citigroup corporate and investment banking

Mortgage Strategy
Focus on Prepayments

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Valuing Fixed-Rate IO Mortgages

Summary points

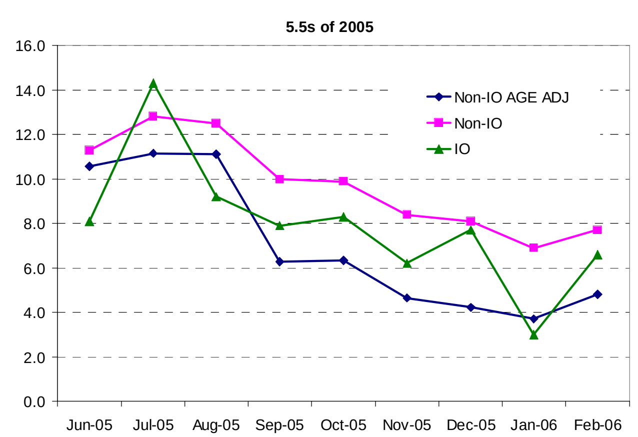
- Agency IO collateral has been prepaying faster than non-IO, but the data series is too short and uncertainty remains.
- Fixed-rate IO collateral appears rich-to-fair on an OAS basis, given a give-up in liquidity.
- However, the sector offers modest extra returns to buy-and-hold investors, willing to trade liquidity for extra yield.

Agency fixed-rate IO collateral trades 20 ticks to a point behind TBA. Is this sufficient compensation for liquidity give-up and an extension risk associated with the lack of amortization?

Prepayment Review

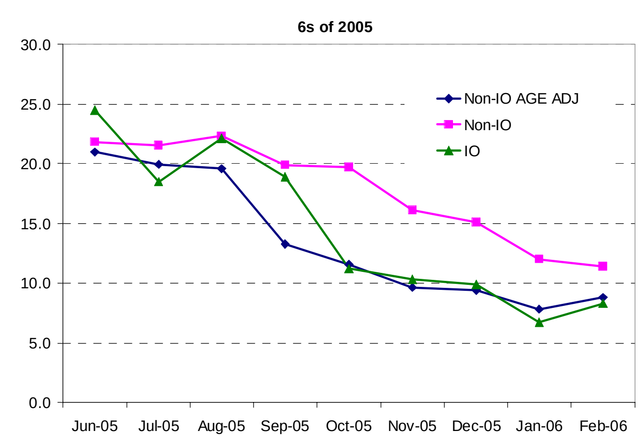
Important determinates of collateral value are prepayment characteristics. Unfortunately, as IO issuance only took off at the end of 2005, agency prepayment data are scarce. Perhaps only the 2005 vintage has enough outstanding to be a representative of the entire agency IO universe. Figure 1 and Figure 2 compare prepayment speeds of 2005-originated IO and non-IO 5.5s and 6s. However, a direct comparison of speeds may be misleading; there is a substantial WALA difference between 2005-originated IOs and non-IOs. After adjusting for WALA, we observe that IO collateral is slightly faster than non-IO collateral for 5.5s; for 6s, speeds are comparable.

Figure 1. 5.5s of 2005. Speeds of Agency 30-year IO and non-IO Collateral. Jun 05 –Feb 06



Source: CPRCDR.

Figure 2. 6s of 2005. Speeds of Agency 30-year IO and non-IO Collateral. Jun 05 –Feb 06



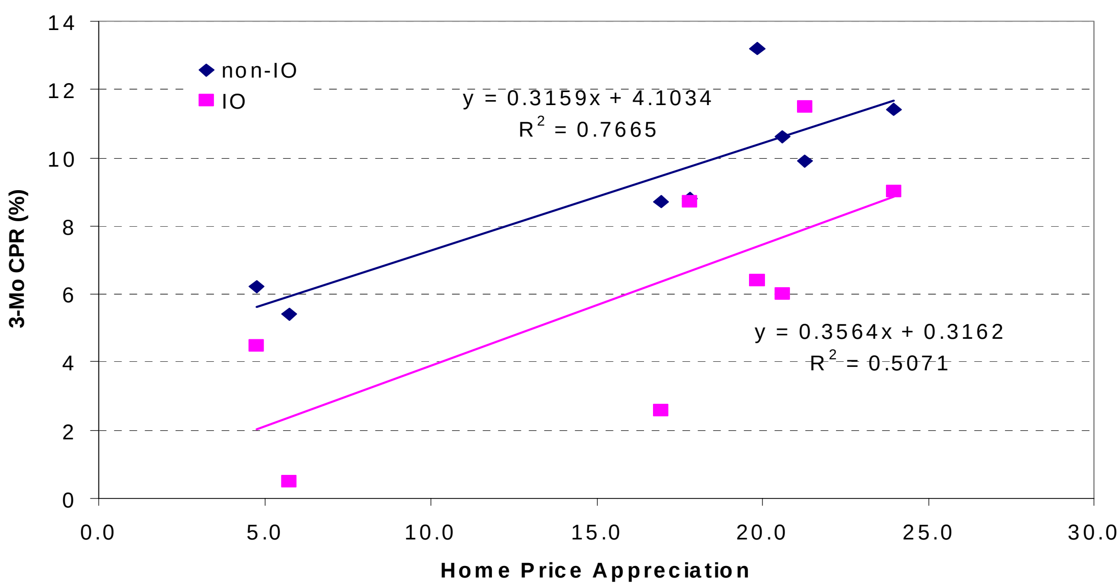
Source: CPRCDR.

The hypothesis that IO collateral is faster than non-IO collateral, which is also supported by speeds of a smaller 2004 vintage, may be explained by IO's higher concentration in states with strong housing markets, like California, Florida or Arizona. We consider this hypothesis plausible, but given the market's expectation of a weaker housing market and the short length of the prepayment data series, we will carry out the analysis for two prepayment assumptions: a) same speeds for IOs and non-IOs, and b) IO speeds have a 10% faster turnover component (the turnover dial is set to 1.1).

Leverage to the Housing Market

An important consideration about IO prepayments is that IOs may be more leveraged to the housing market, and that IO speeds may slow substantially should home price appreciation weaken. To verify this hypothesis, we looked at state speeds for IO collateral and regressed them against state home price appreciation rates (see Figure 3). State prepayment data are very noisy for IOs, and we had to limit ourselves to a handful of states with large IO issuance.[1] Based on this limited data, there is little difference between how strongly IO and non-IO speeds depend on home price appreciation rates.

Figure 3. State Speeds Versus State Home Price Appreciation, 5.5s of 2005, Feb 2006



Source: CPRCDR, Freddie Mac and Citigroup.

Note, however, that because of somewhat higher concentration in high appreciating states, like California, Florida, or Arizona, IOs may be impacted more should the housing markets in these areas weaken the most.

OAS Analysis

A natural way to analyze relative value of IOs and non-IOs, is to calculate the price differential under the same OAS. The results are shown in Figure 4. It compares market price concessions for IO collateral relative to TBA with a theoretical price difference assuming that either prepayments are the same (the 3rd column) or that IO have a 10% larger turnover component (the 4th column).

[1] We used AZ, CA, FL,GA, MD, NJ, and VA.

Figure 4. Fixed-Rate IO Valuation. Constant OAS Analysis, Mar 20, 2006			
Coupon	Market Pay-up (1/32)	Theoretical Pay-up (1/32) No dial adjustment	Theoretical Pay-up (1/32) Turnover dial at 1.1
5.0s	-28	-24	-16
5.5s	-22	-16	-12
6.0s	-20	-9	-6

Source: Citigroup.

While theoretical price concessions are smaller than market concessions, they do not account for the liquidity differences for IOs and non-IOs. These differences include wider bid-offer spreads for IOs and IO's ineligibility for TBA deliveries. Yet, for buy-and-hold investors, IOs present a good value.

For investors who care more about liquidity and roll opportunities, IO collateral appears rich to fair, from an OAS perspective. In particular, should one put the TBA eligibility value at 8-10 ticks, 5s and 5.5s appear rich to fair, while 6s look fair.

Scenario Analysis

For investor who hedge volatility and curve exposures the OAS analysis makes sense. For those who do not hedge, OAS valuation is less meaningful. For such investors, OAS represents an average return over a number of interest rate scenarios. On some of these scenarios the return could be higher, on others – lower.

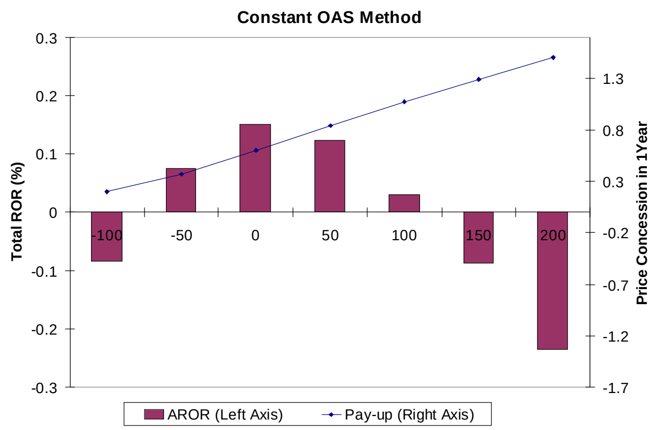
To better understand the conditions when IOs are expected to outperform, we conduct a rate of return study in various interest rate scenarios. On Yield Book, we set seven interest rate scenarios, ranging from –100bp to +200bp in 50bp increments. All rate shifts are assumed gradual over a 12-month horizon. We compare IO 6s, priced 20 ticks behind TBAs, with an effective-duration-neutral combination of TBA 5.5s and 6s. Buy and sell positions are delineated in Figure 5.

Figure 5. Relative Value Analysis, Fixed-Rate IO 6s versus TBAs, Mar 21, 2006							
Collateral	Price($)	Par Amount ($,000)t	Market Value($,000)	Yield(%)	OAS(bp)	Duration	Convexity
Buy							
IO 6s	99.93	1,000	1,001	6.01	-11	3.5	-2.5
Sell							
TBA 6s	100.55	594	599	5.87	-12	3.0	-2.5
TBA 5.5s	98.50	408	402	5.77	-21	4.2	-1.7
Sell Total	99.71	1002	1,001	5.83	-17	3.5	-2.2
Difference		-2	0.0	18bp	6	0	-0.3

Source: Citigroup.

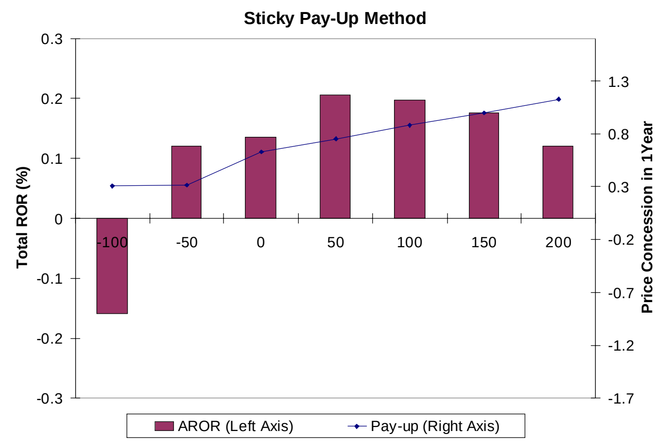
Horizon TBA prices are derived under a constant OAS assumption. For IOs, we make two different price assumptions at the horizon. One is a constant OAS, meaning that the IO OAS remains unchanged (see Figure 6). The other assumption is that IO price concessions are "sticky" and change less than OAS may suggest (see Figure 7). For Figure 6 and Figure 7, we assume the same prepayment assumptions for IOs and non-IOs.

Figure 6. Total Return Analysis. Constant OAS Assumption, Mar 21, 2006



Source: Citigroup.

Figure 7. Total Return Analysis. Sticky Pay-up Assumption, Mar 21, 2006



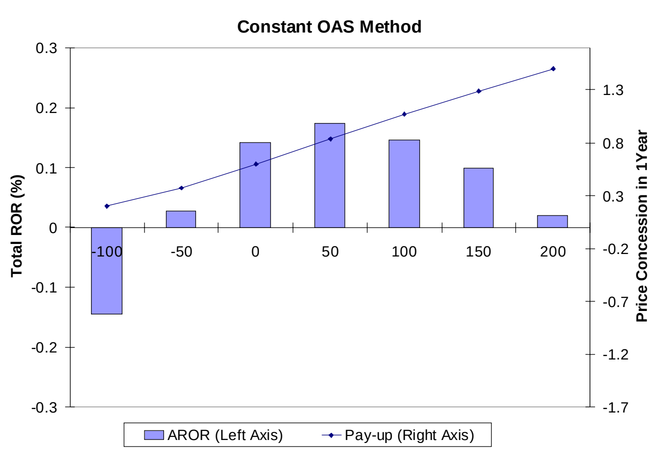
Source: Citigroup.

As expected, under the constant OAS assumption, the return is positive in some cases and is negative in others. However, for small interest rate shifts, the yield pick-up for IO proves decisive, resulting 10bp-15bp extra returns.

While the possibility that IOs will trade according to OAS appears unlikely, the "sticky pay-up" analysis has drawbacks of its own. In particular, it is very difficult to predict how IO concessions will evolve. In the case of Figure 7, we assumed that the same relative coupon concession (for example, in the +100bp scenario, the concession for 6s will be the same as the current concession for 5s). It is the assumed tightening of the IO concessions that led to a higher rate of return in the sell-off scenarios for the "sticky pay-up" case relative to the "constant OAS" case.

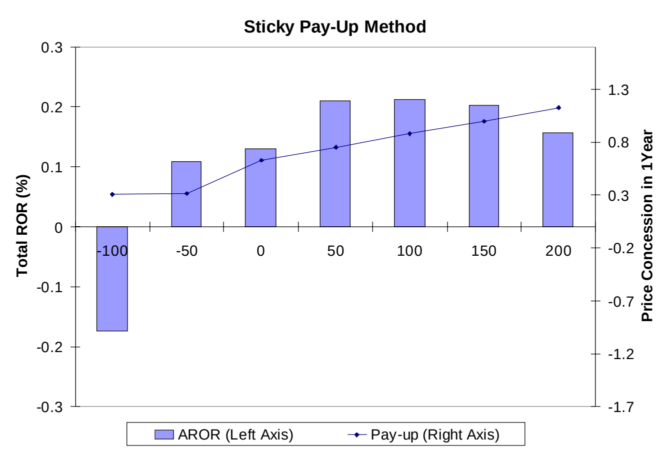
Should IOs turn out to prepay faster than non-IOs when out of the money, returns in sell-off scenarios may be higher. Figure 8 and Figure 9 shows results of a similar analysis assuming that IOs have a 10% faster turnover speeds.

Figure 8. Total Return Analysis. Constant OAS Assumption, Turnover Dial =1.1. Mar 21, 2006



Source: Citigroup.

Figure 9. Total Return Analysis. Sticky Pay-up Assumption, Turnover Dial =1.1. Mar 21, 2006



Source: Citigroup..

Conclusions

Although fixed-rate IO collateral appears rich-to-fair on the OAS basis, given a give-up in liquidity, the sector offers modest extra returns to buy-and-hold investors, willing to trade liquidity for extra yield.

Disclosure Appendix A1

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