# A Review of Hybrid ARM Prepayment Rates

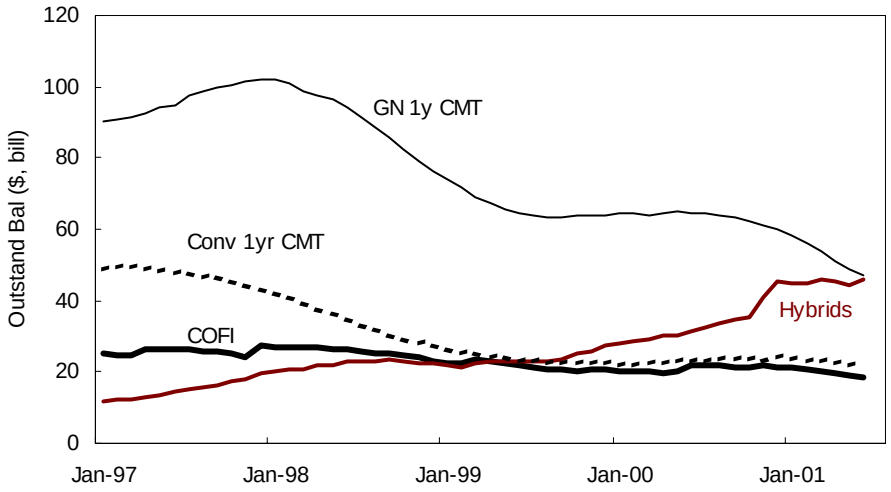
**Hybrid ARMs are an attractive alternative product for investors who traditionally buy balloons, 15-years, ARMs, short CMOs, or short ABS. Below we examine some of the prepayment characteristics of hybrid ARMs and take a look at what speeds we might expect going forward.**

## Hybrids capture a greater share of the ARMs market

Outstanding balances on hybrid ARMs have been growing consistently over the past few years, even as the balances on one-year CMT-linked ARMs (both GNMA and conventional) and COFI ARMs have been declining or staying flat. At $46.2 billion, hybrids now represent 28% of the $164 billion total securitized ARMs market. In fact, hybrids are now poised to overtake one-year CMT GNMA ARMs in market share. This growth is particularly impressive given that the hybrid market is relatively young and that hybrids had less than 10% of the market share as little as three years ago.

With today's steep curve, hybrid 5/1s now offer borrowers a rate approximately 50 bp lower than new 30-years. We would not be surprised to see continued growth in hybrid ARMs originations over the near term, owing to the steep curve environment.

**Exhibit 1: Outstanding balances on hybrid ARMs continue to grow ($, billions)**

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## A quick review of recent speeds

In the table below, we highlight the latest speeds on several vintages of Freddie Mac hybrid ARMs. The analysis of hybrid speeds is always complicated by the many

different effects (specific rate and yield curve environments, reset effects, differences in WAC, to name just a few) that influence prepayments and can combine to alter patterns across vintages significantly. Nonetheless, several themes emerge that are explained in more detail in the analysis that follows. First, shorter-to-reset hybrids tend to prepay faster than longer-to-reset hybrids of the same vintage. This can be seen by looking at the six-months speeds on any vintage, but is particularly pronounced in the 1996 and 1999 vintages (see below).

Second, differences in WAC can have a significant impact on speeds: Observe the difference between 1999-vintage 10/1s with a WAC of 7.27% and 2000-vintage 10/1s with a 44 bp higher WAC. Hybrid ARMs of the 2000-vintage are notable for their quick response to refi incentives and the remarkable high speeds posted after just a short amount of seasoning — especially in the notoriously sluggish 10/1s.

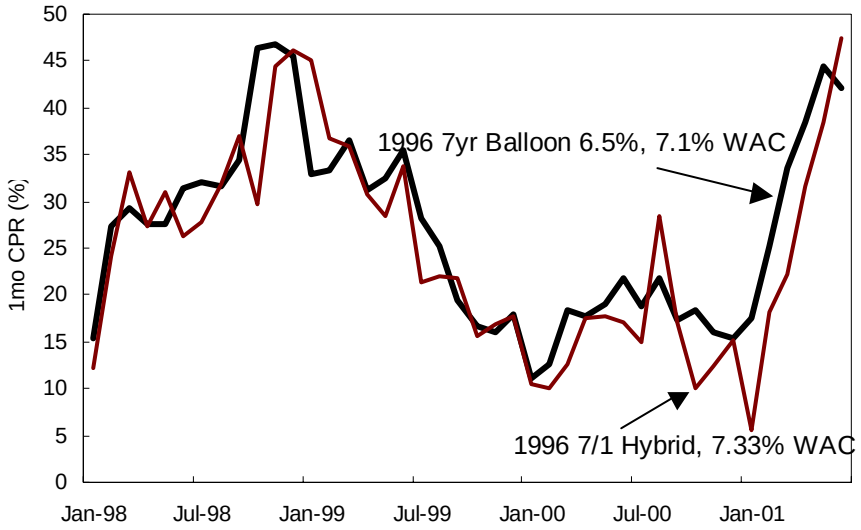
**Exhibit 2: A look at recent speeds on hybrid ARMs**
One-month CPRs (%) on Freddie Mac hybrids

| Vintage | Type | WAC | WAM | WALA | Balance ($MM) | Factor | June | May | April | 6mo CPR |
|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | 3/1 | 7.92 | 299 | 61 | 142 | 0.21 | 59.6 | 51.8 | 52.1 | 48.2 |
| | 5/1 | 7.41 | 300 | 60 | 386 | 0.34 | 59.5 | 47.3 | 38.4 | 39.5 |
| | 7/1 | 7.33 | 303 | 57 | 180 | 0.44 | 47.4 | 38.4 | 31.7 | 28.5 |
| | 10/1 | 7.33 | 302 | 58 | 85 | 0.50 | 35.4 | 30.2 | 17.2 | 21.5 |
| 1997 | 3/1 | 7.82 | 312 | 48 | 224 | 0.28 | 69.1 | 61.6 | 57.8 | 55.2 |
| | 5/1 | 7.06 | 309 | 51 | 1222 | 0.47 | 46.6 | 36.3 | 31.4 | 30.5 |
| | 7/1 | 7.18 | 312 | 48 | 429 | 0.51 | 39.7 | 30.1 | 28.3 | 25.7 |
| | 10/1 | 7.35 | 311 | 49 | 152 | 0.72 | 36.4 | 28.4 | 28.0 | 26.6 |
| 1999 | 3/1 | 7.04 | 337 | 23 | 829 | 0.73 | 54.0 | 39.2 | 35.8 | 34.0 |
| | 5/1 | 7.01 | 337 | 23 | 3614 | 0.84 | 39.1 | 33.1 | 32.7 | 27.0 |
| | 7/1 | 7.05 | 335 | 25 | 1256 | 0.84 | 32.7 | 25.0 | 22.8 | 21.1 |
| | 10/1 | 7.27 | 335 | 25 | 977 | 0.88 | 31.0 | 23.9 | 19.3 | 18.4 |
| 2000 | 3/1 | 7.51 | 344 | 15 | 637 | 0.76 | 60.7 | 55.8 | 58.8 | 48.1 |
| | 5/1 | 7.73 | 345 | 15 | 2225 | 0.76 | 58.0 | 51.7 | 47.4 | 42.7 |
| | 7/1 | 7.73 | 347 | 13 | 450 | 0.82 | 59.3 | 50.4 | 53.1 | 44.5 |
| | 10/1 | 7.71 | 347 | 13 | 231 | 0.82 | 52.2 | 56.5 | 48.4 | 42.5 |

## Balloon and hybrid prepayments go hand in hand

The striking similarity between non-convertible hybrid ARM prepayments and balloon prepayments can be seen across most vintages and over long periods of time. This should perhaps come as no surprise given the likeness of the borrowers who take out these types of mortgages: The borrowers that traditionally back hybrids and balloons both have higher turnover rates, as they tend to be more mobile than borrowers who opt for longer-term fixed rate mortgages. In exhibits 3 and 4 below, we plot one-month CPRs on seven-year balloons with 7/1 hybrids and five-year balloons with 5/1 hybrids, respectively.

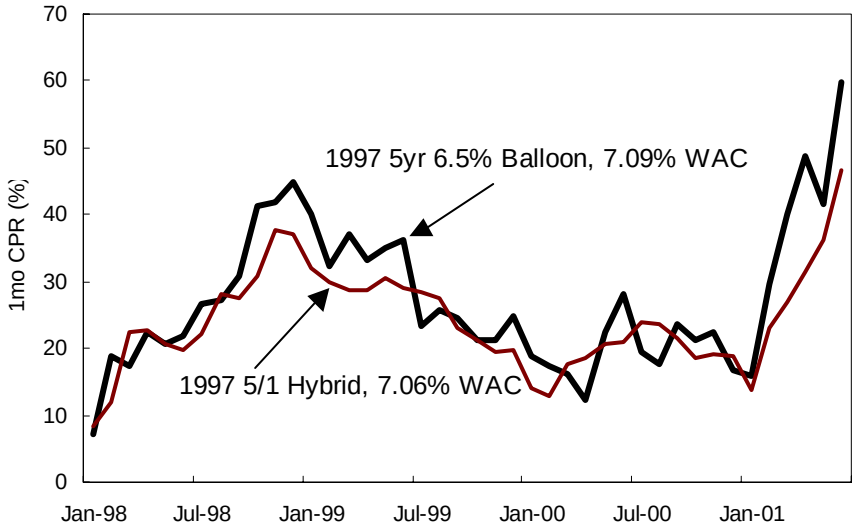
**Exhibit 3: Hybrids track balloons, whether you look at 7/1s vs. 7-yr balloons...**
1mo CPR (%) on 1996 seven-year 6.5s and non-convertible 1996 7/1 hybrids




**Hybrid ARM and balloon prepayments track each other, across most vintages and over long periods of time.**

*Source : Goldman, Sachs*

**Exhibit 4: ... Or 5/1s vs. 5-yr balloons**
1mo CPR (%) on 1997 vintage five-year 6.5s and non-convertible 1997 5/1 hybrids




*Source : Goldman, Sachs*

As can be seen, the monthly speeds on hybrids and balloons have been quite consistent over time. We have plotted older vintages to illustrate the similarity in prepayments through a range of different rate environments, but 2000-vintage hybrids and balloons have the same relationship in speeds. In general, balloon

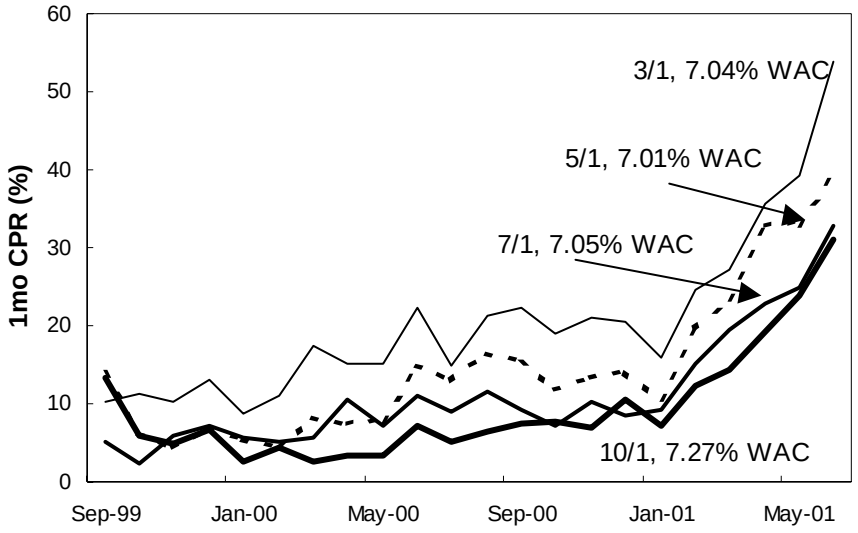
speeds can be considered good indicators of hybrid ARM prepayment rates.

## How about 3/1 and 10/1 hybrids?

Predicting the prepayment behavior of 3/1 and 10/1 hybrids is a bit trickier, since there are no balloons with three-year or 10-year fixed rate periods to which they can be compared. But experience has shown us that speeds of shorter-to-reset hybrids tend to be faster than the speeds of longer-to-reset hybrids. In Exhibit 4, we plot one-month CPRs on a range of 1999-vintage hybrids, all with WACs in the 7.00–7.25% range. None of these securities have reset yet.

As can be seen in the graph, shorter-to-reset hybrids have higher baseline turnover rates than longer-to-reset hybrids. In fact, during the time period examined below, speeds on 3/1s are roughly 40% faster than speeds on 5/1s, and over 210% faster than 10/1 speeds — despite the relatively lower WAC on the 3/1s. Throughout 2000, baseline turnover on 3/1s led to a simple average monthly CPR of about 20%, compared with just 9% on 10/1s. In addition to having significantly lower baseline turnover, longer-to-reset hybrid ARMs tend to season more slowly and appear to be less responsive to refi incentives. This general trend, which holds for other vintages as well, most likely stems from borrowers with the shortest horizons and most mobility taking out hybrid ARMs with the shortest fixed-rate period. Moreover, shorter-to-reset hybrids probably respond more quickly to refinancing incentives: These borrowers want to lock in better rates as soon as they can, as they fear higher rates after the reset.

**Exhibit 5: Faster speeds on shorter-to-reset hybrids**
One-month CPR (%) on 1999-vintage FHLMC hybrids



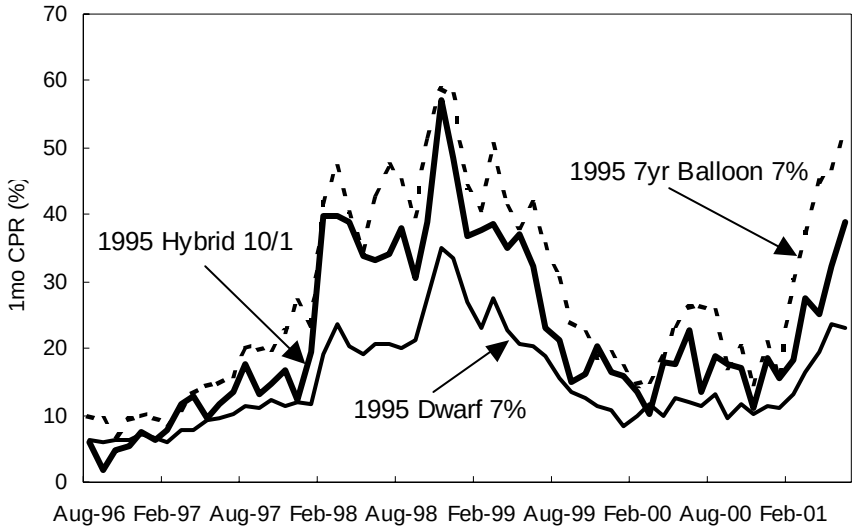

*Source : Goldman, Sachs*

We also note that although 2000-vintage 10/1s posted remarkably high prepayments in May — close to 56% CPR (higher than any other type of hybrids) — the June

report shows 10/1s again at the bottom. While speeds can be variable, three-month, six-month, and 12-month CPRs on 2000-vintage hybrids confirm the trend of relatively higher speeds on short-to-reset hybrids.

History has also shown that 10/1 hybrid speeds tend to be bounded above by speeds on seven-year balloons and bounded below by dwarf speeds of the same vintage and WAC. This has been the case for just about every vintage. As an example, speeds on the 1995-vintage 10/1s, plotted in Exhibit 6, have stayed in these bands consistently throughout the past five years. Furthermore, we note that the ratio of speeds between 10/1s and seven-year balloons averages around 80%, but reaches 90–95% in rallies, pointing to the potential for 10/1s to be very responsive to refinancing incentives.

**Exhibit 6: Somewhere in the middle: 10/1s prepay between dwarfs and balloons**
1mo CPR (%) on 1995-vintage 10/1s, dwarf 7s, and seven-year balloon 7s




*Source : Goldman, Sachs*

## What can we expect going forward?

As mentioned before, the latest speeds on 2000-vintage hybrids have yielded a few surprises, with 10/1s ramping up in speed almost as quickly as other hybrids — and in fact surpassing speeds on other hybrids in some months. This unusual situation may be explained by the relatively higher WAC on 2000-vintage 10/1s compared with both 3/1s of the same vintage and 10/1s of prior vintages, reflecting the steepness of the yield curve at origination. In fact, 10/1s of the 2000-vintage have higher WACs than 10/1s of any other vintage. Exhibit 7 reveals the importance of WAC: Differences in WAC can dominate both the lockout period effect (observe the fast speeds on longer-to-reset 2000-vintage hybrids thanks to their higher WAC) and the seasoning effect (compare higher-WAC 1997-vintage 3/1s to 2000-vintage 3/1s). Nonetheless, lockout and seasoning effects can be very significant when the refi incentive is not as great as it is today for the high-WAC 2000 vintage.

**Exhibit 7: WACed Out: Higher WACs on 2000 vintage 10/1s result in faster speeds**
FH **h**ybrid ARM speeds by vintage and WAC

| | WALA | | | Current WAC | | | 3-month CPR (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1997 | 1998 | 2000 | 1997 | 1998 | 2000 | 1997 | 1998 | 2000 |
| 3/1 | 48 | 36 | 15 | 7.82 | 6.95 | 7.51 | 63 | 50 | 59 |
| 5/1 | 51 | 37 | 15 | 7.06 | 6.90 | 7.41 | 38 | 36 | 53 |
| 7/1 | 48 | 36 | 13 | 7.18 | 6.80 | 7.73 | 33 | 29 | 54 |
| 10/1 | 49 | 33 | 13 | 7.35 | 6.70 | 7.71 | 31 | 15 | 53 |

*Source : Goldman, Sachs*

Putting the above points together, we can look to the following guidelines in forecasting speeds on recently issued hybrids:

- Hybrid baseline turnover rates are generally between 12% and 18% CPR once securities have about one year of seasoning, with shorter-to-reset hybrids closer to the upper end of that range, and longer-to-reset hybrids toward the bottom of the range. **Investors can count on threshold bottom speeds ranging between roughly 12% CPR for 10/1s to 18% CPR for 3/1s, even if rates sell off from these levels.**
- High turnover, stemming from the fact that most hybrid borrowers have shorter horizons in their homes, **limits extension risk in high interest rate environments.**
- **5/1 and 7/1 hybrids are likely to prepay close to similar-WAC balloons**. For example, new Gold five-year balloon 6s with a WAC of 6.55% are prepaying around 12% CPR. The 12-month CPR is forecasted to be about 21%. **Based on these balloon speeds, we can expect *new* 5/1 hybrids with around 6.60% WAC to exhibit similar prepayments. Furthermore, hybrids can be expected to track balloons in case of upward or downward changes in market levels.**
- Similarly, 7/1 hybrids are likely to prepay like seven-year balloons. For *new* 7/1s with a WAC of around 6.60%, this translates to 12-month speeds of around 19% in the base case.
- 10/1s should prepay more slowly than similar-WAC 7/1s, putting them at around 15% CPR in a base-case scenario if WACs are around 6.5%.
- On the other hand, 3/1s with a 6.5% WAC can be expected to have base case speeds around 20% CPR.

As mentioned before, projecting hybrid ARM speeds is particularly complicated thanks to vintage-specific features that can make speeds appear inconsistent with seemingly established patterns. However, the above provides a general framework for thinking about hybrid prepayments. For more information about relative value in the hybrid mortgage sector, please see the July 13, 2001, edition of the *Mortgage & ABS Comment*.