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Market Facts

Is The Convexity Trade Back?

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Mortgage-backed securities (MBS) are the largest sector of the fixed income market; 38% of the Lehman Aggregate Index is MBS versus 23% for Treasuries and 19% for corporate bonds.

When interest rates rise, the duration of a MBS, or its sensitivity to movement in interest rates, also rises. When interest rates rise (or prices fall), MBS prices fall faster than positively convexed fixed income securities (i.e., Treasuries). Conversely, when interest rates fall (prices rise), MBS prices rise slower than positive-convexity fixed-income securities. So, prices fall faster in a declining market and rise slower in a rising market. This is what is referred to as negative convexity. The market compensates for this unpleasant feature by offering a higher yield.

The reason for negative convexity is the option homeowners have to refinance. An MBS is made up of hundreds, if not thousands, of mortgages. When a homeowner refinances, the amount of the refinanced mortgage is "passed-through" to the MBS holder.

When rates rise, the likelihood of refinancing falls and the average life (or duration) of the cash flows from those mortgages increases. When rates fall, the likelihood of a refinancing increases and the average life (or duration) of the cash flows decreases.

The problem for the bond market is the typical bond portfolio, which often has mortgages as its largest component, will extend in duration as interest rates rise and shorten as interest rates fall, exactly the opposite of what most want. And given the huge size of the mortgage market, it has repercussions for the entire market.

However, what must be kept in mind is that the convexity trade does not create a trend, it only accelerates it. Rates had to be heading higher in the first place and the convexity trade pushes the trend further. For example, when yields rise, mortgages extend in duration. Rebalancing back to previous duration levels requires a manager to sell assets with long durations (i.e., sell Treasury bonds). In turn, this selling puts more upward pressure on yields and creates more selling.

Was It In Effect Yesterday?

With this as a background, is the convexity trade in effect today?

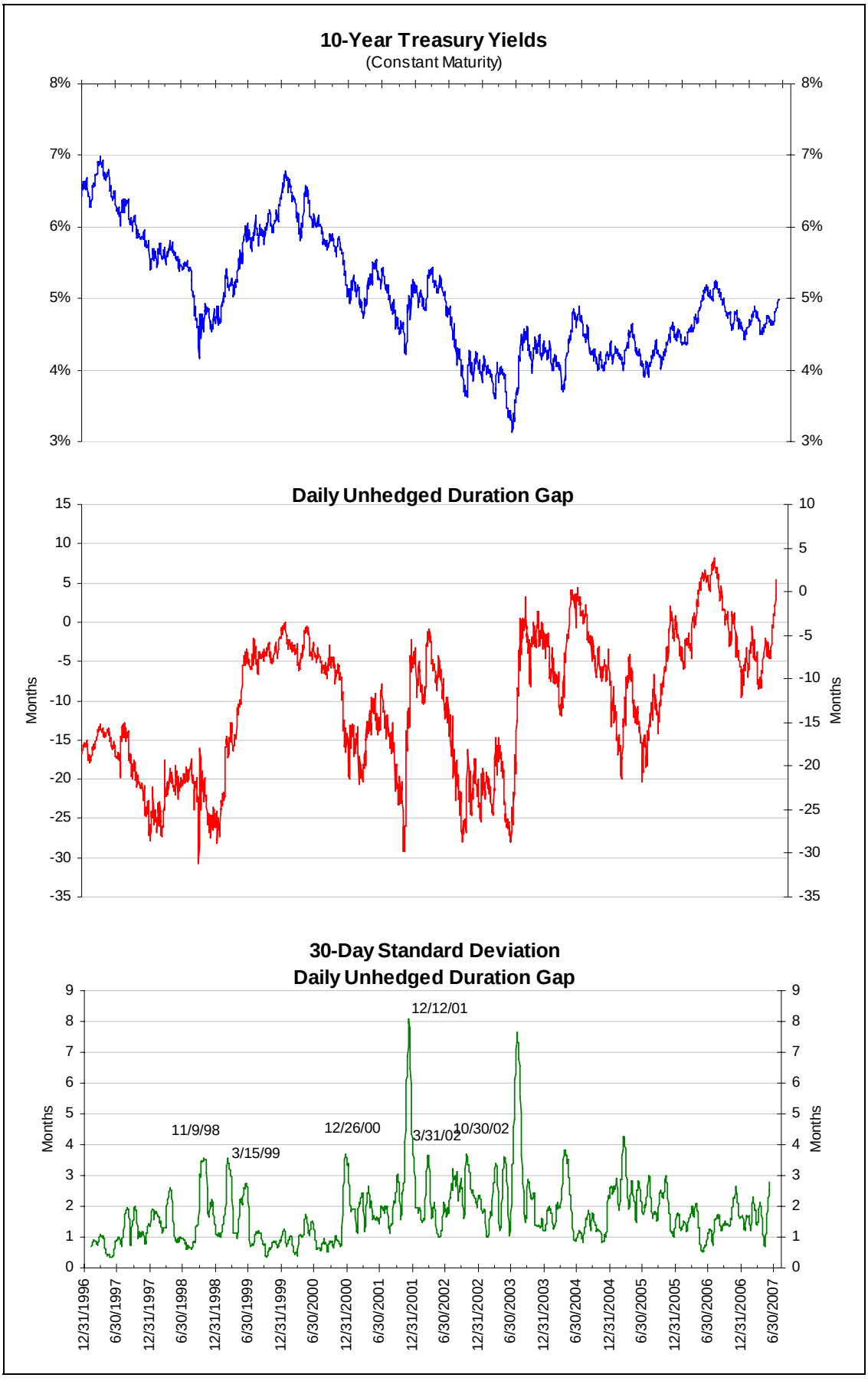
The chart on the next page shows the yield of the 10-year in the top panel (blue), the "daily unhedged duration gap" in red in the middle panel and the 30-day standard deviation of the daily unhedged duration gap in green in the bottom panel.

The "daily unhedged duration gap" is the difference between the effective duration of the Merrill Mortgage Master Index and the Merrill Agency Master Index. It is expressed in months.

When yields move, the difference in the duration between these two fixed-income markets changes. Managers will then have to rebalance their mortgage portfolio's duration in response (or anticipation) of these moves. Since Fannie Mae and Freddie Mac are by far the largest convexity traders (they are believed to account for over half the trading in this strategy), measuring the change in mortgage duration against the duration of borrowing costs (agency securities) is believed to be the best way to measure the convexity trade.

The key statistic that determines the amount of convexity trading is the change in the daily unhedged duration gap, which is shown in green in the bottom panel. There are two ways to look at the bottom panel. On an absolute basis, it is still at a low level. On a relative basis, it is at its highest level in almost two years. Given this, we would say that the convexity trade has been non-existent for the last two years and yesterday's move through 5% kicked it up to a "moderate level."

However, after being non-existent for two years, going from none to moderate looks like a huge shift.


10-Year Treasury Yields
(Constant Maturity)
8%
7%
6%
5%
4%
3%
Daily Unhedged Duration Gap
Months
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
30-Day Standard Deviation
Daily Unhedged Duration Gap
12/12/01
11/9/98
3/15/99
12/26/00
3/31/02
10/30/02
9
8
7
6
5
4
3
2
1
0
12/31/1996
6/30/1997
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