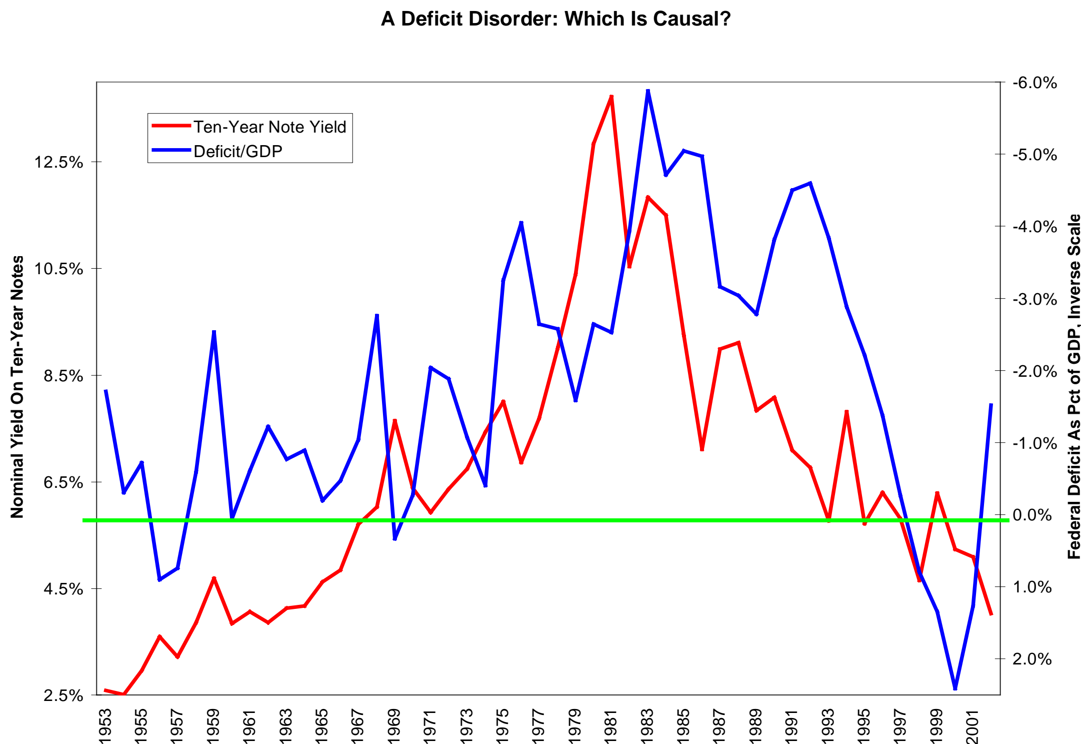
Bonds Begin At Home

Bond traders are funny people, sometimes intentionally so. Their primary tasks, forecasting interest rates and the shape of the yield curve, rank somewhere between the creation of the perpetual motion machine and the establishment of the kingdom of heaven on earth on the difficulty scale, so it is natural for them to scout around for helpful clues. When they are not trading bonds tick-for-tick off of stocks, crude oil, gold, the dollar, soybeans, the utterances of assorted Federal Reserve officials or any combination of the above, they focus on the federal deficit.

The logic, seemingly impeccable, actually is quite peccable, if we may coin a word: While it makes sense on the surface that increased government borrowing should raise both interest rates and inflationary expectations, such a simplistic causal relationship is not borne out at all in the data. In fact, interest rates appear to lead the deficit more than the other way around.

A Deficit Disorder: Which Is Causal?

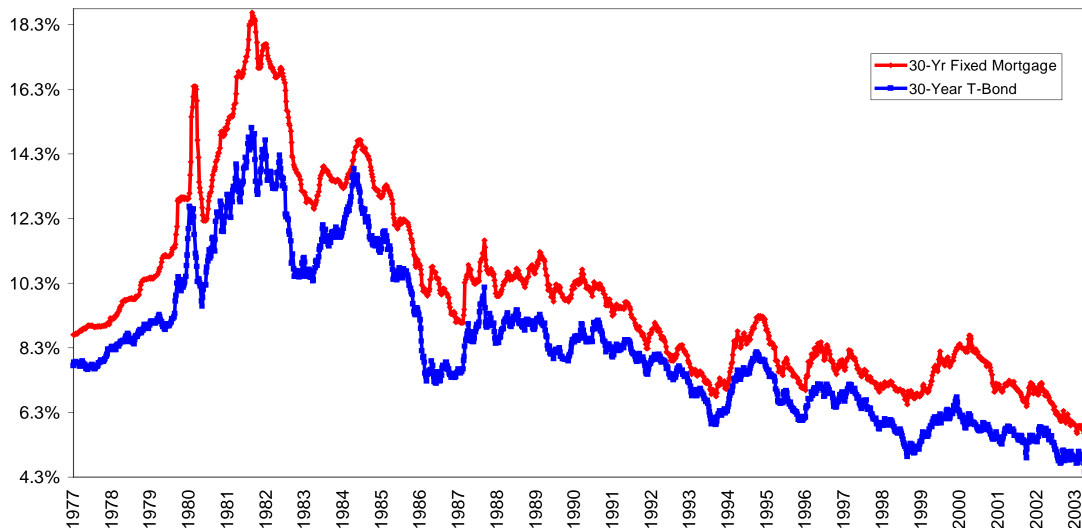


The Biggest Bond Market

Federal credit demands are but one slice of a vast credit demand pool, and are not the largest slice at that. In 2001 alone, mortgage originations for 1-4 family units exceeded $2 trillion, an amount nearly 20% of GDP. The collective behavior of households and their $6.2 trillion of mortgage debt drives interest rates as much if not more than does public borrowing.

While everyone is aware of the linkage between Treasury rates and home mortgage rates, the spread between the two has not been constant. Thirty-year mortgage yields have been falling more quickly, albeit from higher levels, than have long bond yields. This would suggest that, rumblings of a housing bubble aside, lenders see less risk in the nation's homeowners relative to the nation's government than they did only three years ago.

This is inconsistent with economic reality. Uncle Sam has one more printing press than most homeowners, and the combination of rising housing prices and a weakening economy should be increasing, not decreasing, mortgage lending risk. While real estate is a secured loan, you cannot foreclose on everyone at once without driving housing prices, the collateral for all remaining mortgages, down catastrophically. Some other factor, therefore, must account for the narrowing spread at lower rates.



Embed Options, Not Reporters

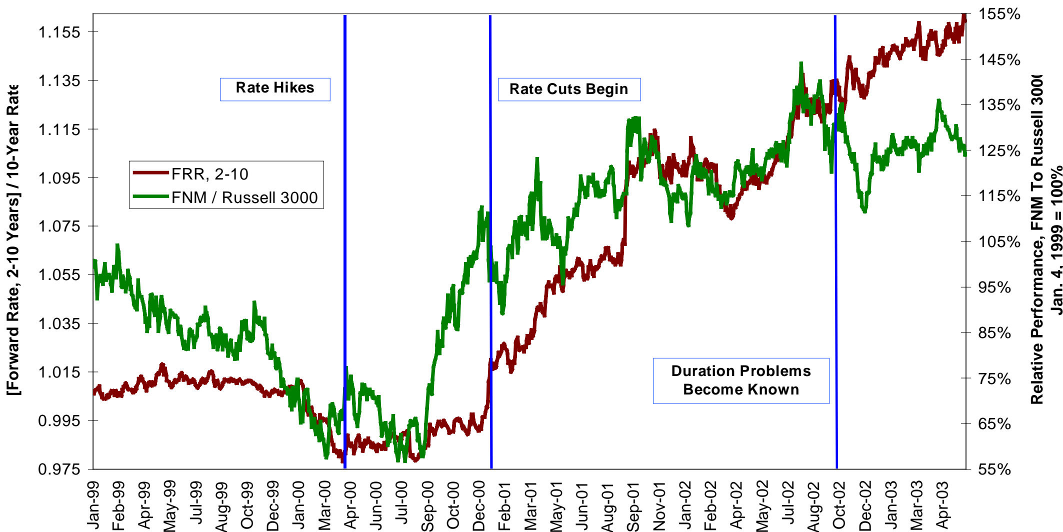
One aspect of the mortgage/Treasury spread derives straight from fixed income mathematics. The duration of the lower-coupon Treasuries is longer than that of the mortgages. As such, Treasuries are going to be more volatile in price and their yields are going to be more volatile as well. As yields fall, the value of each basis point rises, (see "The Fate Of The Late, Great Eight," *Futures*, October 1999) and this creates some portfolio hedging problems, for the giant players in the mortgage market such as Fannie Mae.

But the real action in mortgages derives from the options embedded therein. A mortgage that can be prepaid gives the mortgagor (borrower) a call option on bonds: As rates fall, you are more likely to refinance and "call" the bond away from the lender (mortgagee). This action reduces the mortgagee's income stream as higher rate mortgages are replaced. The mortgagee thus is short a call on bonds, and must buy ever-larger quantities of Treasuries at lower yields to hedge its prepayment risk. The larger quantities are required to provide the same interest rate income as the older portfolio and to close the duration gap between assets and liabilities. These purchases in turn drive yields lower and accelerate the pace of mortgage refinancing.

The shape of the yield curve comes into play as well. One of the Federal Reserve's frustrations throughout 2001 was that long-term rates, including mortgage rates, remained relatively high even as short-term rates plunged. The yield curve started to flatten somewhat in 2002 and 2003 as investors fled the stock market and pushed bond yields lower.

When these two bets are added together, they place Fannie Mae and other mortgages in the position of being short a call option on bonds and reliant upon a stable and positively sloped yield curve. In fact, we can map Fannie Mae's performance relative to the broad market as a function both of ordinal interest rates and as the ratio of the forward rate between two and ten years to the ten-year rate itself. This forward rate represents the rate at which you can borrow money for eight years starting two years from now and the period bridges the zone between yields affected by monetary policy and capital rates.

Fannie Mae's Curve Dependency



Fannie Mae, of course, has one of the largest and most sophisticated interest rate derivative books, but after the experiences of Enron, Bankers Trust, Long Term Capital Management, etc., who should be impressed by all this razzle-dazzle? The more complex any derivative position is, the more likely its operator is engaged in smug self-delusion.

Option-Adjusted Spread

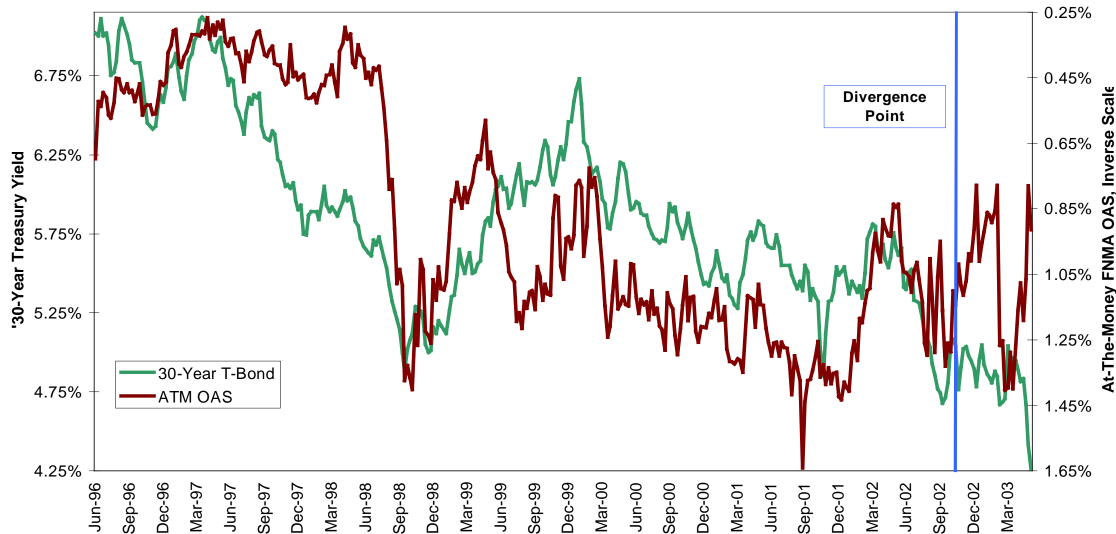
Mortgage refinancing cannot continue indefinitely. At some point, everyone who could and wanted to refinance will have done so. Yields can only go to 0%, after all, and the existing stock of homes will be mortgaged at yields sufficiently low to preclude further prepayment demand. Is there a market-derived measure of gauge the probability of this occurring?

The options embedded in mortgages make a measure called option-adjusted spread, or OAS, the key thermometer for the mortgage-backed securities market. OAS reflects the additional compensation in terms of basis points the mortgagee requires to compensate for the risk of prepayment. The greater the OAS, the greater is the perceived risk of mortgages being prepaid.

An active over-the-counter market for trading the OAS on to-be-announced Fannie Mae securities has developed in recent years. Since data became available in June 1996, the OAS on these securities has had an inverse relationship with Treasury yields; OAS has also spiked higher in times of bond market volatility, such as the Russian default/Long Term Capital Management debacle of 1998, September 2001, and most recently at the start of Gulf War II.

This inverse relationship broke between the end of 2002 and the start of Gulf War II. During this period, the OAS of the current coupon or at-the-money Fannie Mae benchmark, shown below on an inverted scale to highlight the relationship, security fell at the same time as Treasury yields. This was a signal that refinancing demand was becoming exhausted.

How is this conclusion reached? Mortgagees are demanding less insurance in the form of higher yield or OAS, the very same phenomenon seen in the declining spread between mortgages and Treasuries. Of course, the refinancing boom could reignite if long-term interest rates move below 4%.

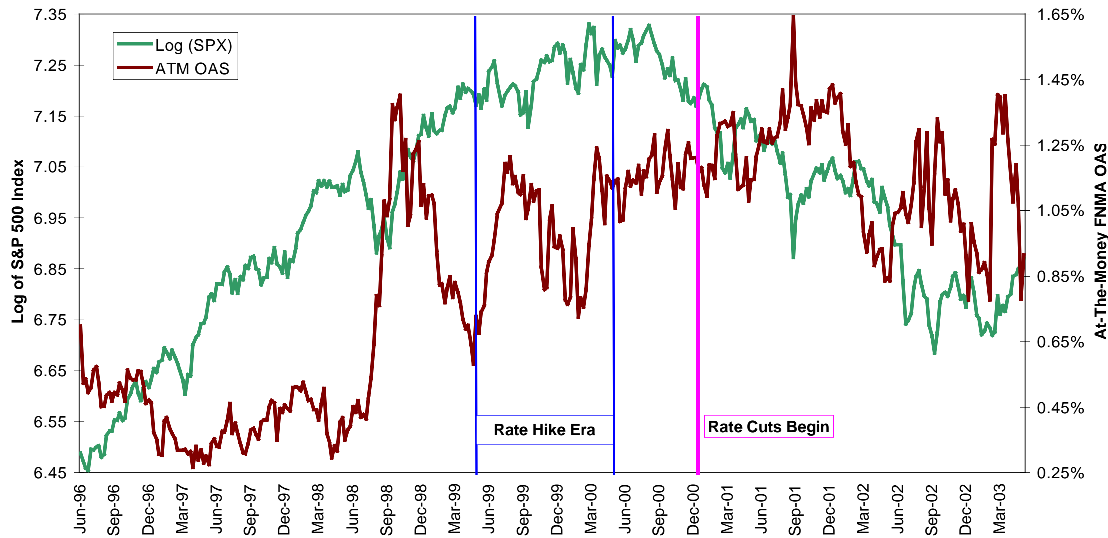


Implications For Financial Markets

The drop in OAS is not some benign and isolated development. Homeowners took $200 billion in equity out of their houses in 2002, and it is a fair bet this helped support consumer spending. This stimulus to this mortgagor class will disappear; in fairness, however, we must point out that mortgage investors will be rewarded with higher returns.

In addition, the gigantic Treasury portfolio assembled by Fannie Mae and other mortgagees as call option protection against prepayments will not be necessary. In a variation of an old Wall Street joke, when Fannie sells, the question will be "to whom?" The last time Treasury bonds were shed in the aftermath of a refinancing boom, 1994, a year in which the Fed began a series of seven increases in short-term rates, witnessed the worst bond market since 1927.

The equity markets will not be immune, either, unless we are willing to believe that higher interest rates by themselves somehow are good for stocks (see "Trade A Sympathetic Market, Get Sympathy," *Futures*, February 2003). Fannie Mae OAS generally rose during the late 1990s with the interruptions noted above. The general increase in prepayment risk even withstood the period of rate hikes by the Federal Reserve in 1999-2000, which suggests the mortgage market might have feared stockholders withdrawing equity from their bloated accounts to prepay mortgages.



Once the Federal Reserve started raising rates in January 2001, OAS continued to move higher under the weight of the hoped-for refinancing boom. Equity accounts are still recovering from the worst bear market since the Great Depression and are still well below their recent highs. The mortgage market is signaling the end of refinancing. The two great reservoirs of household savings, equity accounts and real estate, are being stretched simultaneously.

A similar constellation of events – bear market in equities, a stall in real estate values, wartime budgets and scattershot policy direction – occurred in the early 1970s. At that point, the general economic malaise still had another decade to run. Who says things are different this time?