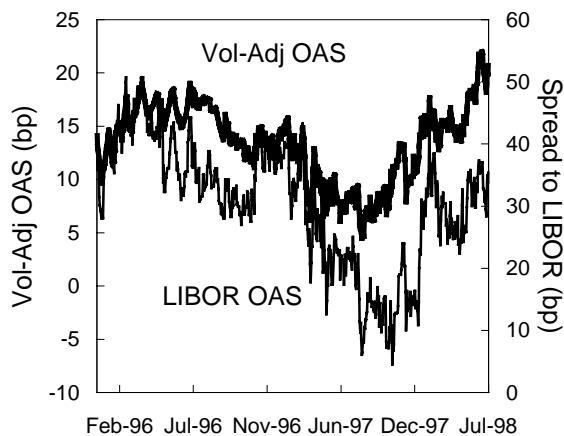


**Where Angels Fear to Tread?**

Much has been said about the recent underperformance of the “hedge fund” trade of buying a mortgage and hedging it with swaps and options. Although the faster-than-expected prepayment speeds hurt this trade, the major source of underperformance was that mortgage pricing did not fully reflect the collapse of long-dated swaption volatility. However, as opposed to using this result as a cautionary tale to scare investors away from using the capital market as a guide for valuing and for hedging mortgages, we take the opposite tack. *We believe that a careful analysis of the trade says just the opposite, and that it looks even more compelling after the recent underperformance.* As shown in the chart below, on a swaption volatility-adjusted basis, mortgages look as cheap as they have in years, while the repricing of the swaption market has taken out much of the basis risk of this trade.

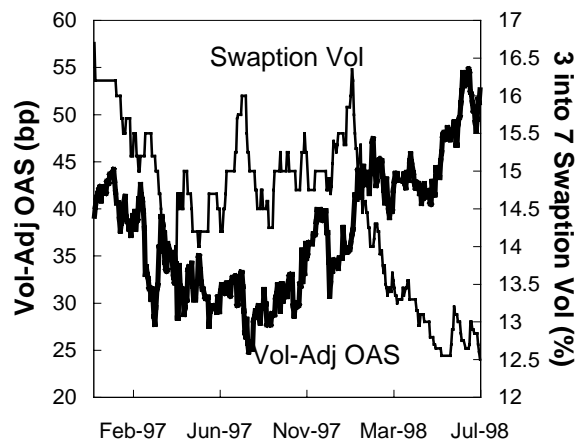
**Mortgages Cheap on a Volatility-Adjusted Basis**



The holy grail quest of mortgage investors has long been to find the duration and option equivalent of a mortgage in the swaps market. A precise mapping between the capital market and the mortgage market would enable investors to more accurately hedge, and value, mortgage securities. Along these lines, both investors and dealers created OASs that were calibrated to options in the capital market. The core assumption of volatility-adjusted OAS was that the prepayment option and the capital market option have a one-to-one relationship. This means that it is not enough that mortgage prices are correlated with volatility, but that the price of a mortgage must *fully* reflect the theoretical volatility sensitivity of a change in volatility in the capital market.

In mid-1996, some hedge fund managers believed that the linkage between the two markets was close enough and started buying mortgages and hedging them with long-dated swaps and swaptions. While this strategy did work for a while, it began to unravel as volatility came off its highs of late 1997. A volatility-adjusted OAS should be completely uncorrelated with volatility if mortgage pricing fully reflects changes in capital market volatility. As shown in the chart below, volatility-adjusted OAS (using 3/7 swaptions) was basically flat and uncorrelated for current coupon conventional 30-years during the second half of 1997 as prices in the mortgage market closely tracked the 3% rise in volatility. However, mortgage pricing decoupled from capital market volatility during 1998 when volatility fell 3% and volatility-adjusted OAS rose 20 bp.

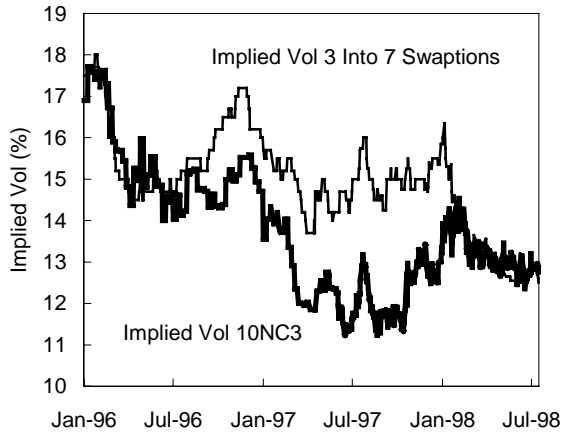
**Mortgages Cheapened as Volatility Fell**



We believe that this cheapening of mortgages on a volatility-adjusted basis is an opportunity to buy mortgages and hedge them with capital market options. The wrong reaction is to walk away from the wreckage of this trade with the attitude that “it just goes to show you the difficulty of hedging a mortgage with swaps and swaptions.” The basis risk between mortgages and capital market volatility is lower today after this repricing of capital market volatility. Our view is that, in contrast to the environment in 1997, agency buying of swaptions will provide protection, though not immunization, against another decoupling of the capital and the mortgage market.

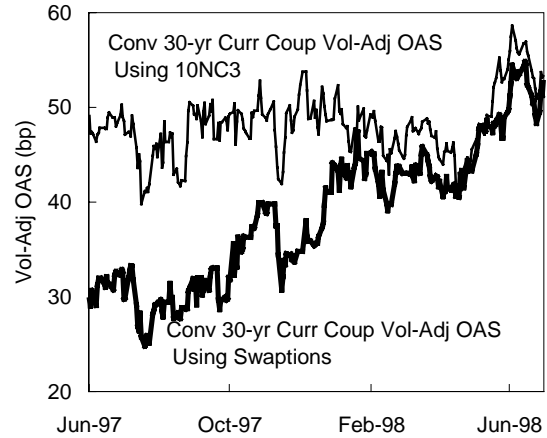
Prior to the 1998 collapse, changes in swaption volatility did not dominate the agencies' valuation of mortgages. They could buy options at much lower volatilities by issuing callable debt. As shown in the chart below, implied volatility on callable debt (measured as the volatility that sets the 10NC3 OAS equal to the 10-year agency bullet OAS, using the new benchmark issue OAS for the last four months) was significantly below long-dated swaption volatility before the decline in swaption volatility in 1998. Consequently, as shown in the chart at upper right, the fall in swaption volatility, rather than cheapening mortgages to the agencies, just brought the two markets back into alignment, after their divergence over the period in which the hedge funds put on their trade.

**Swaption Volatility Collapsed to 10NC3 Volatility**



However, as a result of the collapse of swaption implied volatility back to 10NC3 implied volatility, we believe that the basis risk has diminished from using swaptions to hedge mortgages. On the margin, the agencies will value a mortgage using the cheapest source of volatility. The problem that occurred in 1998 was that swaptions were expensive to 10NC3s; as a result, the fall in swaption volatility did not affect the agencies' valuation of mortgages. Now with swaption volatility on par with 10NC3, any further fall in swaption volatility will make mortgages more attractive to the agencies.

**Mortgages Did Not Cheapen to the Agencies**



Relying on the agencies to prevent a repeat of 1998 clearly has some risks as well. Just because mortgage cheapen on a volatility-adjusted basis doesn't mean that the agencies will buy more mortgages; other considerations also influence agency buying. However, at least now if mortgages were to cheapen as swaption volatility were to fall, it is more likely that the agencies would buy more, because — in contrast to early 1998 — mortgages would be cheaper to the agencies as well as to hedge funds.