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*A Commentary by Harley Bassman:*

## The Convexity Maven

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Value Concepts from the Credit Suisse Trading Desk  
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### *An Open Letter to the FED:* **“Operation Twist - Down in Coupon”**



Long time readers know that we do not shy away from making bold suggestions directly to the United States Treasury or the Federal Reserve Bank. Late in the summer of 2008 we advocated for an effective Government takeover of the GSEs, which followed shortly thereafter. In February 2010, our recitation of the

benefits of an accelerated “buy-out” schedule caught their fancy. Unfortunately, we had no takers for the notion of the FED issuing MBS put options as a more efficient manner to execute QE1. Most painful of all, despite a congressional hearing on the topic last summer, we have yet to be able to generate serious Government interest in any form of a mandated GSE Refinance program (CARP).

Spurred on by past success, today we would like to recommend that if the FED deems it necessary to provide additional financial stimulus to the markets, the best possible execution would be: **Operation Twist – Down in Coupon**.

Specifically, we believe the FED should announce a plan to sell the higher coupon MBS bonds they purchased during QE1 and use the proceeds to purchase slightly above Par (Current Coupon) MBS. This would be functionally identical to the Treasury Twist program presently in operation.

Let’s be clear from the start, our basic premise has not changed: We do not have a price (interest rate) problem, we have a credit problem. Any business venture that is viable with the Treasury Ten-year rate at 1.50% is almost certainly a winner with that rate at 2.50%. That said, we have long since given up on this line of reasoning; so if Financial Accommodation is going to occur, at least we can do it in the most efficient manner.

**Operation Twist – Down in Coupon** checks all the boxes in a single financial exercise:

- 1) It will lower the key driver of consumer mortgage rates;
- 2) It will “bull-flatten” the Yield Curve;
- 3) It will reduce Implied Volatility;
- 4) It will increase the income the FED wires to the Treasury;
- 5) It should accelerate the process of “Asset Substitution”.

The FED announced plans for a Large Scale Asset Purchase program (LSAP) in late 2008. This plan included the purchase of \$500 billion Fannie Mae and Freddie Mac MBS bonds. This plan was expanded in 2009 with the announced intention of buying an additional \$750 billion MBS bonds by March, 2010. This operation was a major success. Not only did the yield on secondary mortgage bonds decline by nearly 200bps in a mere six weeks, but also the risk spread on MBS bonds, as measured by our favorite CMM vs. 10CMS, returned to its long-term average of 72bps within six months.

In order to maintain the elevated level of their balance sheet, the FED decided to recycle returned principal (both scheduled and early) into new MBS bonds. Despite these new purchases, the bulk of the FED’s current holdings of \$854

billion MBS bonds was acquired during the QE program. It is these high coupon bonds that we suggest should be sold to fund the purchase of new lower coupon MBS. As detailed in the table below, the FED owns over \$500 billion MBS bonds with a coupon rate of 4.5% or higher.

### Significant FED Holdings as of July, 2012

Coupon	FN/FH	<u>30 year</u>	<u>15 year</u>
3.00%		\$1,497	\$13,809
3.50%		\$118,572	\$3,289
4.00%		\$161,566	\$12,163
4.50%		\$326,447	
5.00%		\$149,429	
5.50%		\$51,654	
6.00%		\$7,117	

In millions of Current Face

Source: NY Fed

### Lower Consumer Mortgage Rates

Ultimately, the purpose of lowering interest rates is to increase Monetary Velocity. Since GDP can be modeled as Money Supply times Velocity, we can identify a declining Velocity as the main reason the FED's expansive Monetary Policy has yet to result in a growing economy. As such, increasing Velocity should be the FED's primary goal.

A person's home is generally their largest asset, and the mortgage associated with that home is their greatest financial obligation. Consequently, a significant decrease in the rate of that mortgage will result in either the purchase of a larger home (with a bigger mortgage) or a reduction in monthly payments. In both cases, new monies are directed into consumer spending.

Since most home mortgages are not taken onto the balance sheet of the lending institution, it is the price (rate) of Secondary MBS bonds that is the key driver of the Primary rate, this is the rate that the consumer is offered. When a primary lender closes a loan, he generally snips off 60bps of coupon, packages a basket of similar loans into a GSE MBS bond, and then sells that MBS into the Secondary market. Assuming that the 60bps "servicing strip" is an economic wash, the profit of the business is generated by funding a "Par" (100-00) loan to the homeowner by selling a MBS bond at 103-00 into the secondary market.

Let's examine a hard numbers example: A primary lender offers a loan for a new home purchase at 3.60%. The originator can wrap the loan into a FN 3.0% MBS by paying 35bps running to the Government for the credit guarantee. The originator (usually also the servicer) keeps the remaining 25bps to manage the cash flows and any foreclosure issues down the road. He sells the FN 3.0% MBS three months forward at 103-00 to hedge his interest rate risk. This three month period is generally the length of the process from rate lock to closing. On a \$300,000 loan, he will receive \$309,000 from the TBA sale and pass along \$300,000 to the borrower at the closing, clearing a profit of \$9,000 or three points. (Nice business, huh ?)

If the originator wants to maintain a constant profit margin of three points, the rate he offers to the homeowner is purely a function of the Secondary MBS price he can receive. So while there is certainly a nice correlation between Treasury rates and Mortgage rates, at the end of the day, **if the FED wants to move the needle on the Primary mortgage rate, they need to lower the rate on the Current Coupon MBS bond.** [Notice that the price and value of premium MBS bonds is irrelevant.]

A plan to purchase \$500 billion in Par MBS bonds will be the most direct manner for the FED to lower the rate the consumer pays for a mortgage.

### A "Flatter" and Lower Yield Curve

	<u>Price</u>	<u>Yield</u>	<u>CPR</u>	<u>OADur</u>	<u>OACvx</u>
<b>FN 5s:</b>	109-00	0.85%	35%	0.46	-1.60
<b>FN 3s:</b>	104-00	2.35%	10%	5.15	-2.25

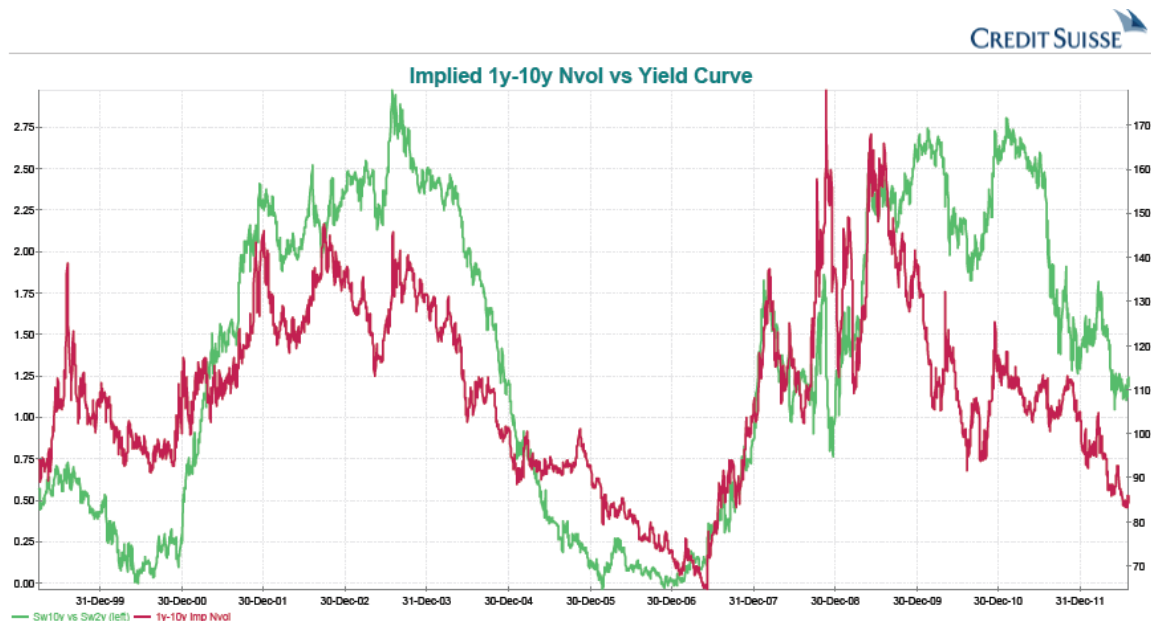
The risk indicatives above are sourced from CS Locus MBS Live for TBA bonds. And while one may quibble with the digits to the right of the decimal, there can be little debate about the integers to the left. Specifically, the effective duration of FN 5 is so low that many portfolio managers consider these bonds to be cash equivalents. On the other hand, FN 3s are extraordinarily interest rate sensitive and sport a hedge ratio of roughly 65% of the Ten-year swap rate.

Placing pencil to paper, in broad strokes, if the FED were to sell all of their FN 5s and re-invest the proceeds into FN 3s, the analytical replication on the Yield Curve vector would be similar to selling \$75bn Sw2s versus buying \$98bn Sw10s. With respect to the Duration vector, it would be similar to a net buy of nearly \$80 billion Treasury ten-year notes, large enough to soak up nearly all of the next four auctions. If the FED were to transact the complete program, that could absorb a full year's production of 30-year MBS bonds.

## Lower Implied Volatility

We will not insult your intelligence by detailing why swapping \$150 billion FN 5s for \$160 billion FN 3s would effectively be a huge Implied Volatility sale by the FED. Suffice it to say that the near-the-money option embedded in FN 3s is vastly more convex than the deep in-the-money option embedded in FN 5s. A back of the envelope calculation indicates that only swapping the FN 5 cohort could have the similar effect as selling \$25bn three year into ten-year straddles.

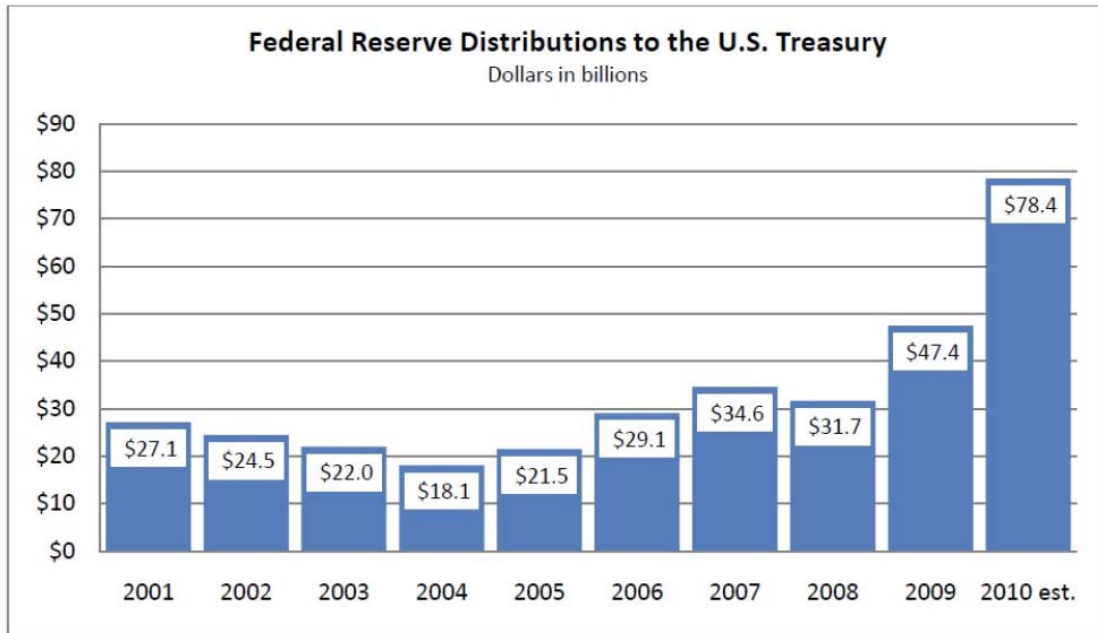
However, there is an additional impact that is not obvious at first blush. As we have detailed in past Commentaries, there is a strong correlation between the shape of the Yield Curve and Implied Volatility. Below, the **-mint line-** is the Sw10yr rate minus the Sw2yr rate. This is overlaid upon the 1yr into 10yr Implied Normal Volatility, represented by the **-persimmon line-**. Using our busy envelope, if a full implementation of **Operation Twist – Down in Coupon** were to flatten the Yield Curve by 25bps, that might lead to 5bp decline in Volatility.



## Increased FED Income remitted to the Treasury

In general practice, the FED is not an independent profit center; they remit net income gains to the Department of the Treasury. This income is budgeted and anticipated by the OMB when projecting the U.S. Budget. This income is generally a result of net interest income from securities held in the FED's System Open Market Account.

As detailed below, there has been a significant increase in distributions to the Treasury which coincides with the growth of the FEDs balance sheet.



Source of 2001-2009 data: 2009 Annual Report of the Board of Governors of the Federal Reserve System

The FED purchased their portfolio on the standard TBA basis. This means they do not know, *ex ante*, exactly which bonds they will receive. As one might expect, dealers tend to deliver the least valuable bonds in their inventory to fulfill their TBA commitments. These bonds will be the most negatively convex that tend to prepay quickly when rates decline. (This is why there is an active “specified pool” market.) So there should be no surprise that the FED’s holdings of FN 5s include quite a few securities issued in 2008, the fastest prepaying cohort.

	<b>FN 5s</b>	<b>1m CPR</b>	<b>3m CPR</b>	<b>6m CPR</b>
<b>2011</b>		9.3%	12.4%	10.7%
<b>2010</b>		19.4%	22.0%	22.4%
<b>2009</b>		22.8%	25.5%	26.1%
<b>2008</b>		<b>43.2%</b>	<b>43.2%</b>	<b>39.9%</b>
<b>2007</b>		40.0%	34.6%	34.2%
<b>2006</b>		31.3%	41.2%	38.9%
<b>2005</b>		26.8%	28.9%	29.3%
<b>2004</b>		24.3%	25.4%	26.1%

Source: Bloomberg

The **-violet table-** above shows how the 2008 issue year is presently prepaying at a much faster rate than the other cohort years. While it is unclear how the

FED accounts for prepayments when their cost basis is far below current market prices, what is undeniable is that FN 5s issued in 2008 are presently generating a negative economic return at prepayment speeds greater than 42%.

<b>FN 5s</b>	Wac = 5.65%	Wam = 26yr	Price = 109-00		
<b>25cpr</b>	<b>30cpr</b>	<b>35cpr</b>	<b>40cpr</b>	<b>45cpr</b>	<b>50cpr</b>
1.99%	1.44%	0.85%	0.22%	-0.46%	-1.19%

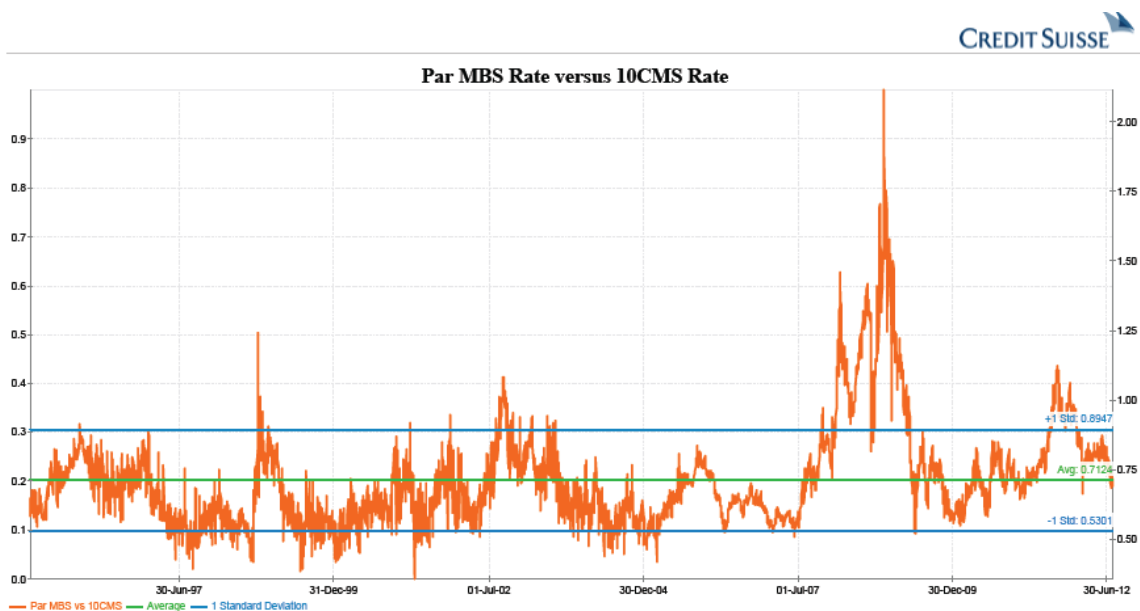
Source: Bloomberg

While one cannot generalize across their entire portfolio, a down in coupon trade from 2008 FN 5s to 2012 FN 3.5s would likely increase their static yield by nearly 250bps. A swap of merely \$50 billion would increase their economic return by over \$1 billion. While I have not called the OMB to ask their opinion, I assume they would appreciate the extra income.

### Increase the pace of Asset Substitution

Let's review the "Grand Plan" of the FED. First the FED "Helicoptered" money into the financial system. The subsequent decline in Monetary Velocity prompted them to:

- 1) Reduce the Funds rates to Zero;
- 2) Collapse the slope of the Yield Curve;
- 3) Collapse the level of Implied Volatility;



The clear purpose is to force monies out of the “safe” assets and into Equity, Credit and other “risky” business ventures thus increasing financial circulation and eventually inciting an increase in the inflation rate (their ultimate goal).

While many investors have moved their “safe” assets to greener (and more opportunistic) pastures, there is still a hard-core group of investors who are camped out in what is certainly the cheapest fixed-income asset that “cannot default”. While some pundits have referred to such investments at the “cleanest dirty shirt”, the fact of the matter is that MBS bonds are not rich on a historical spread basis. As shown by the **-tangerine line-** on the previous page, the spread of the constant maturity mortgage rate (CMM) versus the spot ten-year swap rate (10CMS) is presently only near its long-term average of 72bps. During QE1, at the peak of the FED’s program, the CMM vs. CMS spread contracted into the mid-50s. As such, there is room for a concentrated purchase program that could both lower and tighten the Par MBS rate to a level that is no more outlandish than the current Treasury ten-year rate of 1.45%.

There are only two ways out of a debt crisis, default or inflate (which is just a slow motion default). While the money supply has been tremendously expanded, it is not circulating. Since a fiscal solution has been placed out of bounds until after the election, it falls upon the FED to ramp up Velocity.

**Operation Twist – Down in Coupon** offers the FED the greatest possibility for success with the least political risk. It will simultaneously lower Rates, flatten the Yield Curve and reduce Implied Volatility, the critical components of risk. Moreover, the FED will directly target the Par Mortgage rate, the key driver of the Primary mortgage rate.

With any luck, the FED could clean up with a financial trifecta:

- 1) A refinance wave places “permanent” money into the consumer’s pocket;
- 2) Animal spirits are finally kindled as “real money” leaves safe assets;
- 3) A “no printing press” solution draws political praise from both sides.

If I could only think of a clever name for this program, it might work.

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