

**Observations on Hybrid ARM Empirical Durations**

Hybrid ARM issuance continues to run at a reasonably hefty pace. However, the securitization of hybrid ARMs understates the importance of the sector in the mortgage market, as a large number of hybrid originations are held in bank whole loan portfolios. In this article, we analyze the recent empirical trading durations for hybrids and draw the following conclusions:

- The empirical correlation between hybrid ARM prices and Treasury yields and swap rates has been weak for most of the year. The correlation with swaps is higher, but swap rates have generally been poor predictors of movements in hybrid prices.
- Longer-to-reset hybrids are more correlated with swaps and Treasuries, whereas 3/1s have exhibited virtually no correlation.
- While the price history for hybrid ARMs is limited, hybrids have traded shorter in duration than comparable balloons.

**Uncertainty Surrounding Empirical Durations**

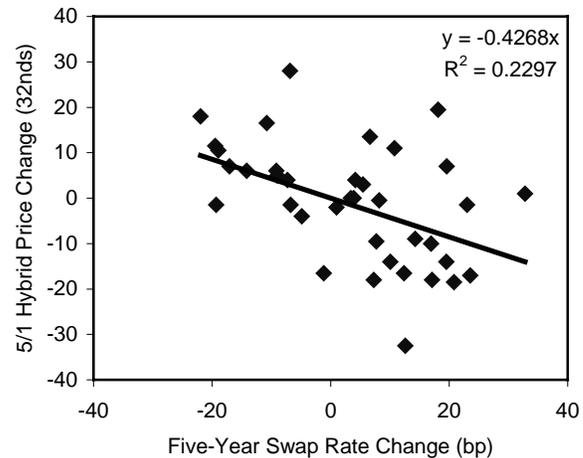
In view of the relative newness of the product, pricing history is limited. (We have a time series of weekly prices starting in January of this year.) In addition, given the performance of hybrid ARMs during the large market sell-off, determining empirical duration is difficult. For example, early in the year, hybrids traded at prices that were higher than those of comparable balloons, (hybrids were cheap at that time). As the market sold off and the hybrid reset caps became more expensive, hybrids widened to the current, and more stable, 8–12 ticks behind balloons (which we view as somewhat rich given the increased value of the caps; see *Mortgage Market Comment*, October 1, 1999, for more detail).

**Weak Correlation to Treasuries and Swaps . . .**

As shown in the chart at right, hybrid price changes have been only weakly correlated with changes in swap rates. (We compute the price changes on the hybrid using the lowest coupon hybrid that was near par.) Interestingly, the correlation with swap rates is higher than the correlation with Treasury rates. However, the correlation is still somewhat weak, with a slope that is smaller than might have been expected, reflecting the low correlation between hybrid price and swap rate changes.

**Correlation of Hybrid Prices With Swap Rates Has Been Weak**

5/1 Hybrid Five-Day Price Changes Versus Five-Year Swap Rate Changes



**. . . Has Resulted in Short Empirical Durations**

In the following table, we show the results of regressions of five-day changes in hybrid prices against five-day changes in Treasury rates. As the table shows, hybrid price changes have been very noisy with respect to Treasury yield changes. The simple regressions reflect this fact, with low explanatory power and small slope coefficients (which can be roughly viewed as empirical dollar durations). As a point of reference, we estimate the empirical price duration of seven-year balloon 6.5s to be roughly 2.5 years, substantially longer than the estimated empirical duration of 7/1 hybrids.

**Hybrids Have Traded Short Empirically**

Empirical Price Durations on Par-Priced Hybrid ARMs; Computed From Jan 99–Present

Hybrid	Slope	R-Squared	Empirical Duration
3/1	-0.40	0.01	<b>0.40</b>
5/1	-1.37	0.25	<b>1.37</b>
7/1	-1.44	0.16	<b>1.45</b>
10/1	-2.10	0.32	<b>2.11</b>

Note: Based on regression of hybrid price change versus Treasury yield change.

A more reasonable expectation is that 7/1 hybrids will have a duration similar to that of seven-year balloons. In fact, there’s reason to believe that hybrids could trade longer than balloons. For instance, in a market sell-off — especially a curve-steepening sell-off, which makes the embedded caps more ex-

pensive — hybrids could reasonably be expected to underperform balloons. As the embedded caps become more valuable, the hybrids should widen relative to balloons, reflecting the increased value of the short options position. However, it's not clear that the market is efficiently pricing the changing value of these embedded caps. Thus, we recommend hedging hybrids using durations that are similar to balloon durations — longer than their recent empirical durations, but not long enough to fully reflect the value of the caps.

### Conclusions

The limited data available on hybrid pricing do not allow us to draw strong conclusions. However, we make the following recommendations:

- Use a combination of Treasuries and swaps to hedge hybrids, with the thought that correlations will stabilize now that the relative pricing of hybrids (compared with balloons) has stabilized.
- Do not use balloons or 15-years to hedge hybrids at this point, in view of the extremely technical natures of those markets in the current environment of limited supply. Besides, the correlation between balloons and hybrids has been even worse than the correlation of hybrids with Treasuries!
- Hedge hybrids to durations that are longer than their recent empirical durations suggest. That means hedging a hybrid pool like a balloon.