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CMBS Interest Only (IO) Securities
Drivers of Cash Flow and Risk (Part II)



Commercial Mortgage-Backed Securities

CMBS Interest Only (IO) Securities The Relative Value Proposition (Part I)

Commercial Mortgage-Backed Interest Only (CMBS IO) securities are one of our favorite CMBS trades given the opportunity to earn option-adjusted spreads of 250+ bps for highly-rated securities.¹ This substantial opportunity exists partly because IOs are often overlooked due to the sector's relatively small market value outstanding, its lack of inclusion in standard benchmark indices, complexity of structure, and misperceptions of negative convexity stemming from residential mortgage IO experience. This lack of focus and misunderstanding of IOs present a unique opportunity to earn option-adjusted spreads (OAS) well beyond those offered by senior CMBS principal bonds and higher risk mezzanine bonds, while actually assuming less risk.

The fundamental picture for CMBS IOs is also favorable, supported by a confluence of factors including: 1) a positive outlook for commercial real estate prices and operating income; 2) low loan coupons that reduce the risk of term defaults; and 3) the likelihood of higher interest rates in the future that increase the cash flow to the IO through loan extensions.

This paper is the first in a two-part series whose objective is to take some of the mystery out of CMBS IOs. In this paper, we explain their genesis, structure, and the different types of CMBS IOs. In addition, we, discuss the fundamental factors supporting IO performance and highlight the IO value proposition. Part II of this series explores the key risk variables of the IO sector, identifies the CMBS IO subsectors we currently find most attractive, and describes the necessary surveillance requirements.

I. CMBS Since the Financial Crisis

In 2015, the CMBS market continued its recovery from the financial crisis with private label (non-agency) issuance reaching \$94 billion, while agency CMBS issuance continued at a record pace, up \$50 billion for the year. Structural improvements in the private label market since the financial crisis include better controls over the special servicer, reduced opportunity for conflicts of interest between investment grade and non-investment grade investors, and considerably higher levels of credit enhancement for subordinate classes.

Additionally, while underwriting standards have recently weakened, they remain more conservative compared to the peak issuance years of 2006/2007 and are supported by a robust commercial real estate market characterized by rising prices and near record transaction levels.

Despite this positive backdrop, CMBS spreads are at their widest levels since 2012 due to fairly heavy issuance, macroeconomic concerns, the threat of rising interest rates, and weaker secondary trading liquidity given the effects of new bank regulations and higher capital requirements.



¹ As of February 29, 2016.

While the capital structure of CMBS principal bonds has remained fairly static since the financial crisis, the structuring of CMBS IO securities has changed, resulting in some investment opportunities that weren't available prior to 2010. Today's CMBS IOs are particularly attractive given several supportive fundamental factors, and we believe they offer an opportunity to outperform CMBS benchmarks that exclude these investments.

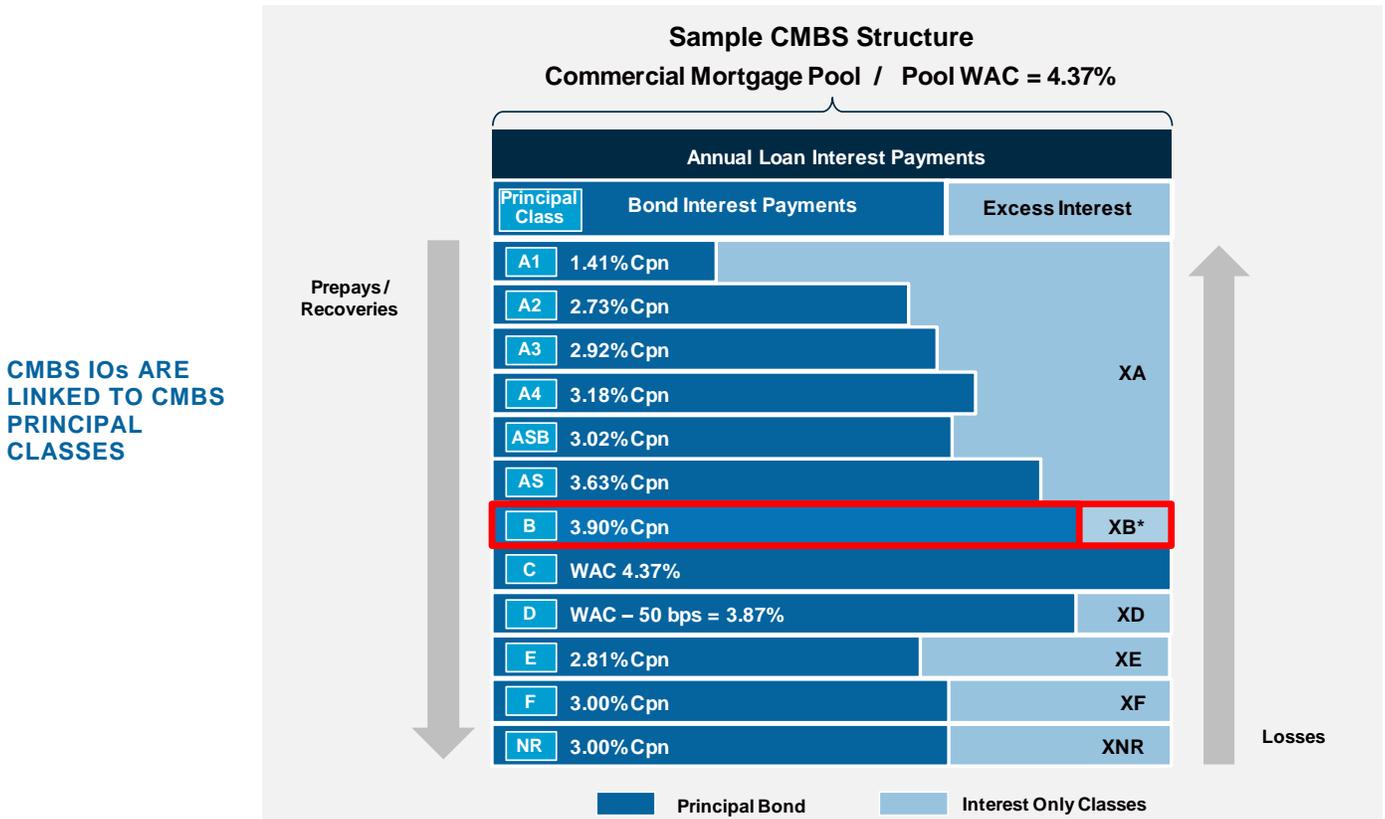
II. CMBS IOs Introduced

First, let's explain the underlying structure of CMBS IOs as it is important to understanding the value proposition, and cashflow and risk variables associated with this asset class.

CMBS IOs and principal bonds issued from a "conduit" deal are collateralized by a pool of approximately 50 to 100 fixed-rate commercial mortgage loans that are fairly well diversified by loan size, geographic location, and property type. In the sample CMBS structure shown below, the pool of loans has a weighted average coupon of 4.37% net of servicing fees (pool WAC). But the average interest rate of the CMBS principal bonds is much less at 3.1%, leaving 1.26% of "excess interest." CMBS issuers sell the rights to this excess interest through the creation of CMBS IO securities (XA through XNR), with each IO linked to a principal class or combination of principal classes.

For example, the XB IO highlighted in red in the diagram below is linked to the class B principal bond. This IO receives monthly cashflows based on a notional amount equal to the par amount of the class B bond multiplied by the excess spread on that class.

This current CMBS IO structure was driven by a change to rating agency methodology made after the financial crisis. Under the current approach, a rating agency will generally rate a CMBS IO security equal to the rating of the most subordinate class to which the IO is linked. Unlike a pre-crisis CMBS IO that could garner a triple-A rating even though it was linked to below investment grade classes, a triple-A rated CMBS IO today can generally only reference triple-A rated principal classes.



Source: Prudential Fixed Income. * The excess spread of the XB IO highlighted in red is 47 bps (4.37% - 3.90%).

"Excess Spread" Is a Feature Unique to CMBS IOs

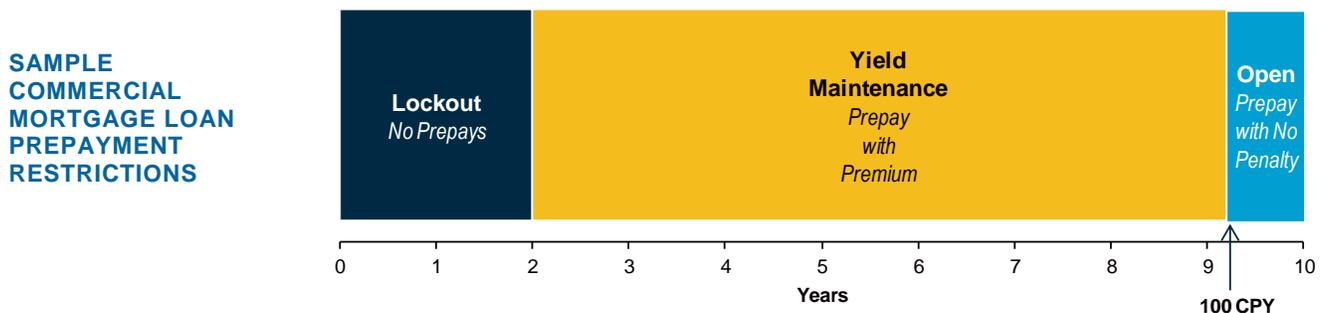
The reason the pool WAC exceeds the coupon on each CMBS principal bond is two-fold:

(1) Aaa and Aa-rated CMBS principal bonds (classes A1 through B in the preceding diagram) benefit from substantial protection in the form of credit enhancement that reduces the risk of these bonds relative to the risk of the underlying loans. Lower risk translates into a coupon on these senior bonds that is often substantially below the coupon on the riskier loans.

(2) Subordinate CMBS principal bonds (in particular, classes D through NR), on the other hand, reflect a risk level in excess of the underlying loans since these classes essentially provide credit protection to the more senior CMBS bonds. Subordinate CMBS bondholders however, prefer to buy these bonds at deep discounts (e.g., \$30 to \$50), rather than at par. As a result, CMBS issuers reduce the coupon on these bonds to a level that is typically well below the coupon on the underlying loans in order to generate the desired discount dollar prices.

CMBS IOs Have Strong Call Protection and Are Not Negatively Convex

Unlike most residential mortgage loans that allow the borrower to freely prepay the loan at any time without penalty, commercial mortgage loans are generally structured with strong call protection which extends to both the principal bonds and the IO certificates. This protection will either be in the form of lockout or yield maintenance, followed by a short open window, as is illustrated below. Given these prepayment restrictions, CMBS IOs are not considered to be negatively convex, so the OAS of the IO is generally unaffected by declining interest rates.



Source: Prudential Fixed Income. Sample illustration.

- **During the lockout period**, the borrower can typically defease the loan with U.S. Treasuries, however future cashflows to the IO and principal bonds are unaffected.²
- **During the yield maintenance period**, the borrower can prepay the loan by paying a variable penalty that is calculated to neutralize the benefit to the borrower from any change in interest rates.³
- **During the open window period**, the borrower can prepay the loan with no penalty. Only prepayments in the open window are sensitive to interest rates, but the impact on the IO is limited given the short window length coupled with the current pricing convention which assumes all loans prepay in full on the first month of their open window period.⁴

² **Defeasance Removes Credit Risk:** Most CMBS loans permit the borrower to defease the loan during the lockout period by purchasing U.S. Treasuries that exactly replicate the cash flow of the underlying loan and pledging them to the CMBS trust. Through defeasance, the borrower extinguishes the lien on the property without eliminating (prepaying) the loan. As a result, defeasance has no impact on scheduled cash flow of the CMBS IO. In fact, defeasance actually removes credit risk associated with the loan given the high quality, U.S. government securities that serve as the substituted collateral.

³ **Approximate Yield Maintenance Premium Calculation:** (Loan Coupon – Refi Rate) * Duration * Loan Amount.

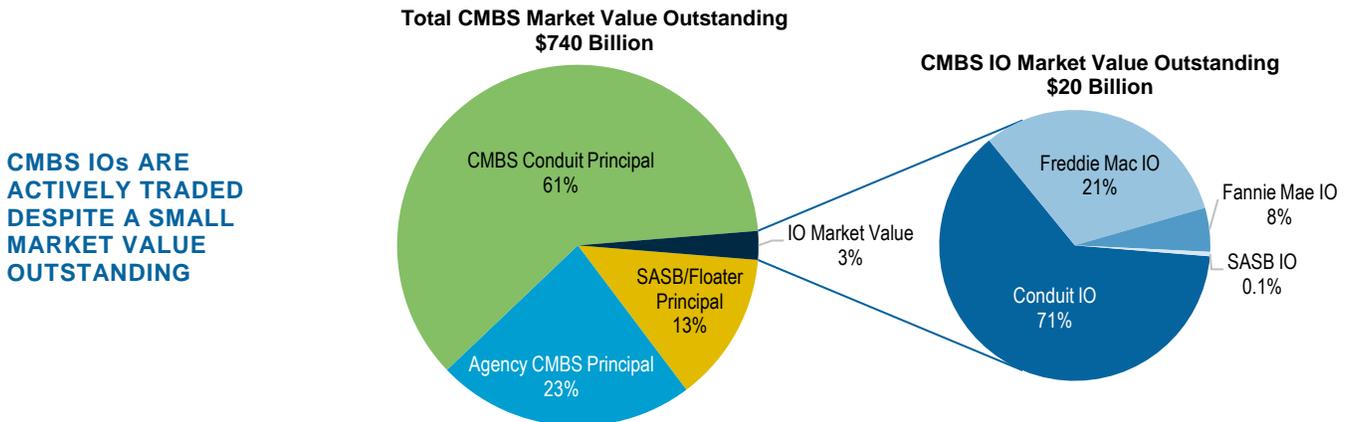
⁴ **CMBS IO Pricing Convention:** The current pricing convention assumes: 1) 100% CPY (constant prepayment rate after yield maintenance); and 2) 0% CDR (constant default rate). 100% CPY assumes all loans prepay on the first month of their open window period. The open window typically ranges from three to 12 months but can occasionally extend to 36 or 48 months. 0% CDR assumes no loans default at any time.

III. CMBS IO Market Size and Types of Issues

CMBS IOs Are a Niche Market

The CMBS IO market, across all varieties discussed below, totals approximately \$20 billion of outstanding market value relative to the total CMBS market outstanding of \$740 billion as of December 31, 2015.

Although CMBS IOs are only a small portion of the total CMBS market, they can offer attractive value for investors with the resources necessary to research and analyze this sector. Additionally, despite the relatively small market value outstanding, there is active secondary trading of these IOs. The IO bid-ask spread is typically 10 bps while the bid-ask spread on the most liquid CMBS securities (super senior bonds) is typically 3 to 5 bps; however, the lower duration of the IO (approximately 3 to 5 years) relative to the super senior bonds (5 to 8 years) equates to a similar cost to trade in dollar terms.



Source: Prudential Fixed Income as of December 31, 2015.

Three Types of CMBS IOs

1) Private Label, Fixed-Rate CMBS (Conduit) IOs (~70% of outstanding CMBS IO market)

Collateral: Fixed rate loans on a wide range of property types (office, retail, multifamily, hotel) and geographic regions. Conduit deals often contain loans on 50+ properties and the diversified nature of the pool results in variation by loan size, coupon, term, and prepayment provision. Property quality is typically lower in conduit CMBS than Agency CMBS or single asset/single borrower (SASB) deals, and conduit collateral is more likely to produce defaults and liquidations during the loan term (term default).

IO Structure: A separate IO is linked to each principal class or a combination of principal class(es). Conduit deals are typically issued with XA, XB, XC, and XD IOs that are linked to the super senior (AAA) classes, the AA class, the BBB class, and the B piece, respectively. The drivers of cash flow and risk vary significantly among the different tranches of conduit IOs depending on prepayments, defaults, and coupon dispersion.

Prepayment Protection: Approximately 80% of the loans are locked out until the open period while 20% are subject to yield maintenance. All loans are freely prepayable during the last three to 12 months of the loan term.

2) Agency CMBS IOs⁵ (~30% of outstanding CMBS IO market)

Collateral: Fixed rate loans on multifamily (apartment) properties. The multi-family sector has performed extremely well since the financial crisis due to a substantial shift from home ownership to rental, limited new apartment construction, and readily available financing from the government agencies. The loans typically back higher-quality, multi-family properties when compared to conduit CMBS, and the loan coupons are lower given the Agency performance guarantee that leads to lower financing costs.

⁵ We do not recommend Ginnie Mae project loan CMBS IOs given weak prepayment protection along with 30+-year loan terms. A discussion of Ginnie Mae CMBS IOs is outside the scope of this paper.

IO Structure:

- Freddie Mac: Separate IOs are attached to the guaranteed senior (X1) and unguaranteed subordinate (X3) tranches. The X2 IO is sold to the most subordinate bondholder and is not available at deal issuance.
- Fannie Mae: Separate IOs are attached to guaranteed senior tranches that are tied to a shorter loan pool (X1) and a longer loan pool (X2). Fannie Mae does not issue unguaranteed tranches. The X1 IO is not typically offered.

Prepayment Protection:

- Freddie Mac: 90+% lockout with the remainder of the loans subject to yield maintenance. Loans are freely prepayable during the last three to 12 months of the loan term.
- Fannie Mae: 100% yield maintenance. Loans are freely prepayable during the last three to 12 months of the loan term.

3) Single Asset/Single Borrower (SASB) and Large Loan Floater IOs (<1% of outstanding CMBS IO market)

Collateral: Fixed or floating rate loans on a single property or portfolio of properties owned by a single borrower. The loans in these pools often have lower leverage and the properties are of higher quality to compensate for the lack of diversification. Floating rate loans generally have a two-year initial maturity followed by several one-year extension options while fixed rate loans have terms ranging from five to 10 years.

Structure: Most large loan floater deals contain two IO certificates, the XCP and XEXT. Both IOs typically reference the notional of the entire CMBS structure, from the most senior class to the most subordinate, but have rights to the stream of excess interest at different periods of time. The XCP receives payments during the loan's call protected period while the XEXT receives payments after a loan's call protected period has ended.

Prepayment Protection: Floating rate loans generally are subject to spread maintenance (the equivalent of yield maintenance for floating rate loans) for the initial term and are freely prepayable thereafter, while fixed rate loans are typically locked out or subject to yield maintenance.

IV. The Value Proposition of CMBS IOs

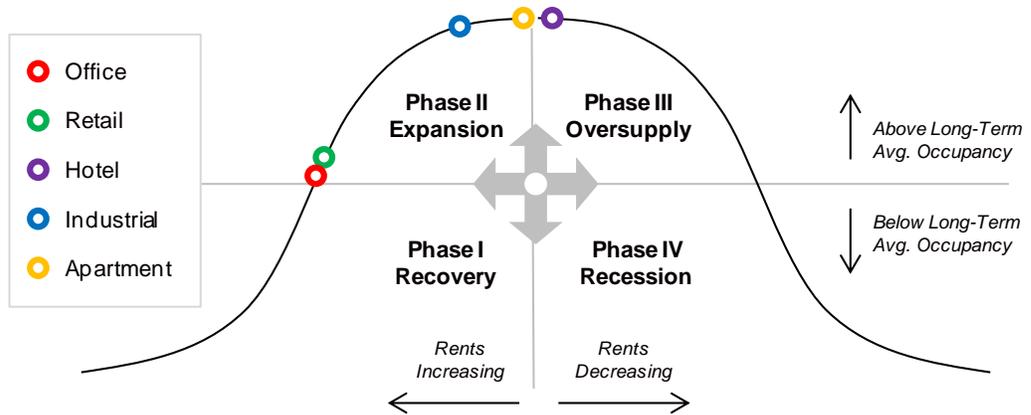
CMBS IOs currently offer attractive relative value compared to similar-rated CMBS principal bonds and are well supported by commercial real estate fundamentals and underwriting trends. The IO value proposition includes positive carry given wide pricing spreads along with the potential for substantial total return. The total return boost is driven by the tendency for IOs to trade at tighter spreads with each year of seasoning, assuming loans perform as expected. In many portfolios, this combination of carry and roll down can provide an attractive alpha source without the risk and volatility associated with mezzanine CMBS principal bonds.

Commercial Real Estate Fundamentals, Interest Rates, and Underwriting Trends Favor IOs

Given the current and projected strength of the commercial real estate (CRE) market, we generally don't expect CMBS IOs to experience significant yield loss in the next several years due to early term defaults and liquidations. Hotel loans, however, require careful analysis given the sector's highly volatile net operating income.

As is illustrated in the following chart, aside from hotels, all property sectors are still in the recovery or expansion phases of the commercial real estate cycle and are experiencing rising occupancy and higher operating income. New construction remains near historically low levels for the retail and office sectors, which represent approximately 60% of CMBS loans. And while it is difficult to predict when the cycle will turn negative, fundamentals currently point to strong net operating income growth that should serve to suppress early loan defaults. Additionally, CRE prices have continued to rise and are well supported given strong fundamentals and low interest rates.

MOST U.S. COMMERCIAL REAL ESTATE SECTORS ARE IN THE RECOVERY OR EXPANSION PHASES OF THE CYCLE



Source: Prudential Fixed Income as of February 29, 2016.

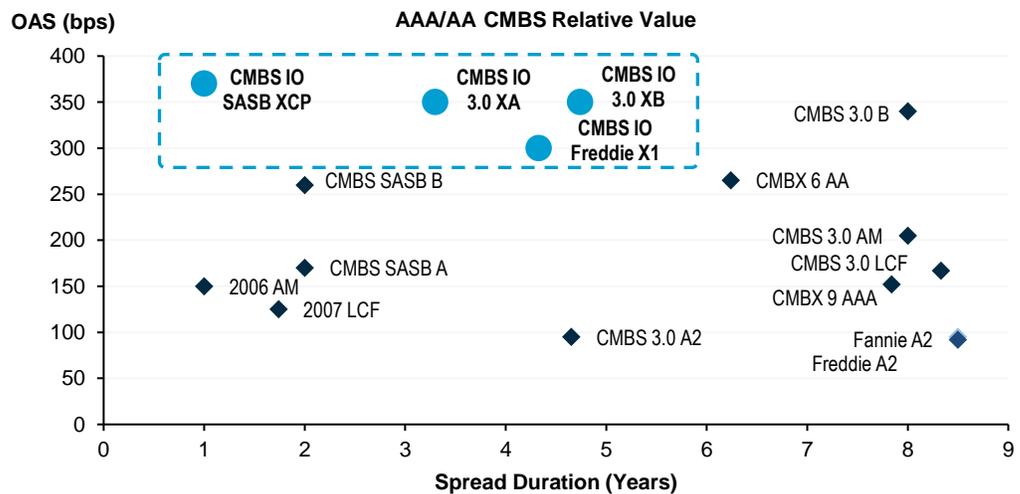
While we project low term defaults, we also expect the combination of today’s low coupon loans, along with modestly rising U.S. Treasury rates over the medium/long term, to result in loan extensions and, at a minimum, slower prepayments in the open window period (far less than the industry pricing convention that assumes all loans prepay in the first month of their open window period). While the open window prepayment rate for conduit loans has averaged near 70% over time, we believe the rate of prepayments in the open window is extremely sensitive to a rise in interest rates. Prepayments in the open window should slow dramatically whenever the refinancing rate on a new loan exceeds the coupon on an existing loan. We believe a 10-year U.S. Treasury rate of 2.5% or higher over the next five to 10 years should result in low open window prepayments for current vintage loans—a scenario that will boost CMBS IO yields as the IO will receive cashflow for a longer time period.

Finally, CMBS underwriting standards have been on a declining trend for the last several years as evidenced by rising loan-to-value ratios, more interest-only loans (no loan amortization), and a focus on properties located in secondary/tertiary markets. While more aggressive underwriting typically translates to a higher default rate, we do not believe those defaults will materialize until the loans mature given the borrower’s positive cash flow position relative to principal and interest payments on the loan. Maturity defaults and the resulting extension of loan terms can benefit the IO by delaying the reduction in notional amount and increasing cash flow to the IO.

Attractive Relative Value of CMBS IOs vs. CMBS Principal Bonds

Currently the CMBS IO sector, highlighted in blue in the chart below, offers significantly more spread with far less duration risk than CMBS principal bonds. As we discuss on the following page, this attractive relative value proposition is primarily due to the structure of the CMBS IO and is enhanced given today’s upward sloping yield curve.

RELATIVE VALUE WITHIN CMBS IOs AND PRINCIPAL BONDS



Source: Prudential Fixed Income as of February 29, 2016.

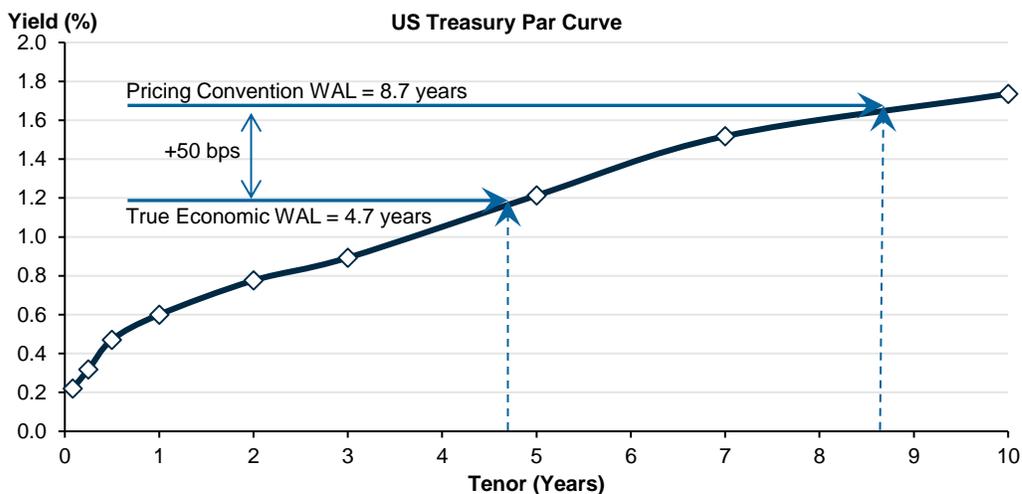
The CMBS IO Pricing Convention Can Enhance Yield

A CMBS IO is typically priced using the par Treasury curve which uses a single point on the yield curve that corresponds to the IO’s weighted average life (WAL).⁶

The calculation of the WAL for an IO is complicated by the fact that, while the IO receives periodic cashflow based on an outstanding notional principal amount, the IO never actually receives principal. The pricing convention computes the WAL by incorrectly assuming the IO receives a “principal payment” whenever the notional schedule declines (when the underlying principal bond would be repaid under the pricing assumption). However, since actual periodic IO payments often bear no resemblance to the principal on the underlying bond, the resulting WAL is meaningless.

A better estimate of an IO’s WAL can be derived by assuming the IO is a fully amortizing bond with a periodic cashflow split into: 1) coupon payments equal to its yield multiplied by its current notional amount; and 2) principal payments equal to any remaining scheduled IO cashflow. The resulting WAL represents a more accurate estimate of the true economics of the IO and is often far shorter than implied by the pricing convention. Since the Treasury curve is currently upward sloping, the IO is priced to a higher Treasury yield than is justified, resulting in a generous yield upside. In the example below, the IO is only a 4.7 year bond but earns a yield as if it were an 8.7 year bond, boosting its OAS by 50 bps.

CMBS IO PRICING CONVENTION PROVIDES ADDED SPREAD WHEN CURVE IS UPWARD SLOPING



Source: Prudential Fixed Income. Sample illustration as of February 29, 2016.

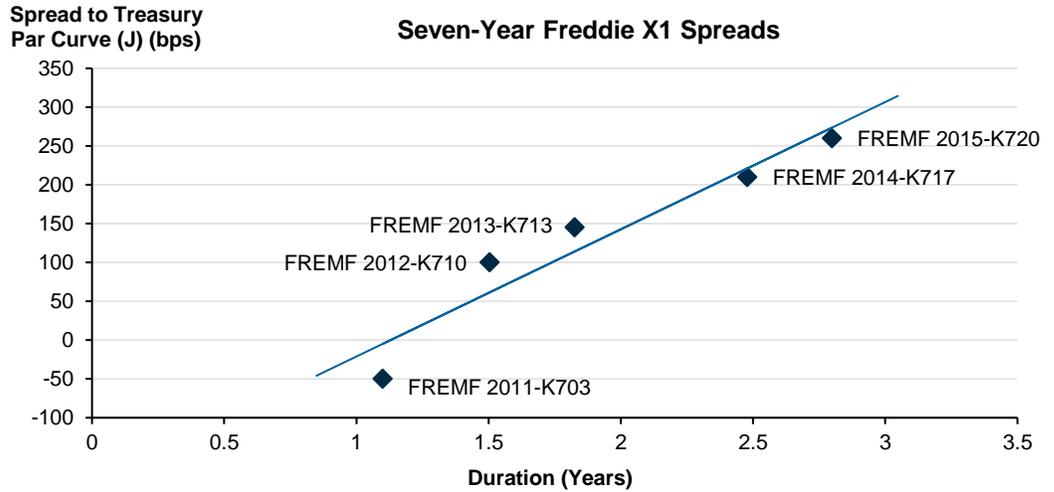
Substantial CMBS IO Spread Tightening Potential from Seasoning

CMBS IOs currently benefit from a steep term curve where each year of seasoning can translate to substantial spread tightening. As is illustrated in the following chart, the IO spreads of seasoned Freddie Mac deals are substantially tighter than those of more recently issued deals. The steepness of this curve has persisted for several years and can be explained by the following:

- 1) Loan performance early in the life of recent agency and conduit CMBS deals has been good with only a handful of troubled loans. As long as loan performance remains benign, IOs will continue to roll down the term curve as they season. Idiosyncratic risk in the form of weak loan performance can result in spread widening, highlighting the need for constant loan-level surveillance.
- 2) The improvement in the OAS of an IO assuming that all loans repay on the *last* month of their open-to-prepay window compared to the pricing assumption that all loans repay on the *first* month of their open-to-prepay window is referred to as the “slope” of the IO. The slope of the IO increases as the remaining life of the IO shortens, highlighting the additional potential yield upside given actual prepayment speeds slower than the pricing assumption. As the window of this potential windfall draws nearer, its potential net present value increases and investors are willing to pay a higher price (lower spread) for the IO.

⁶ The weighted average life (WAL) of a bond is computed by time-weighting its principal cash flows.

ROLLODOWN CAN BOOST CMBS IO TOTAL RETURN

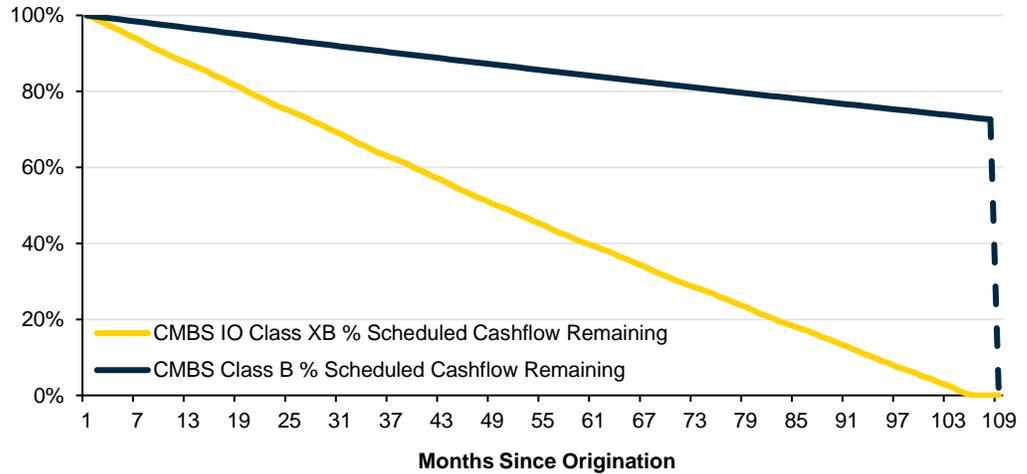


Source: Prudential Fixed Income as of February 29, 2016.

Amortization of the CMBS IO Reduces Exposure to Tail Events

While the CMBS IO is considered a “notional class” since it has no principal, it can be thought of as the equivalent of a fully amortizing bond. Given the monthly paydown of an IO investment, the market value and exposure to credit risk decline with each payment date. Depending on the type of IO, a vast majority of its present value may be repaid in the earlier years of the transaction, leaving it less exposed to tail events. In fact, as long as any realized loan-level losses result from maturity defaults, a CMBS principal class could lose 100% of its principal while the IO linked to that class would take no yield loss. In addition, IOs have shorter durations than the referenced principal bonds and are correspondingly less sensitive to interest rate movements.

CMBS IO VS. PRINCIPAL BOND CASH FLOW PROFILE FROM INCEPTION TO MATURITY



Source: Prudential Fixed Income. Sample Illustration.

Potential CMBS IO Yield Upside Can Offset Losses and Reduce OAS Volatility

Unlike CMBS principal bonds which have contractual cash flows limited to periodic interest and the ultimate repayment of the par amount, CMBS IOs can often generate returns *greater* than expected at the time of purchase due to two factors:

- 1) The CMBS IO notional amount declines at a slower pace than expected due to loan extensions or maturity defaults.
- 2) A higher pool WAC than expected due to prepays/defaults of loans with coupons lower than pool WAC, or extensions/maturity defaults of loans with coupons higher than the pool WAC.

This potential yield upside serves to reduce IO yield volatility since it can help to offset any losses realized earlier in the life of the IO. We explore these variables in more detail in the second paper of this series, “*CMBS IOs: The Drivers of IO Cash Flow and Risk (Part II)*.”

Conclusion

CMBS IOs currently have a favorable risk-return profile and offer spreads well in excess of both senior CMBS principal bonds and comparatively higher risk mezzanine CMBS bonds. This favorable profile is well supported by both technical and fundamental factors, and we expect these factors to persist for some time.

These attractive spreads result from a lack of investor focus given a relatively small market size, complexity of structure, and misconceptions of negative convexity. Positive fundamental factors include strong commercial real estate performance, low interest rates that serve to reduce early loan defaults, and, ironically, looser loan underwriting that can improve certain IOs' returns through maturity extensions.

Despite the attractiveness of the sector, security selection is important given differences in loan concentrations, IO structure, and prepayment protection across the various types of CMBS and on a deal-by-deal basis. As will be described in Part II of this series, careful security selection and extensive surveillance are necessary in order to invest successfully in this often misunderstood but attractively-priced sector.

NOTICE

Source(s) of data (unless otherwise noted): December 31, 2015.

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