular Sentiment at CREFC: But is it More "Caution" or More "Optimism"?", *CMBS Weekly*, January 13, 2012

- **Regulation coming to a head.** Regulatory uncertainty emerged as a key concern, particularly risk retention, amid the generally optimistic tone of the conference.

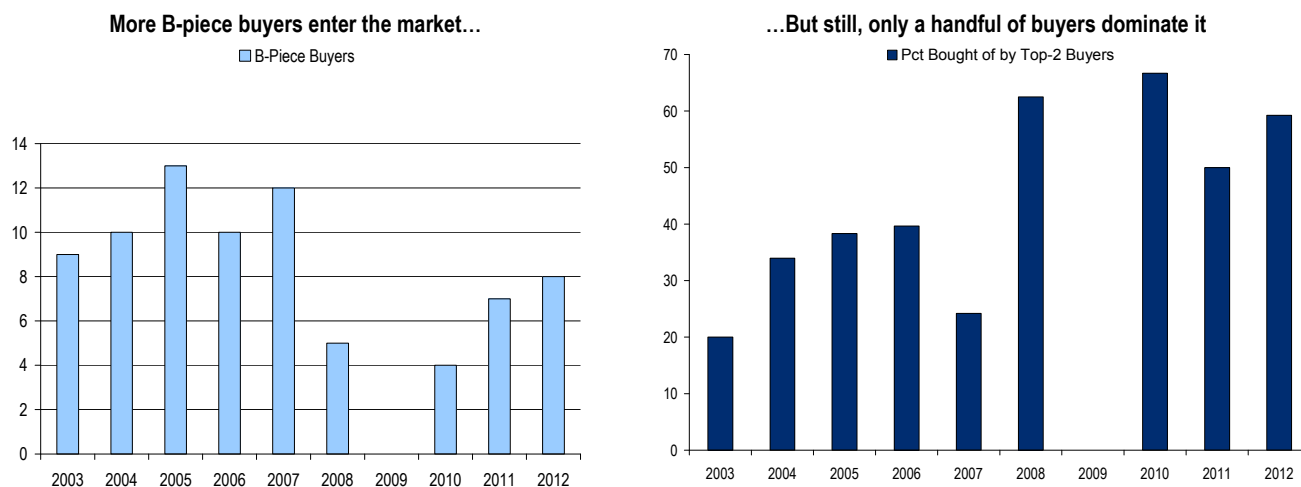
We discuss a few of these topics further in the sections below.

## B-Piece Buyer Concentration Remains a Concern

**Despite a growth in the number of B-piece buyers since the market re-emerged in 2010, only a handful of buyers dominate it.** Eight buyers bought B-pieces in 2012, up from four in 2010, as the left chart of Figure 2 shows. This is still a smaller number of buyers compared to the 10-13 buyers active before the crisis, but the growth trend is obvious.

However, the top two B-piece buyers accounted for about 60% of the market, as the right chart of Figure 2 shows. Indeed, B-piece buyer concentration is evident in new issuance deals, in fairly sharp contrast to 2003-2007 when the top buyers accounted for a much smaller percentage of the market. The concerns about the future of the B-piece market are heightened by the forthcoming risk retention rules, which we discuss in the next section.

Figure 2. Number of B-Piece Buyers and Top-2 Buyers Percentage of the Market, 2003-2012



Sources: Commercial Mortgage Alert and Citi Research

## Regulation – A Key Concern with Fast-Approaching Retention Rules

Regulatory uncertainty emerged as a key concern amid the generally optimistic tone of the conference. Panelists much discussed forthcoming regulatory changes, especially in the issuers and the B-piece buyers' forums, but also, for example, in the bank portfolio lending session. This somewhat contrasted with the June conference in Washington, where regulation was not so much in the spotlight.

The single biggest concern was risk retention rules. CREFC communicated their current expectations as follows:

- **The premium capture cash reserve account (PCCRA) will likely not be included in the final rules.** This has probably been the biggest concern for most securitized products sectors, including CMBS. As originally proposed in April

2011, many market participants suspected this requirement could cripple the securitization market. Also, the provision was not part of the Dodd-Frank Act.

- **The 5% retained position will be based on market proceeds, rather than par/face value.** Because subordinate bonds are usually sold at deep discounts, the subordinate bonds' "market value" will often be significantly less than the par value, translating into a smaller percentage of the deal being retained. As such, the "market value approach" would almost double the deal's par percentage that B-piece buyers would have to hold.
- **B-piece buyers will have to hold their position for a minimum of five years.**
- **The regulators could release an "interim final rule".** Instead of re-proposing the rules for market feedback or finalizing the rules with no further feedback, the regulators could take this interim final rule middle-way approach. Releasing an interim final rule would mean that the two-year implementation period for CMBS will kick off as soon as the rules are published. However, the regulators could still incorporate market feedback during the implementation period. Yet some panelists expressed doubts that the regulators will still be receptive to market feedback after receiving extensive comments over the past couple of years.
- **There is no clear guideline yet for the timing of the regulators' next step.** The regulators are reportedly still debating the definition of Qualified Residential Mortgage (QRM), and that aspect, that is unrelated to CMBS, could be holding up the release of the full rules. Some speakers suggested a Q1 release, while other suggested it would happen only in Q2.
- **Actual rule details will matter a lot.** Despite the fairly specific expectations outlined above, CREFC representatives emphasized that there is no formal guidance whatsoever about the formal rules. The specific language of the rule could significantly determine the actual market impact. For example, it is not clear what exemptions if any the regulators will provide for the five-year holding period. What happens if a B-piece buyer merges with or acquired by another entity? What kind of hedging will be allowed? Will the B-piece buyer be allowed to sell a portion of its holdings?

### **B-piece Retention Is Now the Focus of Attention for the CMBS Market**

With a growing sense that the regulators will drop the premium capture requirement from the retention rules, the market focused on the B-piece provisions the rules will likely contain. To be sure, the concerns over the B-piece holders risk retention provisions are not new. Shortly after the regulators released the NPR back in April 2011, we mentioned that requiring the retained position to be 5% of the deal's market value could have some adverse implications for new issuance.<sup>2</sup> A market value approach would almost double the deal's par percentage that B-piece buyers have been typically purchasing. Indeed, the renewed focus on the B-piece buyer retention rules emerges as the rules approach implementation.

#### **B-piece buyers expressed serious concerns about the future of the market.**

They basically said that requiring them to hold 5% of market proceeds for five years will crush their market. On the other hand, quite a few investors thought that putting in place the retention provisions could force some discipline on the market, and have a positive long-term impact.

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<sup>2</sup> "Risk Retention Expected Revisions Create Uncertainty," Citi, *CMBS Weekly*, April 29, 2011.

## A Market-Value Approach Nearly Doubles the Required B-piece Par Percentage

In Figure 3 we use a hypothetical CMBS transaction to illustrate how using the “market value” and “par value” approaches has an impact on the amount of required risk retention. Our conclusions are based on the following calculations:

- **Retention based on par/face amount.** Total original face amount of noninvestment-grade (lower than BBB-) bond classes divided by total original face amount of all bond classes.
- **Retention based on market value.** Total price paid for non-investment-grade (lower than BBB-) bond classes divided by total proceeds to dealer upon securitization (including premium priced bonds, IO tranches, etc.).

**Figure 3. Required Risk Retention Based on “Face Value” and “Market Value” (Dollars in Millions)**

Hypothetical \$1.5 Billion CMBS Transaction					
Tranche	“Face Value” (\$)	Rating	Subordination (%)	\$ Px	“Market Value” (\$)
A	1,245.0	AAA	17.00	101	1,257.5
B	37.5	AA	14.50	101	37.9
C	52.5	A	11.00	101	53.0
D	37.5	BBB+	8.50	100	37.5
F	45.0	BBB-	5.50	94	42.5
G	15.0	BB	4.50	52*	7.8
H	15.0	B	3.50	52*	7.8
J	7.5	B-	3.00	52*	3.9
NR	45.0	NR	0.00	52*	23.3
<b>Total B-Piece</b>	<b>82.5</b>	<b>—</b>	<b>—</b>	<b>52</b>	<b>42.6</b>
X (IO)	1,500.0	AAA	—	4.9	74.0
				103	1,545.0

Retention Based on Par / Face Value		Retention Based on Market Value	
Deal Size	1,500	Market Value	1,545
B-Piece Face Amt	82.5	B-Piece Amt (Mkt Value)	42.6
<b>Retention %</b>	<b>5.5</b>	<b>Retention %</b>	<b>2.8</b>
Req. Retention Amt (5% Face)	75.0	Req. Retention Amt (5% Mkt)	77.3
Amt Retained (Face Amt)	82.5	Amt Retained (Mkt Value)	42.6
<b>Add Req. Retention (Face Amt)</b>	<b>0.0</b>	<b>Add Req. Retention (Mkt Value)</b>	<b>34.6</b>
Add Req. Retention (Face)	0.0	Add Req. Retention (Face)	66.9
Total Face Retained	82.5	Total Face Retained	149.4
<b>Total Face Retention %</b>	<b>5.5</b>	<b>Total Face Retention %</b>	<b>10.0</b>

\* Assumes B-Buyer requires a blended 14% yield for all non-investment-grade tranches and all non-investment-grade tranches carry a 5% coupon.

Source: Citi Research

In the top portion of Figure 3, we can see that the B-piece (shaded in gray) is comprised of classes G, H, J and NR and represents about 5.5% of the deal based on par/face value, or \$82.5 million. So if the B-piece buyer were to purchase our hypothetical B-piece, they would meet the 5% risk retention requirement under the “face value” approach (see the bottom left portion of Figure 3).

However, the B-piece would not be large enough to satisfy the 5% risk retention requirement if the rules employ the “market value” approach. This is partially because the B-piece buyer is purchasing the B-piece at about 52 cents on the dollar in our example, which results in a “market value” of only \$42.6 million (numerator in the “market value” approach). Additionally, since the issuer of our hypothetical deal

**Requiring 5% retention based on market value would almost double what B-piece buyers typically purchase on par basis**

made three points of profit, the “market value” of the deal (denominator in the “market value” approach) is 3% higher than the face amount of the deal. So, the smaller numerator (\$42.6 million versus \$82.5 million) and larger denominator (\$1,545 million versus \$1,500 million) result in the B-piece buyer retaining just 2.8% of the deal under the “market value” approach, clearly below the 5% threshold.

Moving to the bottom right section of Figure 3, we can see that a B-piece buyer would be required to retain an additional \$34.6 million of bonds in order to satisfy the 5% retention requirement under the “market value” approach. But, the additional \$34.6 million is based on the actual purchase price, not par/face value of the bonds. So, if the B-piece buyer were to still require a 14% yield on the entire, now-larger, B-piece, it must purchase an additional \$66.9 million of face amount (the entire BBB-tranche and part of the BBB+ tranche) in order to satisfy the retention requirement.

All told, the “market value” approach would require the B-piece buyer to retain \$149.4 million of face amount bonds — about 10% of the par value of the deal, or nearly double what B-piece buyers typically retain. This increase would clearly have a negative impact on the economics of new issue deals.

## **Collateral Slippage in the Freddie K Deals Shows Tail Risk**

Looking through the Freddie K data we did indeed find the trends investors alluded to — namely, a growing number of very low debt yields and more IO loan exposure in the deals. While lower debt yields should be a warning bell for investors across the structure, more IO loans could impact various bondholders differently. IO loans typically have lower term default risk, as they have lower debt service requirements, but higher balloon risk. So these loans may actually benefit premium bond holders and IO investors more so than investors who purchase at a discount.

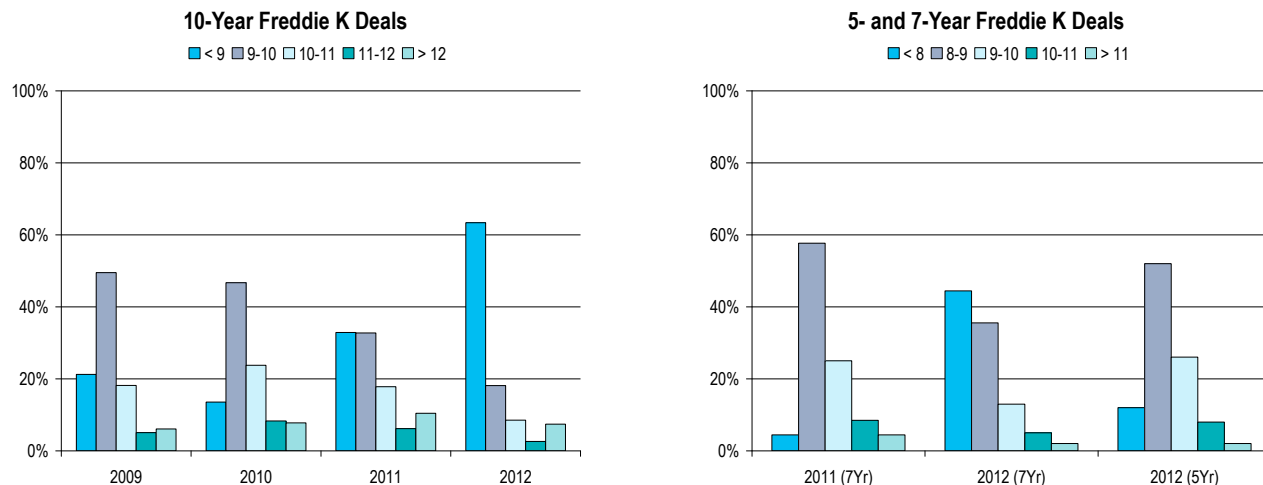
### **Debt Yields Increasingly Falling Below 9%**

We’ve previously noted that aggregate debt yields have been coming down year by year on the Freddie Ks.<sup>3</sup> But investors were particularly focused on the increasing tail risk beyond just the lower average levels. So looking at securitized debt yields in the Freddie Ks issued since 2009, Figure 4 shows a distribution of debt yields for ten-year deals as well as for the five- and seven-year deals.

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<sup>3</sup> Agency CMBS Primer: A Guide to Three Agencies’ Multifamily Programs, Citi, November 28, 2012

Figure 4. Debt Yield (%) of Freddie K Deals, 2009-2012



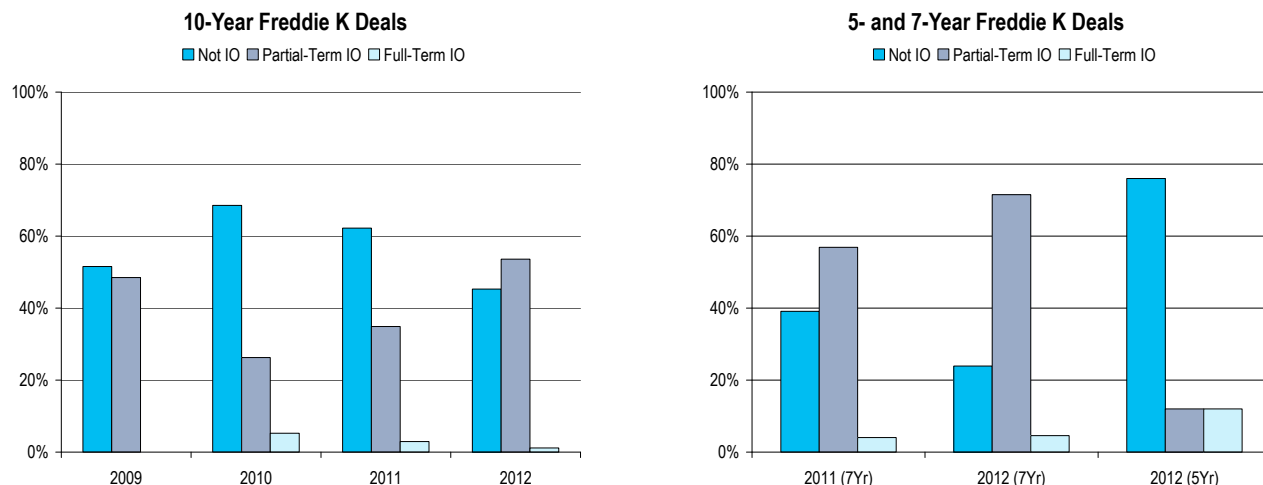
Sources: Trepp and Citi Research

The stark jump in the “< 9” bucket in the 2012 ten-year loans does support the investors’ claim that underwriting is getting more aggressive. Over 60% of the 2012 Freddie K loans were sized with a debt yield of less than 9% versus only 33% in 2011. Meanwhile, in the seven-year deals, over 40% of the debt yields were less than 8% in 2012 versus less than 5% in 2011.

### Frequency of Partial IO Rising, Length of Term Extending

Not only did the debt yields drift lower in 2012 on the Freddie K deals, but the number of partial term interest only loans increased even as the partial term length extended. In 2012, the number of partial term IO loans reached 54% from 33% in 2011. Full-term IO loans remain fairly limited in the Freddie K universe. The seven-year deals also saw a rise in the partial term IO loans, rising to 72% from 57% in 2011.

Figure 5. Interest Only Profile of Freddie K Deals, 2009-2012

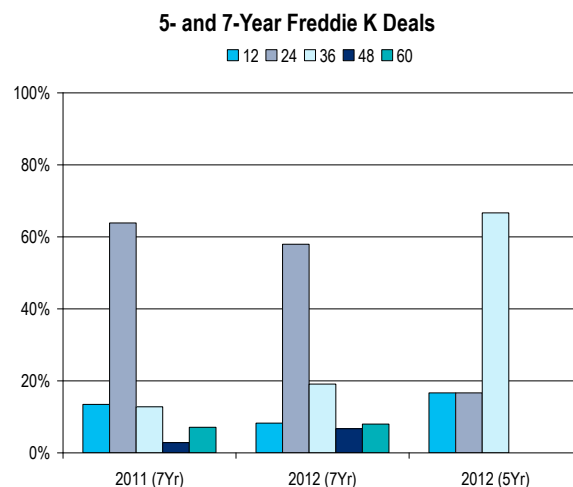
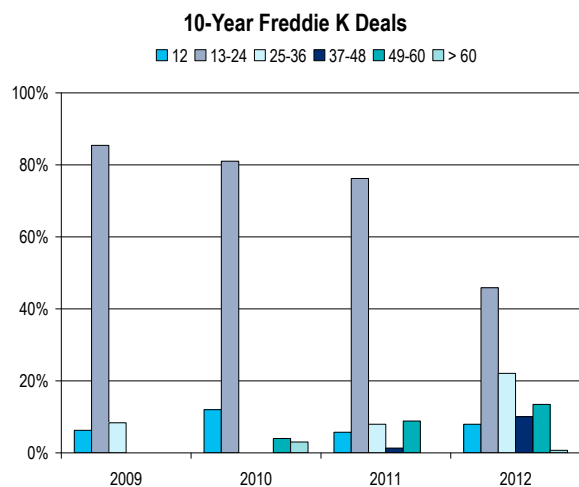


Sources: Trepp and Citi Research



The typical partial IO term had been 24 months for the past few years. While it remained the most predominant term in 2012, its share dropped precipitously to 46% from 76% in 2011. Longer terms of 36, 48 and 60 months showed up much more frequently than in the past. The seven-year loans also saw some movement to 36-month terms, but the decrease in 24-month terms was significantly less than for the ten-year loans.

Figure 6. Partial Term IO Profile (Months) of Freddie K Deals, 2009-2012



Sources: Trepp and Citi Research

## CMBS Relative Value Charts and Issuance Tables

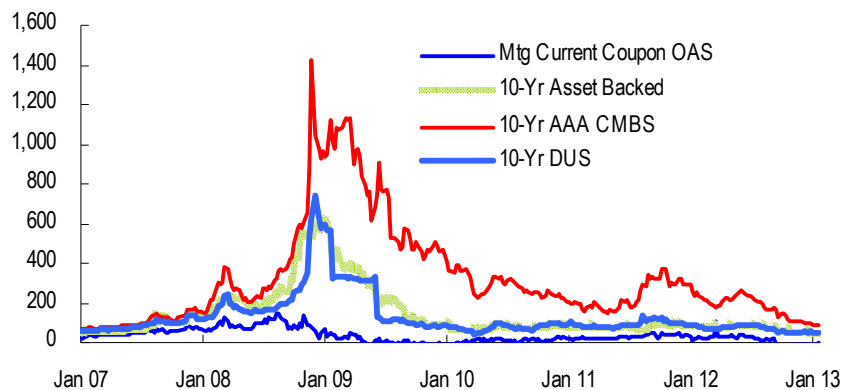
Figure 7. CMBS Relative Value Spreads

	17-Jan-13	Tsy +	Last Week		Last Qtr		Last Year		Average	
			11-Jan-13	Chg.	28-Dec-12	Chg.	28-Dec-12	Chg.	1 yr	3 yr
<b>New Issue CMBS</b>										
AAA 3Yr	28	42	28	0	25	3	25	3	41	NA
AAA 5Yr	40	53	40	0	40	0	40	0	72	NA
AAA 7Yr (AAB)	72	81	72	0	75	-3	75	-3	107	NA
AAA 10Yr	72	76	72	0	75	-3	75	-3	106	NA
AAA Junior	100	104	100	0	125	-25	125	-25	175	NA
AA	140	144	140	0	170	-30	170	-30	244	NA
A	200	204	200	0	240	-40	240	-40	355	NA
BBB-	325	329	325	0	475	-150	475	-150	618	NA
Senior IO	140	NA	140	0	200	-60	200	-60	309	NA
Subordinate IO	400	NA	400	0	650	-250	650	-250	864	NA
<b>Legacy CMBS</b>										
2005 LCF (2Yr WAL)	43	57	43	0	45	-2	45	-2	71	130
2006 LCF (3Yr WAL)	55	69	55	0	55	0	55	0	109	177
2007 LCF (4Yr WAL)	85	97	85	0	90	-5	90	-5	166	221
GG10 LCF (4Yr WAL)	121	133	121	0	131	-10	131	-10	210	274
2005 AM (2Yr WAL)	100	114	100	0	125	-25	125	-25	175	263
2006 AM (3Yr WAL)	125	139	125	0	165	-40	165	-40	280	394
2007 AM (4Yr WAL)	210	222	210	0	265	-55	265	-55	432	528
<b>Agency CMBS</b>										
5/4.5 DUS	20	33	20	0	20	0	20	0	28	NA
7/6.5 DUS	30	39	30	0	34	-4	34	-4	44	NA
10/9.5 DUS	45	49	45	0	48	-3	48	-3	59	70
<b>Intra-CMBS Differentials</b>										
AAA 10Yr - 10/9.5 DUS	27		27	0	27	0	27	0	47	NA
AAA Junior - AAA 10Yr	28		28	0	50	-22	50	-22	69	NA
BBB- - AAA 10Yr	253		253	0	400	-147	400	-147	511	NA
2006 LCF - 2005 LCF	12		12	0	10	2	10	2	39	47
2007 LCF - 2005 LCF	42		42	0	45	-3	45	-3	96	91
2005 AM - 2005 LCF	57		57	0	80	-23	80	-23	104	133
2006 AM - 2006 LCF	70		70	0	110	-40	110	-40	171	217
2007 AM - 2007 LCF	125		125	0	175	-50	175	-50	265	307
<b>New Issue Competing Differentials</b>										
AAA 3Yr - AAA/AA 1-3Yr Corporate	7		7	0	2	5	2	5	19	NA
AAA 5Yr - AAA/AA 3-7Yr Corporate	-16		-15	-1	-15	-1	-15	-1	7	NA
AAA 10Yr - AAA/AA 7-10Yr Corporate	-24		-21	-3	-15	-9	-15	-9	-4	NA
AAA 5yr - A 5yr CC	-15		-15	0	-15	0	-15	0	2	NA
AAA 7yr - A 7yr CC	-3		-3	0	0	-3	0	-3	23	NA
AAA 7yr - BBB 5yr CC	-23		-23	0	-20	-3	-20	-3	-11	NA
<b>Legacy Competing Differentials</b>										
2005 LCF - A 1-3Yr Corporate	-2		-2	1	-36	34	-36	34	-2	49
2006 LCF - A 1-3Yr Corporate	10		10	1	-26	36	-26	36	37	96
2007 LCF - A 3-7Yr Corporate	-4		0	-4	1	-5	1	-5	36	81
2007 LCF - BBB 3-7Yr Corporate	-69		-67	-2	-67	-2	-67	-2	-26	32
GG10 LCF - BBB 3-7Yr Corporate	-33		-31	-2	-26	-7	-26	-7	18	84
2007 LCF - BBB 5yr CC	-10		-10	0	-5	-5	-5	-5	49	68
2007 LCF - BBB 7yr CC	-40		-40	0	-35	-5	-35	-5	34	61
<b>Agency Competing Differentials</b>										
10/9.5 DUS - AAA/AA 7-10Yr Industrial	-26		-25	-2	-18	-8	-18	-8	-9	-1
10/9.5 DUS - AAA 10yr CC	0		0	0	3	-3	3	-3	-6	1
10/9.5 DUS - Agency Debenture <sup>a</sup>	26		25	1	28	-2	28	-2	NA	NA

<sup>a</sup> Agency Debenture = Freddie Mac 2.375 1/13/22

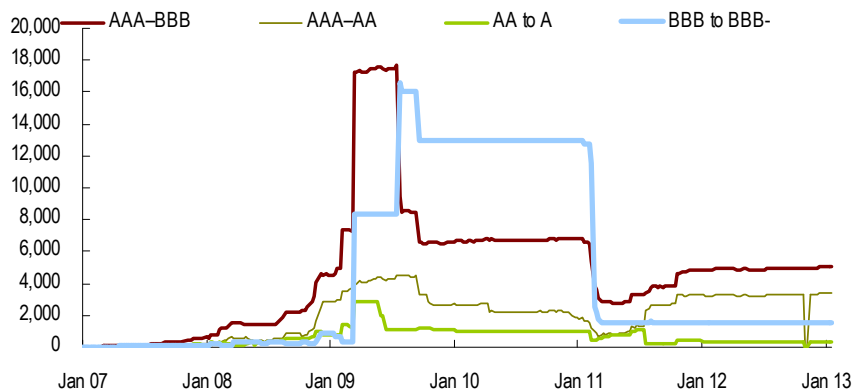
Source: Citi Research

Figure 8. CMBS Spread to Treasuries, Jan 07–Jan 13



Source: Citi Research

Figure 9. CMBS Credit Curve Spreads, Jan 07–Jan 13



Source: Citi Research

Figure 10. CMBS Pipeline

Loan Sellers	Type	Rate Type	Amount (\$MM)	Anticipated Issuance
Morgan Stanley, Bank of America	Multi-borrower	Fixed	1,400	January
Deutsche Bank, Ladder Capital	Multi-borrower	Fixed	1,300	January
Morgan Stanley, Bank of America	Multi-borrower	Fixed	1,300	January
Goldman, Citi, Archetype, Five Mile	Multi-borrower	Fixed	1,250	January
Wells Fargo, RBS	Multi-borrower	Fixed	1,250	January
Cerberus Capital (Kyo-ya Hotels)	Single-borrower	Floating	1,100	January
Extended Stay Hotels	Single-borrower	Fixed	2,500	February
UBS, Barclays, Archetype, Mtge Cap	Multi-borrower	Fixed	1,350	February
Deutsche Bank, Cantor Fitzgerald	Multi-borrower	Fixed	1,300	February
Blackstone (Apple REIT Hotels)	Single-borrower	Floating	775	February
Macerich (Kings Plaza Mall)	Single-borrower	Fixed	500	February
Denihan, Pebblebrook (Hotel Portfolio)	Single-borrower	Fixed	450	February
Goldman, Citi, Jefferies, Archetype	Multi-borrower	Fixed	1,400	March
Morgan Stanley, Bank of America	Multi-borrower	Fixed	1,300	March
UBS, Barclays	Multi-borrower	Fixed	1,250	March
<b>Total Fixed</b>			<b>16,550</b>	
<b>Total Floating</b>			<b>1,875</b>	

Source: Commercial Mortgage Alert

Figure 11. US CMBS Issuance (Dollars in Millions)

Pricing Date	Deal	Type	Amount (\$MM)	AAA		AA	A	BBB	BBB-
				Short Tranche	Long Tranche				
10 Jan 12	QCMT 2013-QC	Single-borrower	600.0		S+85				
9 Jan 12	MSBAM 2013-C7	Multi-Borrower	1394.0	S+36	S+72	S+155	S+200	S+325	
14 Dec 12	SMAP 2012-LV1	Distressed Loans	181.6						
12 Dec 12	JPMCC 2012-LC9	Multi-Borrower	1,071.9	S+40	S+85	S+180	S+245	S+310	S+475
11 Dec 12	GSMS 2012-BWTR	Single-Borrower	300.0		S+100				
6 Dec 12	GSMS 2012-TMSQ	Single-Borrower	208.0		S+110				
6 Dec 12	UBSBB 2012-C4	Multi-Borrower	1,456.1	S+47	S+95	S+180	S+250		S+475
6 Dec 12	COMM 2012-CCRE5	Multi-Borrower	1,133.7	S+43	S+88			S+310	S+470
6 Dec 12	COMM 2012-MVP	Single-Borrower	294.7						
5 Dec 12	JPMCC 2012-PHH	Single-Borrower	175.0						
30 Nov 12	WFRBS 2012-C10	Multi-Borrower	1,305.6	S+50	S+95	S+180	S+250		S+500
29 Nov 12	BAMLL 2012-PARK	Single-Borrower	300.0		S+95				
16 Nov 12	BBUBS 2012-TFT	Single-Borrower	567.8						
16 Nov 12	GSMS 2012-GCJ9	Multi-Borrower	1,388.9	S+50	S+90	S+185	S+255		S+520
16 Nov 12	VNDO 2012-6AVE	Single-Borrower	950.0		S+110	S+140	S+180	S+225	S+270
2 Nov 12	MOTEL 2012-MTL6	Single-Borrower	1,050.0	S+115					
2 Nov 12	COMM 2012-CCRE4	Multi-Borrower	1,111.0	S+45	S+83	S+167	S+240		S+485
16 Oct 12	WFRBS 2012-C9	Multi-Borrower	1,052.8	S+50	S+85	S+180	S+250		S+485
16 Oct 12	COMM 2012-FL2	Single-Borrower	272.8						
3 Oct 12	MSBAM 2012-C6	Multi-Borrower	1,123.5	S+50	S+85	S+190	S+250		S+500
3 Oct 12	COMM 2012-CCRE3	Multi-Borrower	1,251.4	S+50	S+88	S+195	S+260	S+385	S+490
27 Sep 12	JPMCC 2012-C8	Multi-Borrower	1,136.6	S+50	S+88	S+200	S+270		S+535
19 Sep 12	WFCM 2012-LC5	Multi-Borrower	1,277.2	S+50	S+85	S+205	S+260		S+500
14 Sep 12	UBSBB 2012-C3	Multi-Borrower	1,082.1	S+50	S+95	S+220	S+300		S+575
10 Sep 12	CCMT 2012-GC8	Multi-Borrower	1,040.2	S+50	S+100	S+225	S+320		
10 Sep 12	BAMLL 2012-CLRN	Single-Borrower	335.0	L+115		L+160	L+210	L+270	L+320
17 Jan 13	FNA 2013-M1	Agency	1,192.9	S+25	S+43				
4 Jan 13	FREMF 2013-K24	Agency	1,449.5	S+28	S+44				
21 Dec 12	FNA 2012-M18	Agency	302.2						
6 Dec 12	FREMF 2012-K23	Agency	1,369.6	S+32	S+50				
20 Nov 12	FREMF 2012-K22	Agency	1,409.5	S+30	S+50				
9 Nov 12	FNA 2012-M17	Agency	1,011.5	S+25	S+43				
8 Nov 12	FREMF 2012-K711	Agency	1,379.7	S+20	S+31				
17 Oct 12	FREMF 2012-K021	Agency	1,371.5	S+23	S+42				
11 Oct 12	FNA 2012-M14	Agency	1,149.7						
1 Oct 12	FREMF 2012-KF01	Agency	1,371.1	L+35					
24 Sep 12	FNA 2012-M12	Agency	728.5						
19 Sep 12	FNA 2012-M13/A	Agency	618.2	S+22					
19 Sep 12	FNA 2012-M13/B	Agency	500.8	S+25	S+50				
14 Sep 12	FREMF 2012-KP01	Agency	448.2	S+28					
12 Sep 12	FREMF K-020	Agency	1,097.5	S+28	S+52				
10 Sep 12	FNA 2012-M11	Agency	699.6						

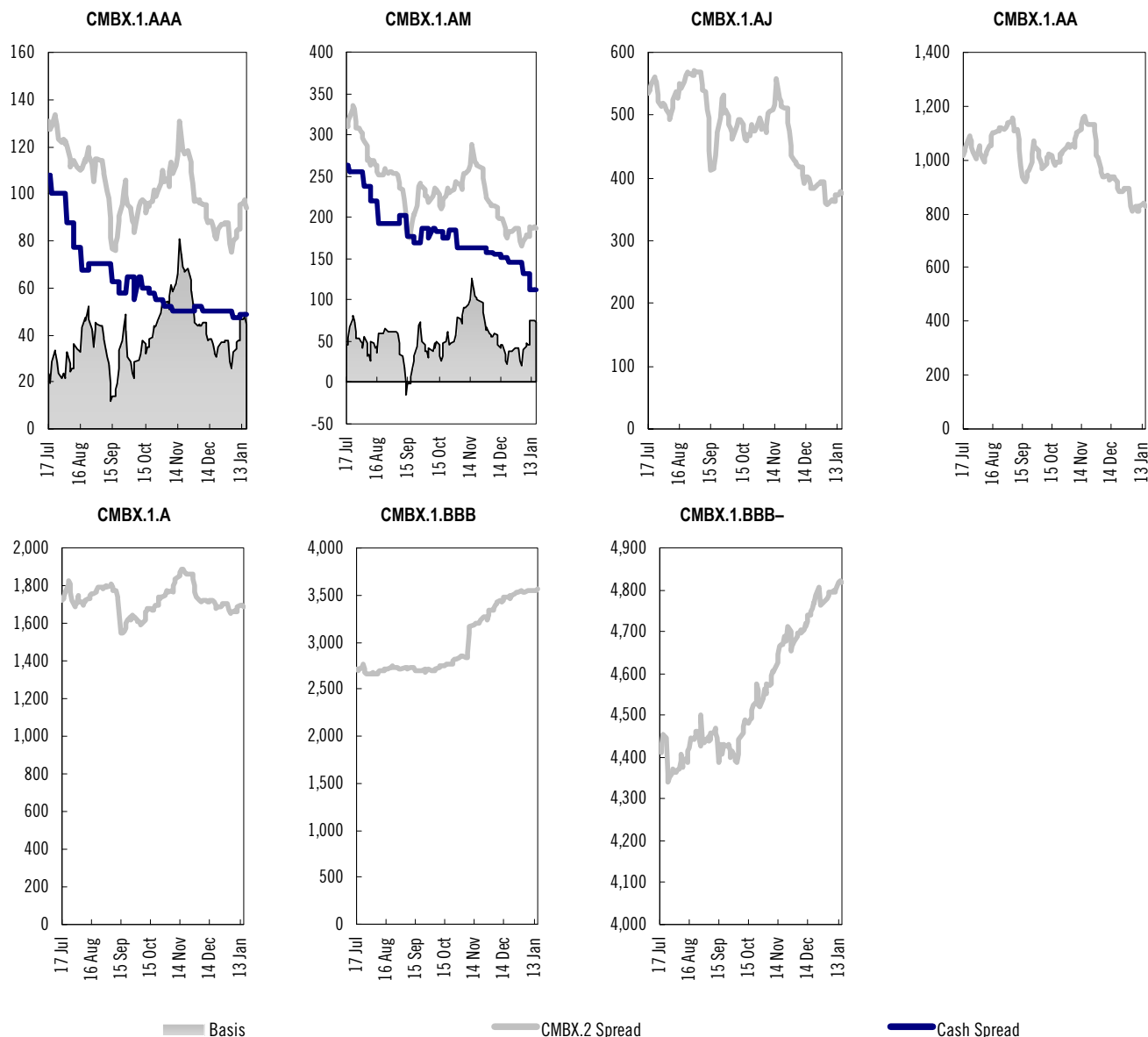
Sources: Commercial Mortgage Alert, Fannie Mae, and Citi Research

Figure 12. Sample Secondary Market Trades with Credit-Adjusted Yields, Base and Stress Scenarios

Date	Deal Name	Class	Size (\$MM)	Fth/Mdy/S&P	Del %	Sub	\$ Price	Base Case			Stress		
								WAL	Yield	Min Sub	WAL	Yield	Min Sub
01/17/13	BACM 2007-2	A2	17.78	AAA/NA/AAA	9.62	39.57	102.03	2.01	4.94	40.05	-	-	-
01/17/13	CSFB 2004-C1	A4	1.00	NA/Aaa/AAA	0.14	18.85	102.59	0.75	0.82	19.04	-	-	-
01/16/13	MSC 2007-IQ14	A2	0.06	NA/Aaa/AAA	12.15	32.91	101.25	3.84	5.53	32.43	-	-	-
01/09/13	JPMCC 2007-LD11	AJ	14.48	NA/Caa1/B-	25.54	13.11	60.00	5.06	17.29	8.82	5.96	7.39	2.26
01/08/13	COMM 2012-CR4	A3	10.94	AAA/Aaa/AAA	0.00	30.02	68.00	9.41	7.75	30.06	9.38	7.76	30.06
01/07/13	MLCFC 2007-9	AJ	13.50	CCC/NA/B-	13.76	10.80	85.00	5.04	10.23	9.54	6.28	6.68	3.81
12/19/12	CD 2007-CD4	AJ	5.00	CC/Caa1/CCC+	20.16	11.88	59.75	5.08	17.27	3.91	5.50	15.34	4.48
12/18/12	GSMS 2011-GC5	A4	0.29	AAA/Aaa/NA	0.00	30.38	76.00	8.23	7.75	30.40	8.20	7.76	30.43
12/18/12	BACM 2004-5	H	9.53	NA/Baa3/BB	10.50	7.22	89.75	4.63	8.37	5.69	5.57	6.02	2.84
12/06/12	BSCMS 2006-PW13	D	7.50	CCC/NA/B-	5.02	6.02	32.00	5.35	35.18	4.89	7.02	15.54	1.09
11/27/12	BACM 2008-1	B	2.10	NA/Baa1/B	10.65	12.16	76.25	5.35	12.74	9.73	6.44	7.79	4.90
11/27/12	BACM 2008-1	C	1.73	NA/Baa3/B-	10.65	11.00	65.50	5.38	16.30	8.23	6.51	9.43	3.40
11/27/12	BSCMS 2005-T20	A4A	0.15	AAA/Aaa/NA	1.88	29.02	43.00	4.36	29.71	29.09	4.08	31.51	28.88
11/20/12	CD 2007-CD5	AJ	6.50	BBB/Baa2/B+	4.33	11.57	98.75	4.89	6.55	11.05	5.20	6.50	10.61
11/20/12	WBCMT 2007-C30	D	9.24	CC/Caa3/D	34.91	9.25	36.25	4.93	17.16	3.38	5.90	2.64	0.89
11/20/12	WBCMT 2006-C27	AJ	8.49	NA/Baa3/BB	20.97	12.21	83.75	3.90	10.80	7.06	4.93	5.30	2.61
11/14/12	WBCMT 2006-C26	B	10.00	NA/Baa3/BB	16.73	11.61	71.50	4.53	14.69	7.88	5.42	1.92	3.38
11/14/12	PCMT 2003-PWR1	C	1.67	AA/NA/A+	8.05	17.25	100.75	0.26	1.34	22.11	0.26	1.33	23.95
11/07/12	LBUBS 2008-C1	AJ	0.31	NA/B2/B	7.45	10.29	90.50	7.79	7.90	7.42	9.75	3.91	1.38
11/07/12	CSFB 2003-C4	G	1.00	NA/Baa3/BBB	1.56	6.21	96.25	1.83	7.88	6.28	2.53	6.97	6.18
11/05/12	JPMCC 2007-CB18	A4	1.18	NA/Aaa/A+	9.39	28.23	80.00	3.93	12	27.51	4.08	11.85	26.33
10/23/12	COMM 2007-C9	G	5.00	NA/Caa2/B	7.42	7.18	57.50	4.89	20.12	6.82	5.62	16.45	5.57
10/22/12	JPMCC 2006-CB16	B	10.50	NA/Caa1/BB-	4.15	6.38	61.00	6.54	12.16	2.65	6.31	-5.04	0.57
10/19/12	LBUBS 2006-C7	AJ	1.55	CCC/NA/BB-	20.49	10.71	69.63	4.15	15.76	8.23	5.09	12.70	3.62
10/17/12	CD 2007-CD4	AMFX	10.00	A/Baa3/BB+	20.39	23.05	104.48	4.37	4.24	20.07	4.98	4.36	19.55
10/16/12	BACM 2006-5	AJ	14.77	NA/B2/BB-	18.16	9.90	66.25	4.67	14.96	5.94	5.34	0.15	0.76
10/15/12	JPMCC 2006-CB16	B	6.50	NA/Caa1/BB-	4.15	6.38	63.03	6.54	11.51	2.65	6.31	-5.71	0.57
10/11/12	JPMCC 2006-CB15	A3	2.68	AAA/Aaa/NA	10.90	28.23	102.13	0.72	2.68	28.22	1.17	3.81	27.98
10/11/12	BACM 2007-1	AJ	10.00	B/B2/NA	23.84	12.94	72.50	4.62	13.31	8.56	5.35	10.06	6.56
10/10/12	JPMCC 2005-LDP5	A2	23.03	AAA/Aaa/AAA	4.52	37.05	100.53	0.50	0.00	39.10	0.46	0.00	39.11
10/05/12	BSCMS 2007-PW16	AJ	6.34	CCC/Baa3/NA	9.89	11.40	85.00	4.96	9.68	10.00	6.01	6.29	2.60
10/02/12	GSMS 2004-GG2	E	13.30	NA/Baa1/BBB-	4.52	5.85	87.50	3.87	9.02	5.14	4.29	1.07	2.96
10/02/12	GMACC 2001-C1	E	5.40	A/NA/B+	95.36	76.56	101.75	0.10	0.00	1.49	0.11	0.00	7.82
09/27/12	CSFB 2005-C2	AJ	8.00	NA/Caa3/CCC-	15.20	9.93	40.75	4.45	30.44	7.69	4.62	24.34	1.87
09/27/12	CGCMT 2007-C6	AJ	15.00	BB/NR/BB-	14.83	11.52	81.00	4.94	10.74	8.63	6.13	4.64	2.77
09/25/12	CSMC 2006-C3	AJ	16.10	NA/Baa2/B+	20.00	11.03	86.00	4.18	9.06	5.25	5.03	0.35	1.54
09/20/12	GECMC 2007-C1	AJ	29.75	NA/Caa1/B-	19.81	10.15	55.75	6.47	17.03	7.25	6.11	14.93	4.21
09/20/12	BSCMS 2007-PW15	AJ	7.00	NA/Caa1/D	4.93	8.96	36.25	4.94	30.74	8.05	6.07	21.21	2.33
09/18/12	BACM 2008-1	AJ	16.04	NA/Baa2/BB	9.71	13.31	92.75	5.45	8.09	11.40	6.20	6.17	6.50
09/06/12	GECMC 2005-C3	E	1.41	BBB-/NA/BBB-	5.61	11.05	90.25	2.96	9.09	11.70	3.27	8.76	11.70
09/06/12	JPMCC 2005-LDP4	D	1.00	CC/Caa2/NA	15.50	9.78	30.50	4.67	39.21	9.65	5.43	31.33	6.62

Source: Citi Research

Figure 13. CMBX.1 Spreads and Basis With Cash, 17 Jul 12–17 Jan 13 (in Basis Points)



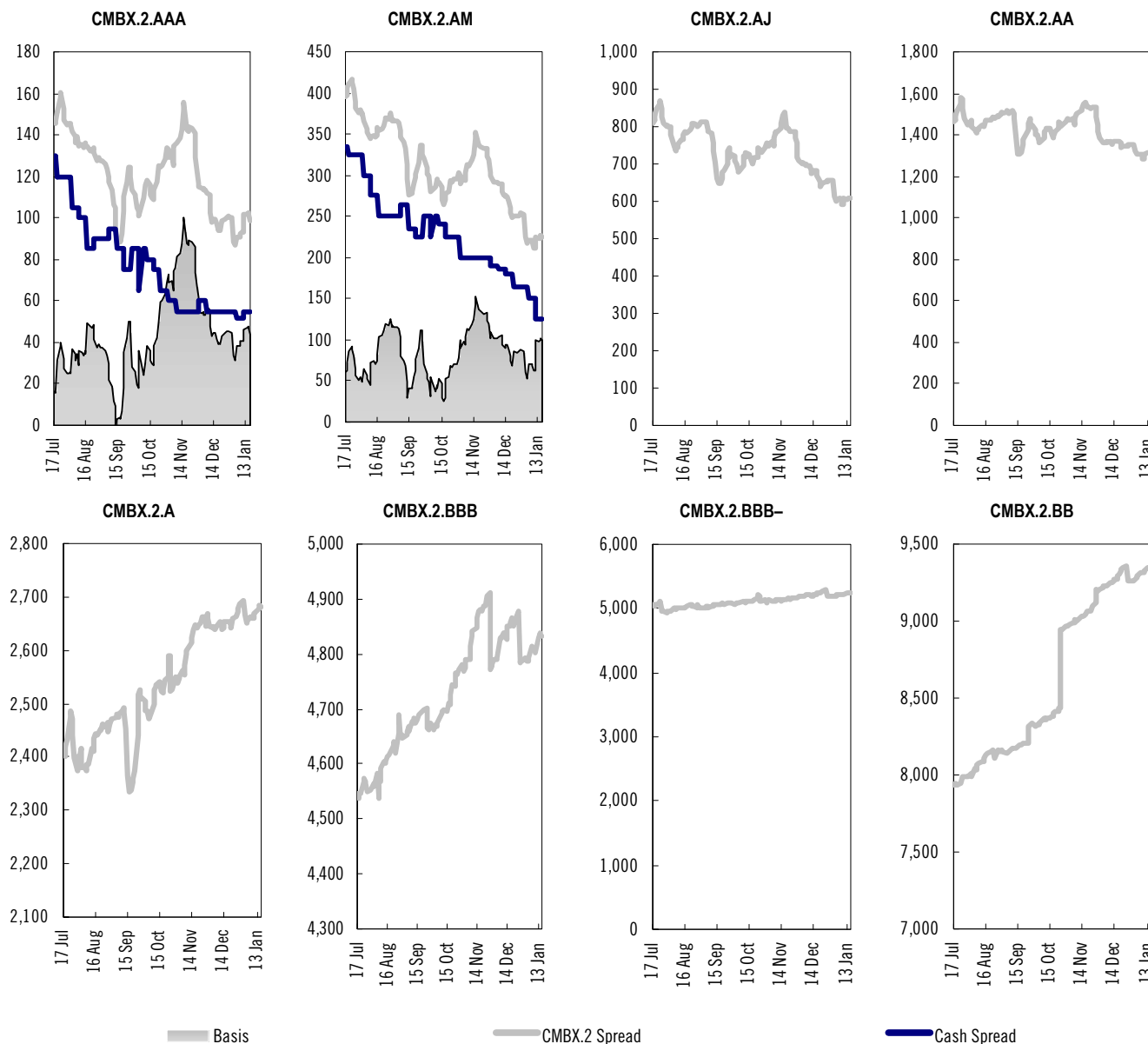
Source: Citi Research

Figure 14. CMBX.1 Spreads and Basis with Cash Summary Statistics, 17 Jul 12–17 Jan 13 (bp)

	CMBX.1							Basis						
	AAA	AM	AJ	AA	A	BBB	BBB-	AAA	AM	AJ	AA	A	BBB	BBB-
Initial Cpn	10.0	50.0	84.0	25.0	35.0	76.0	134.0							
Last	93.8	186.5	374.8	827.5	1,690.7	3,558.4	4,818.9	44.8	74.0	-	-	-	-	-
6 Month Average	102.4	234.9	477.4	1,009.2	1,723.7	2,986.9	4,554.5	39.0	53.4	-	-	-	-	-
6 Month High	133.7	336.1	570.3	1,162.9	1,891.1	3,558.4	4,822.4	80.6	125.2	-	-	-	-	-
6 Month Low	75.4	165.4	356.3	806.7	1,546.6	2,652.5	4,338.9	11.6	-14.9	-	-	-	-	-
6 Month Std Dev	14.6	40.5	63.1	92.3	73.4	343.1	150.6	13.3	23.7	-	-	-	-	-

Sources: Markit and Citi Research

Figure 15. CMBX.2 Spreads and Basis With Cash, 17 Jul 12–17 Jan 13 (in Basis Points)



Source: Citi Research

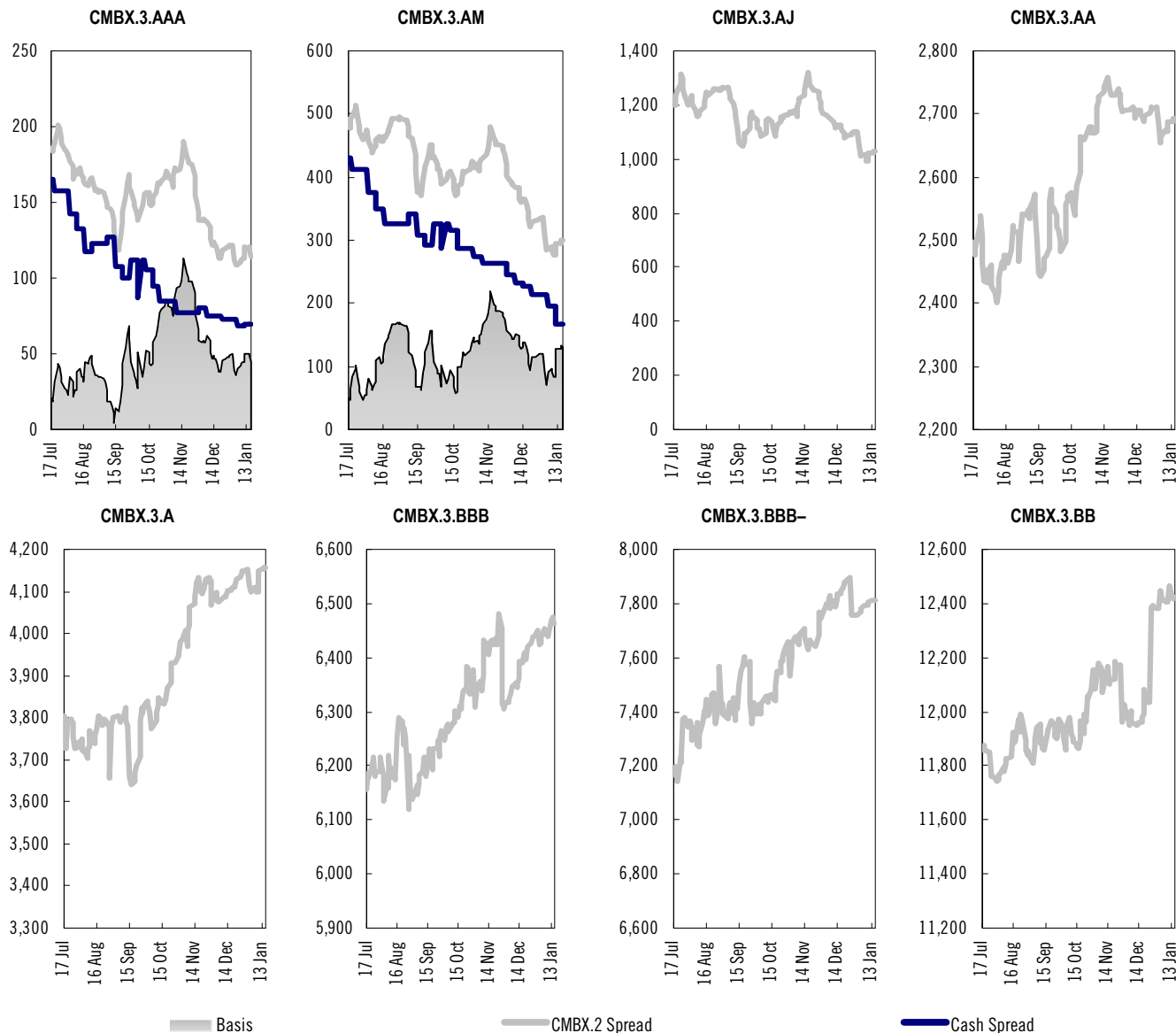
Figure 16. CMBX.2 Spreads and Basis With Cash Summary Statistics, 17 Jul 12–17 Jan 13 (in Basis Points)

	CMBX.2													
	Basis													
	AAA	AM	AJ	AA	A	BBB	BBB-	AAA	AM	AJ	AA	A	BBB	BBB-
Initial Cpn	7.0	50.0	109.0	15.0	25.0	60.0	87.0							
Last	98.9	225.1	608.9	1,298.9	2,680.8	4,832.8	5,234.9	43.9	100.1	-	-	-	-	-
6 Month Average	120.1	310.6	731.6	1,428.4	2,537.0	4,723.9	5,111.3	43.1	82.8	-	-	-	-	-
6 Month High	160.2	416.9	869.1	1,584.5	2,694.0	4,911.2	5,292.1	100.5	152.3	-	-	-	-	-
6 Month Low	86.6	212.0	591.8	1,283.4	2,333.8	4,537.1	4,941.9	0.1	25.1	-	-	-	-	-
6 Month Std Dev	18.9	50.1	68.3	72.8	104.6	104.1	85.2	20.2	28.4	-	-	-	-	-

Sources: Markit and Citi Research



Figure 17. CMBX.3 Spreads and Basis With Cash, 17 Jul 12–17 Jan 13 (In Basis Points)



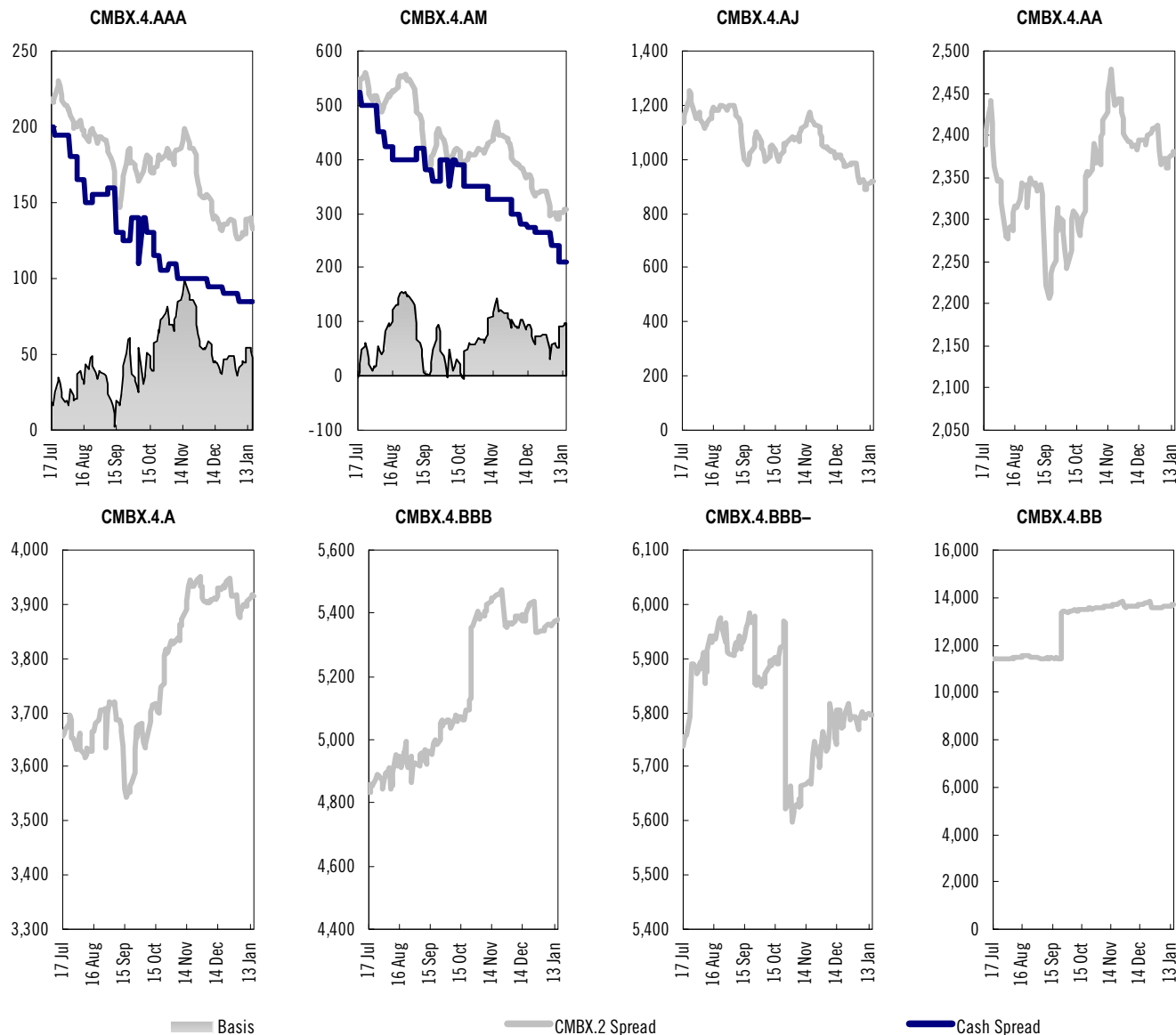
Source: Citi Research

Figure 18. CMBX.3 Spreads and Basis With Cash Summary Statistics, 17 Jul 12–17 Jan 13 (In Basis Points)

	CMBX.3							Basis						
	AAA	AM	AJ	AA	A	BBB	BBB-	AAA	AM	AJ	AA	A	BBB	BBB-
Initial Cpn	8.0	50.0	147.0	27.0	62.0	200.0	320.0	-	-	-	-	-	-	-
Last	114.7	299.1	1,026.9	2,692.3	4,156.3	6,464.2	7,812.7	44.7	131.6	-	-	-	-	-
6 Month Average	151.5	413.6	1,161.6	2,594.0	3,917.0	6,301.3	7,562.1	48.7	119.0	-	-	-	-	-
6 Month High	201.3	513.6	1,318.1	2,757.2	4,156.5	6,481.7	7,893.8	112.8	217.9	-	-	-	-	-
6 Month Low	108.3	277.6	990.9	2,400.0	3,641.5	6,119.0	7,142.7	4.9	46.3	-	-	-	-	-
6 Month Std Dev	23.9	60.3	77.6	106.7	165.4	101.4	194.4	22.9	39.7	-	-	-	-	-

Sources: Markit and Citi Research

Figure 19. CMBX.4 Spreads and Basis With Cash, 17 Jul 12–17 Jan 13 (In Basis Points)



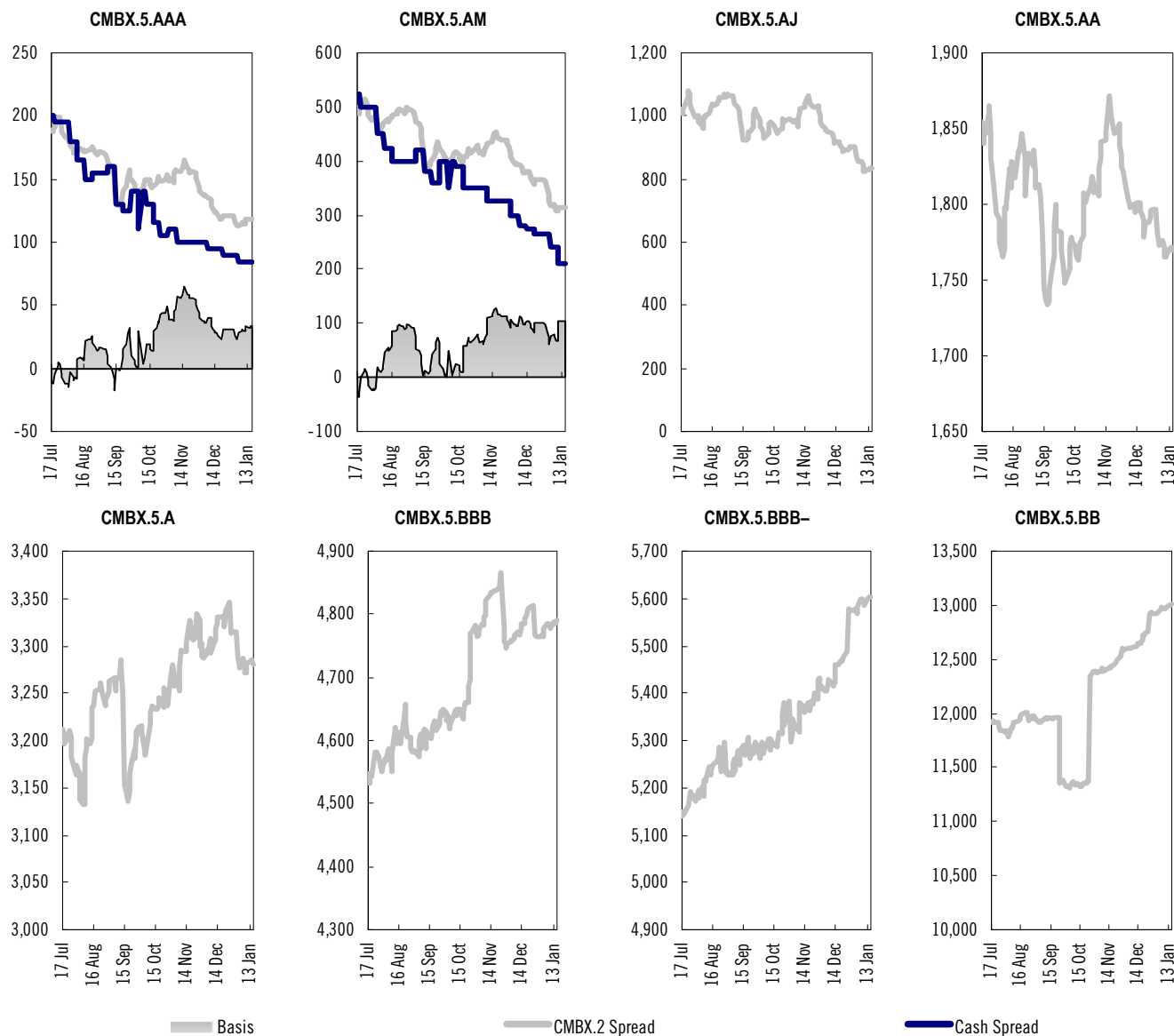
Source: Citi Research

Figure 20. CMBX.4 Spreads and Basis With Cash Summary Statistics 17 Jul 12–17 Jan 13 (In Basis Points)

	CMBX.4							Basis						
	AAA	AM	AJ	AA	A	BBB	BBB-	AAA	AM	AJ	AA	A	BBB	BBB-
Initial Cpn	35.0	50.0	96.0	165.0	348.0	500.0	500.0							
Last	132.8	308.1	921.2	2,380.8	3,914.9	5,380.0	5,796.4	47.8	98.1	-	-	-	-	-
6 Month Average	174.3	432.2	1,075.0	2,351.5	3,772.0	5,155.1	5,827.0	45.7	70.8	-	-	-	-	-
6 Month High	230.1	560.2	1,255.4	2,479.0	3,950.5	5,476.7	5,983.9	99.1	156.1	-	-	-	-	-
6 Month Low	125.6	290.8	889.4	2,206.6	3,544.1	4,831.5	5,598.6	2.2	-4.8	-	-	-	-	-
6 Month Std Dev	26.7	75.4	88.3	58.6	125.8	222.3	101.7	20.4	41.5	-	-	-	-	-

Sources: Markit and Citi Research

Figure 21. CMBX.5 Spreads and Basis With Cash, 17 Jul 12–17 Jan 13 (In Basis Points)



Source: Citi Research

Figure 22. CMBX.5 Spreads and Basis With Cash Summary Statistics, 17 Jul 12–17 Jan 13 (In Basis Points)

	CMBX.5							Basis						
	AAA	AM	AJ	AA	A	BBB	BBB-	AAA	AM	AJ	AA	A	BBB	BBB-
Initial Cpn	35.0	50.0	98.0	175.0	350.0	500.0	500.0							
Last	117.9	314.7	833.1	1,769.7	3,279.6	4,789.3	5,603.0	32.9	104.7	-	-	-	-	-
6 Month Average	150.4	422.9	974.1	1,801.9	3,251.5	4,688.1	5,339.5	21.8	61.5	-	-	-	-	-
6 Month High	199.2	514.4	1,079.5	1,871.7	3,345.8	4,864.9	5,603.0	64.8	129.1	-	-	-	-	-
6 Month Low	113.3	307.2	824.2	1,733.5	3,131.4	4,531.6	5,141.7	-17.6	-37.0	-	-	-	-	-
6 Month Std Dev	22.4	53.5	64.5	31.5	53.4	94.9	125.6	19.9	42.5	-	-	-	-	-

Sources: Markit and Citi Research

## Appendix A-1

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