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We are back with another interesting piece from our friend Alan Boyce. Alan has over 30 years of experience trading mortgages and below presents a trade idea which takes advantage of the artificially tight spreads in the mortgage market. The mortgage market had a big move yesterday while we were preparing the piece but, according to Alan, spreads can move a lot further because mortgages are still very expensive. Any sign that the Fed purchase program will be curtailed would provide an additional catalyst. Alan's discussion of the dynamics of mortgage hedging also potentially has broader implications for the treasury market. -- David Berry

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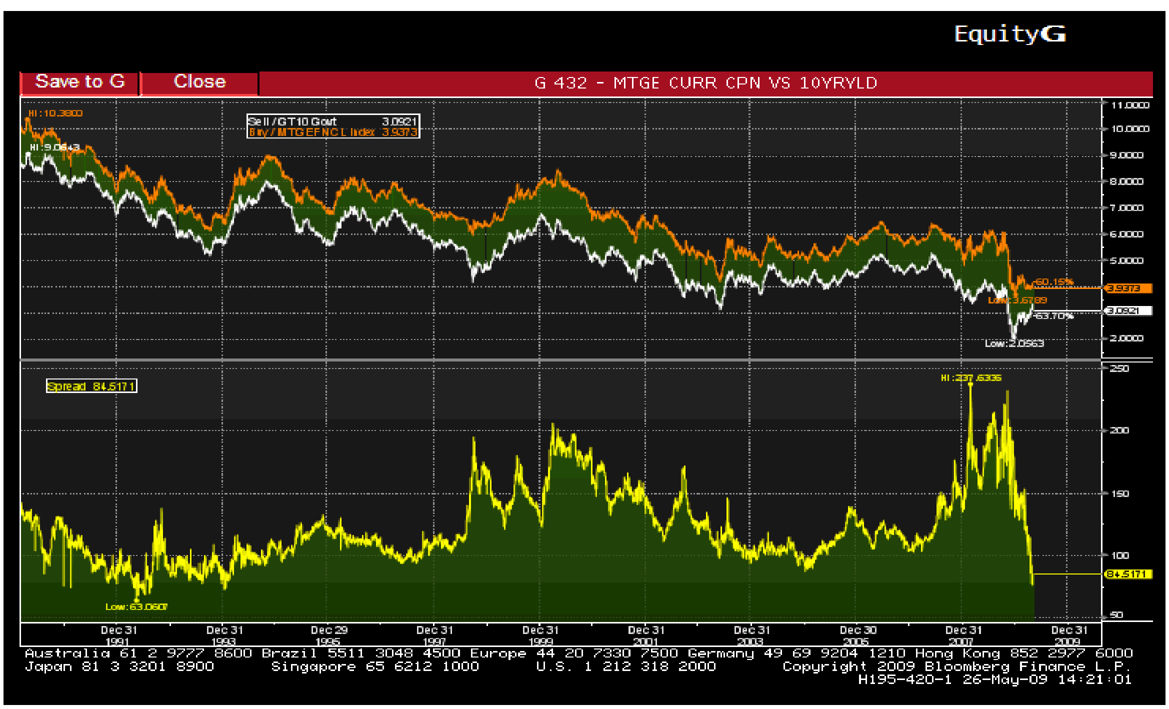
The Dark Side of the Conundrum

Alan L. Boyce

It is now plainly obvious that the mortgage markets are being governed largely by Federal Reserve policy. The Fed has targeted mortgage rates/spreads driving spreads down to historically low levels. In the past month or so, the Federal Reserve has purchased approximately $70 billion mortgages, increasing its holdings of mortgages on its balance sheet to approximately $450 billion. And, they have committed to purchase $1.3 trillion so this buying binge could continue for some time. See chart below of the spread between Generic 10 year treasury yields and the Constant Maturity Mortgage yield (MTGEFNCL on Bloomberg, CMM is the basis swap market).



And, with the recent backup in government yields, off-the-run treasuries in the 2019-2121 sector are yielding over 4% versus 3.94% for CMM!!! Remember that these are callable mortgages with a 30 year amortization schedule and highly uncertain cash flows. Agency mortgages are at their tightest option adjusted spreads (OAS) to the swap and/or treasury curve ever. At these levels, effectively, you are being offered a free option which can't last unless the Fed is willing to take on the Swap and Swaption markets (tens of trillions outstanding).

These low mortgage spreads are widely viewed as a sign of the success of the Fed's program. But, there are signs that the effects of the lower mortgage rates on troubled borrowers has been fairly limited (more on this below) and there is obviously a huge cost associated with this massive program. After all, mortgage borrowers with great credit are receiving a tremendous subsidy from the government as are owners of existing agency MBS, who have been able to sell their positions to the Fed at elevated prices.

Duration Risk

The system of housing finance that brought us the current mess evolved gradually in response to crises and perceived needs, albeit without a clear design. Most of the problems have been discussed at length, but one remains unexplored. How did the size of a callable, 30 year mortgage market double in size without anyone noticing?

Indeed, duration risk (Option-Adjusted Duration, "OAD") associated with the mortgage market is being vastly underestimated today.[1] This is largely the result of the bond market conundrum years, during which duration concerns seemed to melt away. **From 2003 to 2006, the US mortgage market (in terms of total dollars borrowed) grew by 50%, yet the interest rate risk of the mortgage market as measured by option adjusted duration, actually fell by 20%.** This was driven by the Fed's very predictable interest rate policy, which flattened the yield curve and drove interest rate volatility to record lows. At the same time, Greenspan encouraged homeowners to assume the interest rate risk by taking out ARMs, tripling the market share of adjustable rate loans. These three factors: shift to ARMs, a flatter curve, and low volatility, led to a reduction in the perceived risk of the mortgage market. This reduction in aggregate OAD was an order of magnitude larger than the other explanations for the "conundrum" as duration

[1] The callable mortgage markets suffer from "convexity paradox" where each investor must hedge his own changes in Option Adjusted Duration ("OAD") as well as worry about all the other investors trying to hedge changes in OAD. This becomes an exercise in game theory, as investors hedge to the expectation of other investors' hedge activity. Individual investors (and system) worry about change in partial durations (dP/dY) and the size of the error term at every point on the expected callable mortgage price/yield path vs. the original hedge duration. Duration management tools (interest rate futures, swaps and options) are smaller than the mortgage market. Asymmetric U.S. mortgage market results in significant duration extension when interest rates rise

hedging requirements were dramatically curbed. The reduced interest rate risk of the mortgage market is the best explanation for the overall credit market bubble earlier this decade.

	% ARMs	FNCL OAD	Market Size	Total OAD
September 1997	18%	5.0 est	$3.72t	15.2t
September 1999	9%	5.0 est	$4.35t	19.8t
September 2001	10%	4.33y	$5.22t	20.3t
September 2003	12%	4.53y	$6.69t	30.6t
September 2005	28%	3.61y	$8.60t	22.4t
September 2006	30%	3.40y	$9.67t	23.7t
March 2007	25%	3.86y	$10.04t	29.1t
March 2008	19%	4.70y	$10.56t	40.2t
March 2009	14%	5.04y	$10.40t	45t

Today, the Fed is trying to stimulate the housing market by lowering mortgage rates to record low levels. However, this is not helping homeowners who need it because they are locked into mortgages they cannot afford and they can't qualify for Fixed Rate Mortgages even at record low levels. For many of these troubled borrowers, if their loan is not already guaranteed by a GSE, they are stuck with what they have. If they have a low FICO score and/or a high LTV the borrower must pay upfront fees to FNMS (LLPAs). This poorly understood set of additional fees results in much higher mortgage rates for most borrowers. In addition, ultra conservative appraisal practices and limited origination capacity in the mortgage banking industry have made it quite hard for troubled borrowers to find the much advertised sub-5% 30-year mortgage.

As a result there has been a slow refinancing response to the historically high agency MBS prices. The new prepayment data (April 2009) show that a significant number of existing agency borrowers cannot take advantage of current low mortgage rates.[2] Evidence of the Fed's efforts to help at risk homeowners refinance is hard to find in this report. Indeed, total refinancing activity has already begun tailing off despite the low mortgage spreads.

[2] "Alternate Model for MBS Market: USA should switch before interest rates rise", slide 26, Presentation for PRMIA, May 2009, Alan Boyce.

Much slower prepayment speeds mean that the extension risk in the mortgage market is underestimated. If these speeds continue, the change in total hedge ratios for Fannie Mae 30 year mortgages is the same as the duration of $275 billion 10yr notes. If these speeds are seen in the rest of the mortgage market, the change in total hedge ratios is equivalent to the issuance of $1.1 trillion 10yr notes. If 10 year treasury yields back up to 4%, I would expect CMM to rise to 5.25% (long term average spread of 125 bp). Today, the bond market is hedging Fannie/Freddie 5% and 5.5% MBS to DV01s of 3.0 and 2.25. A 35 basis point move in rates could see the durations almost double. This would be the equivalent duration of $300 billion 10yr notes from the extension of only $1.65 trillion dollars of mortgages. If you gross this up for the whole mortgage market, the numbers get astronomical. (The Treasury Department currently expects to auction $250 billion of 10 yr notes in 2009.)

Indeed, the slow refinancing response, steep yield curve, and increased volatility in the treasury market have all resulted in a doubling of the interest rate risk in the mortgage market. **To put this into perspective, the increase in duration of the mortgage market in the last three years is triple the increase in interest rate risk due to the $1.8 trillion US budget deficit in fiscal year 2009.** A moderate increase in the level and slope of the yield curve in today's bond market can result in an overwhelming duration extension, a much larger threat to rising real interest rates than larger budget deficits and/or Chinese selling of reserves.

The recent backup in interest rates makes the duration risk imminent and very real. The shape of the yield curve is the primary determinant of mortgage duration. As the curve steepens, OADs extend. As rates rise, mortgages extend. The scale of this potential duration extension is multiples of what we have seen to date. This is the dark side of the conundrum, even though we now recognize the huge risks associated with callable/extendable mortgage cash flows, we are powerless to do anything about them.

The market and/or Fed is eventually going to realize that it cannot suppress mortgage rates in perpetuity and the associated duration risk makes its current program extremely unattractive/untenable from a cost/benefit standpoint and also from a political standpoint. Especially in the face of evidence that many troubled mortgage borrowers are unable to qualify for refinancing even at these record low mortgage rates. Indeed, the primary beneficiaries of the program have been those lucky enough to sell mortgage securities to the government at inflated prices. They have managed to transfer duration risk, default risk, and liquidity risk all at once at a time when interest rates are rising!!

The direct cost of the program, measured by the amount the government is overpaying for the assets, is roughly 5 points. This is the difference between current price and where agency pass-thrus would trade absent the purchase program. Hopefully, policymakers will realize the error of this program and pursue a more lasting/sustainable mortgage solution similar to the Danish mortgage solution I proposed in my Drobny Guest Piece dated October 2, 2008 "Revising the US Mortgage Market". The Danish system allows for automatic market based de-levering. In fact, in the bond market meltdown of October 2008, the Danish mortgage system was able to reduce outstanding duration by about 10% as homeowners were incentivized to buy back their own debt.

The Fed mortgage purchase program will reach its $1.3 trillion ceiling in October. In early July, the mortgage markets will price loans to October bond settlement. Agency MBS reached record tight spreads to swaps and treasuries in the last week, bringing in a new set of sellers. The technicals of the mortgage market are about to shift. The idea is to construct a trade that will benefit from widening in mortgage security spreads. There are several ways to play this, from shorting agency TBA pass-thrus to buying IOs or Inverse IOs. These are excellent trades but require some experience in the arcane world of mortgage trading.

A simpler and direct way to play is to pay the CMM and receive 10 year Constant Maturity Treasury. By paying on the swap, you avoid any potential collateral squeezes and capture the negative convexity of par mortgage rates (go down like a 10 year, up like a 4 year). Mortgage servicers have been driving down CMM as they try to hedge mortgage servicing rights (MSRs), if rates rise they will need to reverse course and pay CMM in quite large size.

As with most trades, but especially this trade since you are "fighting the Fed", the challenge is the timing of the trade. A number of players have been squeezed out of trying to short mortgage spreads so the likelihood of additional squeeze pressure on the trade is limited. Mortgage traders who tried to put this strategy to work in February have seen this work as a one-way trade against them. Indeed, that is part of the attraction of putting this trade on at this time, at these levels. And, the runway that the Fed has will shorten if MBS sellers become more aggressive.

In an environment where the government is experimenting with aggressive new policies to stabilize a fragile, over-indebted society, this trade makes a lot of sense to me.

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