THC Financial Engineering
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Risk Modeling Bulletin Issue 13

Hybrid ARMs Prepayment

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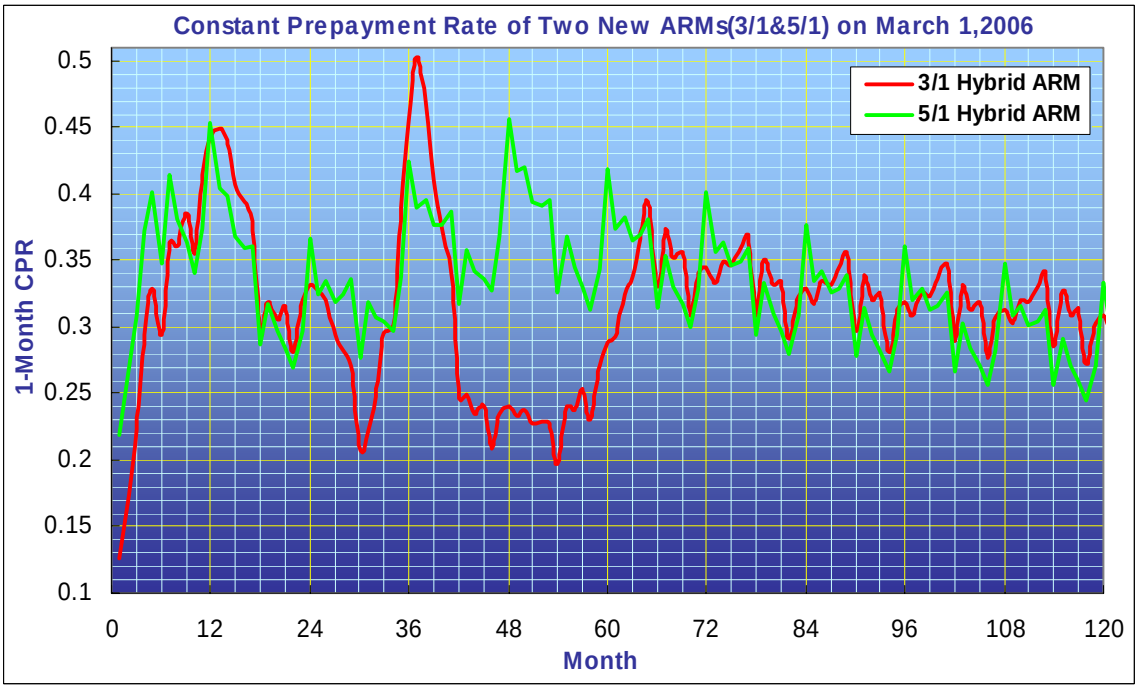
Hybrid ARM markets have grown significantly. The prepayment characteristics of hybrid ARMs are different from those of fixed rate mortgages. This issue's Feature Article describes the prepayment models of 3/1 and 5/1 hybrid ARMs. The Market Perspective describes the valuation and risk characteristics of the Interest Only (or the servicing fees) of the hybrid ARMs.

Feature Article: Hybrid ARMs Prepayment Model

The Hybrid ARMs prepayment model can be estimated from historical prepayment experiences. Consider the following simulation. Figure 1 depicts the constant prepayment rate (CPR) of two hybrid ARMs generated with THC models. Both of the CPR curves show a high point around the 12th month. The 3/1 ARM CPR curve shows another high point at the 37th month, the first month after the initial fix-rate period, while the 5/1 ARM CPR curve analogously shows another high point around the 48th month. Prepayment rates are stable after the 65th month.

FIGURE 1



Market Perspective: Hybrid ARMs and IO Valuation

From the above prepayment models and the arbitrage-free interest rate model, the hybrid ARMs and their IO (Interest-Only) can be valued and analyzed. Table 1 describes two ARMs on March 1, 2006. They are the 3/1 and 5/1 ARMs, indexed to the one-year LIBOR rate with both periodic and life time caps.

TABLE 1: 3/1 and 5/1 Hybrid ARMs

Start Date	Maturity	Original Coupon (%)	Index	Period Cap(BP)	Initial Period Cap Up/Down(BP)	LifeCap (BP)	Margin (BP)
3/1 Hybrid ARM							
2006-3-1	2036-4-1	5.62	1-Year LIBOR	200	200/200	1163	225
5/1 Hybrid ARM							
2006-3-1	2036-3/1	5.76	1-Year LIBOR	200	500/500	1123	225

The performance profiles of the hybrid ARMs are shown in figure 2. The results, as expected, show that the 5/1 ARM has a higher duration than the 3/1 ARM. Their durations and key rate durations numbers are presented in Table 2.

FIGURE 2

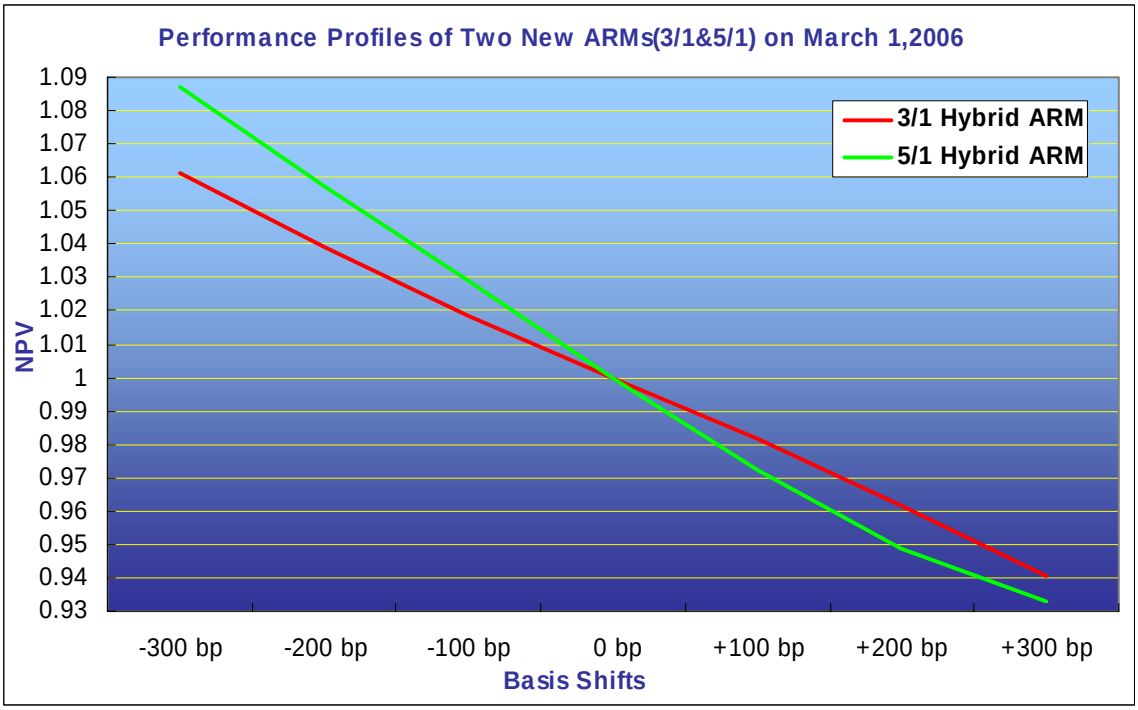
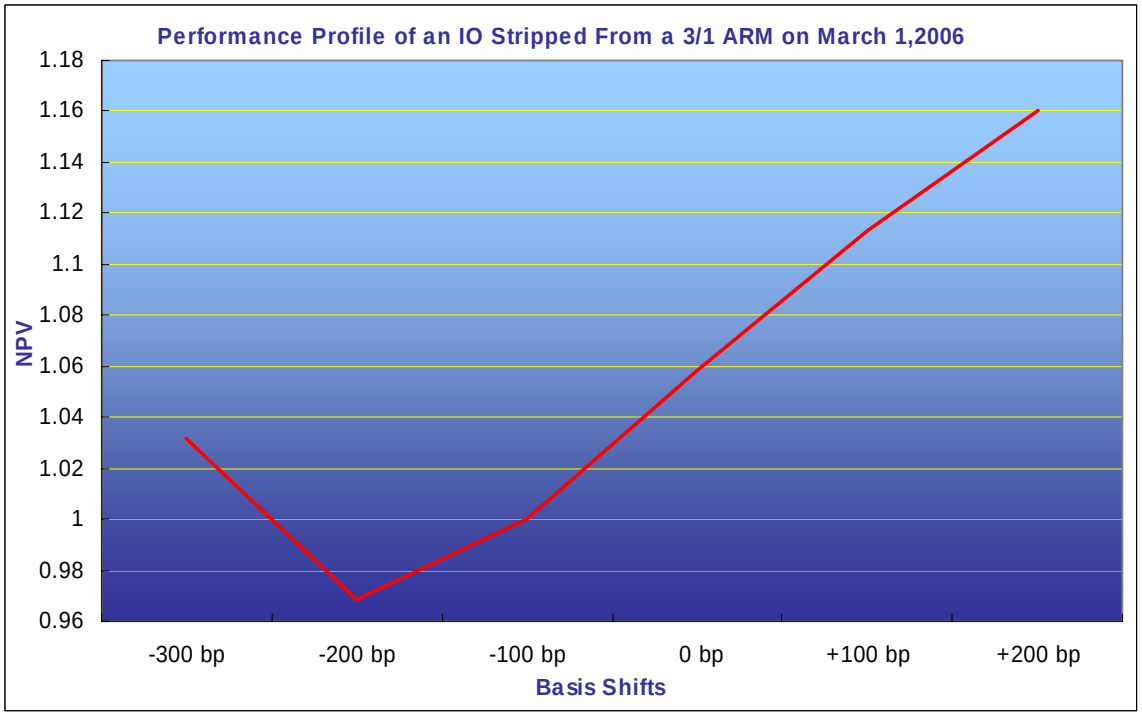


TABLE 2: OAS Durations and Key Rate Durations of the Hybrid ARMs

ARMs	Value(Based on $100)	OAS Duration	Key Rate Durations								
			0.5	1	2	3	5	7	10	20	30
3/1	99.96	2.00	0.10	0.28	0.37	0.91	0.03	0.01	0.11	0.03	0.00
5/1	102.95	4.54	0.07	0.15	0.25	0.61	2.07	-0.37	0.27	0.27	-0.06

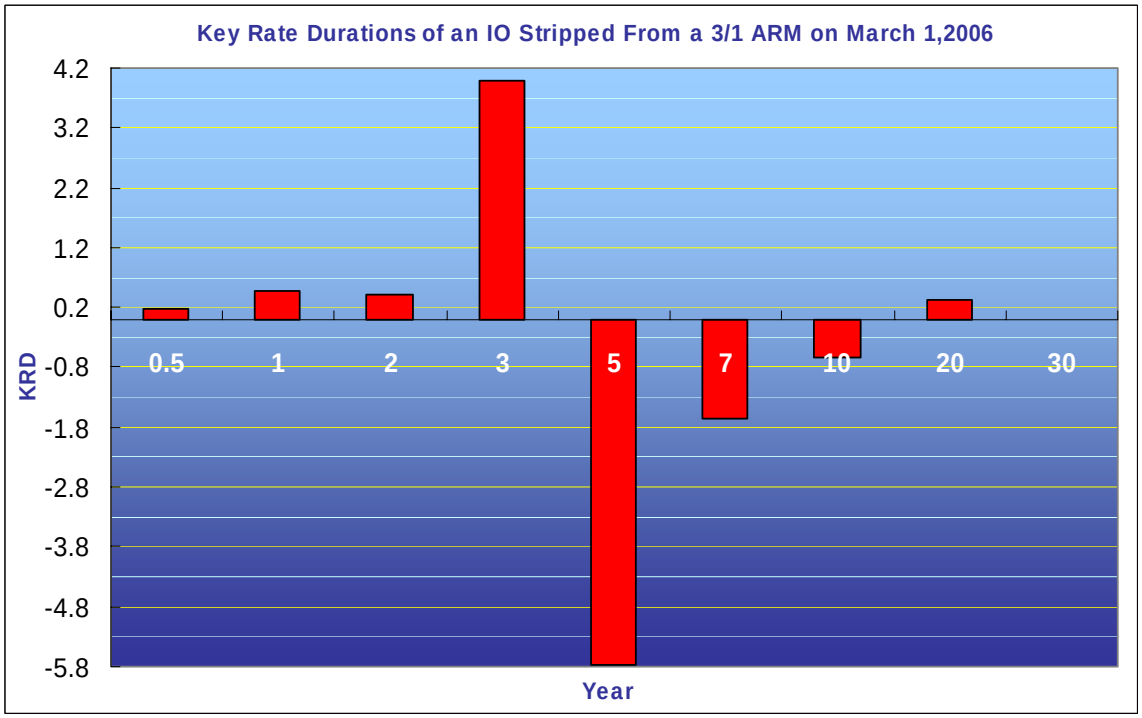
The analysis of the Hybrid ARMs can be extended to their IOs. Figure 3 depicts the performance profile of an IO stripped from the 3/1 hybrid ARM described in table 1. Unlike the hybrid ARMs, the Hybrid ARM's IO value may rise with the rates. However, when the rates are low, the IO value may rise with a falling interest rate. This behavior is depicted in figure 3.

FIGURE 3



Key rate durations of the IO are shown in figure 4. The results show that the IO is most sensitive to the three- and five- year rates, losing value when the former rises or the latter falls.

FIGURE 4



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