

The U.S. economy had been severely shaken by the subprime mortgage and credit crisis that peaked in 2008. The aftermath of the crisis is still upon us and has exerted a profound impact upon the domestic interest rate markets.

Many key interest rates have fallen to unprecedented lows as a result of the monetary and fiscal policies that have been initiated in response to the crisis. While rates remain very low, possibly for an extended period of time, volatility and risk remain evident. It is simply that the nexus of those interest rate risks have shifted farther "out on the yield curve."

This article summarizes the key events that have led to these market conditions and discusses the impact upon CME Eurodollar futures and option markets.

**Key Events** – In a dramatic response to the subprime mortgage and credit crisis, the Federal Open Market Committee (FOMC) declared on December 16, 2008 that they ... "decided today to establish a target range for the federal funds rate of 0 to ¼ percent ... [noting that] ... labor market conditions have deteriorated, and the available data indicate that consumer spending, business investment, and industrial production have declined. Financial markets remain quite strained and credit conditions tight. Overall, the outlook for economic activity has weakened further." <sup>1</sup>

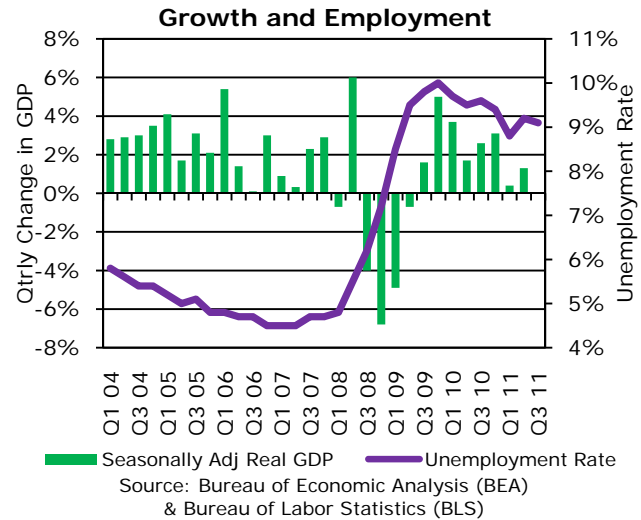
Still, the economy languished in recession with four consecutive quarters of negative GDP growth from the 3<sup>rd</sup> quarter 2008 through the 2<sup>nd</sup> quarter 2009. The nadir occurred during Q4 of 2008 when GDP was posted at -6.8%. Unemployment rates rose alarmingly to 10.1% by October 2009.

In response to loose monetary and expansive fiscal policies, the economy responded. GDP growth rebounded to a zenith of +5.0% by Q4 2009 while the unemployment rate declined to 8.8% by March 2011.

But the result was relatively short-lived and two and a half years later, the economy is backsliding. While still positive, GDP growth clocked in at an anemic +0.4% and +1.3% during the first two quarters of 2011. Similarly, unemployment rates have advanced to 9.1% by August 2011.

Fallout from expansive fiscal policies and a burgeoning budget deficit was realized on August 5, 2011 when Standard & Poor's announced that it had

"lowered ... [its] ... long-term sovereign credit rating on the United States of America to 'AA+' from 'AAA' and affirmed the 'A-1+' short-term rating ... [t]he downgrade reflects ... [S&P's] ... opinion that the fiscal consolidation plan that Congress and the Administration recently agreed to falls short of what, in ... [its] ... view, would be necessary to stabilize the government's medium-term debt dynamics." <sup>2</sup>



In further response, the Federal Open Market Committee (FOMC) issued a press release on August 9, 2011 which indicated its intent to maintain the target Fed Funds rate at the current level of 0 to ¼ percent "at least through mid 2013 ... [suggesting that] ... economic growth so far this year has been considerably slower than the Committee had expected. Indicators suggest a deterioration in overall labor market conditions in recent months, and the unemployment rate has moved up." <sup>3</sup> This represents an unprecedented action to the extent that the FOMC had never previously specified the time frame during which it would hold target Fed Funds at a particular rate.

**Shape of the Yield Curve** – Fed monetary policy has been quite consistent in their response to economic slowdowns or crises dating back to the mid 1980s. During his tenure as Fed Chairman from 1987 through 2000, Alan Greenspan consistently acted to inject liquidity into the system in response to episodes of market distress. These monetary actions often had the result of mitigating downside

<sup>1</sup> Federal Reserve Press Release (December 16, 2008).

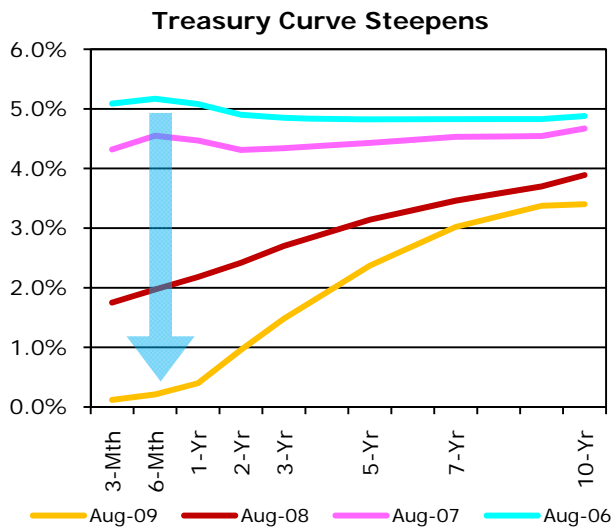
<sup>2</sup> Standard & Poor's Global Credit Portal Ratings Direct, "Research Update: United States of America Long-Term Rating Lowered to 'AA+' On Political Risks and Rising Debt Burden; Outlook Negative" (August 5, 2011).

<sup>3</sup> Federal Reserve Press Release (August 9, 2011).

price action, essentially putting a “floor” under the value of equities and other assets, much like the effect of a put purchase might have on the value of an investment portfolio.<sup>4</sup>

By the late 1990s, this pattern was sufficiently established that the term “the Greenspan put” was coined to refer to the characteristic response of the Fed to market episodes. Current Fed Chairman Ben Bernanke generally has followed suit with this pattern, giving rise to the term “Bernanke put” as well.

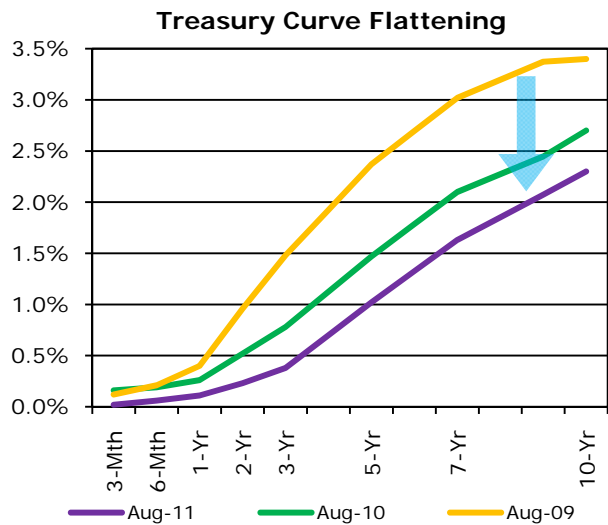
Thus, the yield curve has generally steepened, on an historical basis, as the Fed eased in response to economic weakness. The short end of the yield curve is, of course, anchored by Fed monetary policy. Certainly this was evident as the financial crisis emerged beginning with the decline in housing values in mid 2006. The target Fed Funds rate was slashed from 5.25% down to the current 0-0.25% level.



While short-term rates are anchored by Fed monetary policy, longer-term rates are generally driven by growth prospects and inflationary expectations. Long-term rates declined during the period from 2006 into 2009 but not nearly at the rate at which short-term rates were reduced. Hence, we witnessed a major steepening of the yield curve.

<sup>4</sup> Put options are frequently purchased in combination with long holdings in the underlying asset as a means of achieving protection against possible market declines. By buying puts, investors are assured that they may sell the asset at a fixed strike price regardless of how far the market should fall. In other words, puts provide a form of insurance against market declines.

Since the nadir of economic output was realized in late 2008 and early 2009, rates on the short-end of the yield curve have little room to decline. Still, the Fed’s quantitative easing or repurchase programs (QE1 and QE2) as well as the Fed’s announcement of September 21<sup>st</sup> that it would reprise a version of 1961’s “Operation Twist,” served to bid up prices of longer-term Treasuries, sending long-term rates lower. Paradoxically, while the subprime mortgage crisis originated in the U.S., investors worldwide continued to seek refuge by buying U.S. Treasuries in the face of other economic crises, notably the ongoing European sovereign debt situation.



Thus, the Treasury yield curve has flattened to some extent as longer term Treasury yields have retreated. By this writing in mid September, 10-year Treasury yields have fallen below the 2% mark.

**Eurodollar Calendar Spreads** – Eurodollar futures are often said to be a “mirror of the yield curve.” Note that Eurodollar futures are available extending out a full ten (10) years into the future. Unlike most futures contracts where volumes tend to be concentrated in the lead or nearby contract month, activity in Eurodollar futures is often most intense in deferred months.

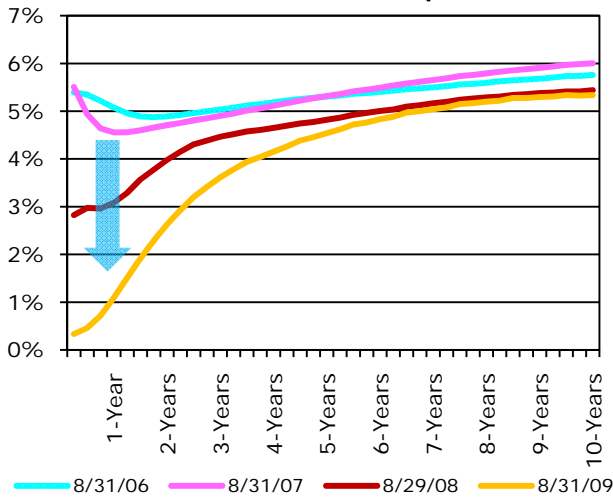
The explanation is that the short-end of the curve is anchored by monetary policy and the Fed takes pains to make their intentions known as a means of promoting economic stability. Thus, there may be little mystery in projecting the value of nearby Eurodollar futures. There may be progressively more uncertainty, risk management and speculative activity, as we move out the curve into deferred contract months.

This liquidity in back-month Eurodollar futures makes it viable to utilize the contract for purposes of taking an exposure to anticipated changes or offsetting risk due to changes in the shape of the yield curve. Specifically, by using calendar or intra-market Eurodollar spreads.

announcement to the effect that it intends to hold monetary policy stable until mid 2013.

CME Eurodollar futures provide an ideal outlet to take advantage of these movements with respect to the shape of the curve because of their unsurpassed depth and liquidity. In general, one may “buy the curve” or take advantage of a possible steepening of the curve by buying nearby futures and selling deferred Eurodollar futures. Position yourself to take advantage of a possible flattening or inversion of the curve by selling nearby and buying deferred Eurodollar futures.

**Eurodollar Curve Steepens**

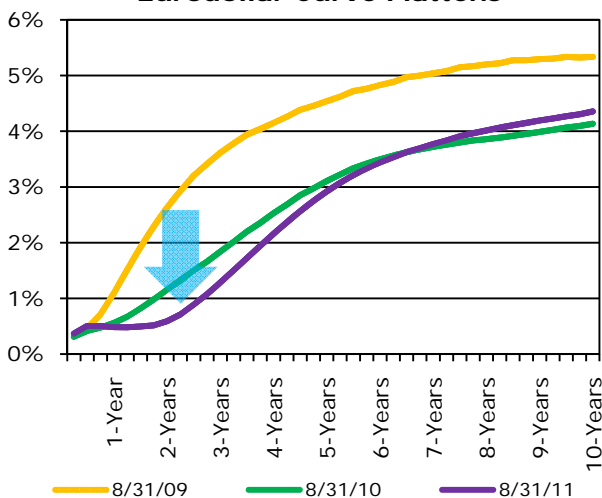


- Yield curve expected to steepen → “Buy the curve” by buying nearby and selling deferred futures
- Yield curve expected to flatten or invert → “Sell the curve” by selling nearby and buying deferred futures

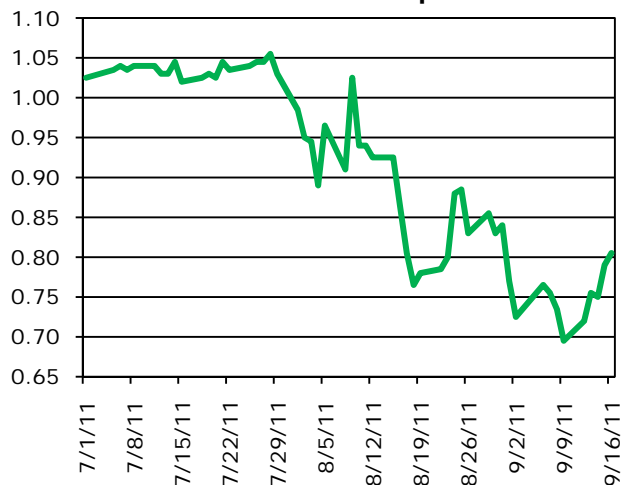
Of course, Eurodollars represent private credit risks as opposed to Treasuries which represent public credit risks. As such, the Treasury curve and the Eurodollar futures curve cannot be expected to move completely in sync. Nonetheless, it is evident that the Eurodollar curve steepened considerable from 2006 into 2009.

The spread between December 2014 and December 2013 Eurodollar futures narrowed 30 basis points (bps) as it moved from just over 100 bps to 70 bps between August and mid September 2011. Thus, profits would have accrued by selling the curve, *i.e.*, by selling December 2013 and purchasing December 2014 Eurodollar futures. Specifically, a profit of \$7,500 (=10 lots x 30 bps x \$25/bp) would have accrued by holding 10 short Dec-13 contracts and 10 long Dec-14 contracts.

**Eurodollar Curve Flattens**



**Dec-14/Dec-13 Spread**



More recently, the Eurodollar curve has flattened in the 0 to 2-year sector of the curve. This is, of course, largely a function of the Fed’s August 9<sup>th</sup>

In addition to Eurodollar futures calendar spreads, traders may further deploy CME options on Eurodollar futures, the most actively traded interest rate option in the world. In particular, traders have found Mid-curve Eurodollar options to be cost effective tools in managing risk and exploiting

opportunities. Mid-curve options are short dated options on Eurodollar futures expiring 1, 2, 3 and 4 years out on the yield curve, *i.e.*, a Dec-11 option on the Dec-13 underlying futures is referred to as a “green” Mid-curve option. Mid-curve options provide traders the unique opportunity to minimize risk exposure while capitalizing on changing shapes of the Eurodollar curve.

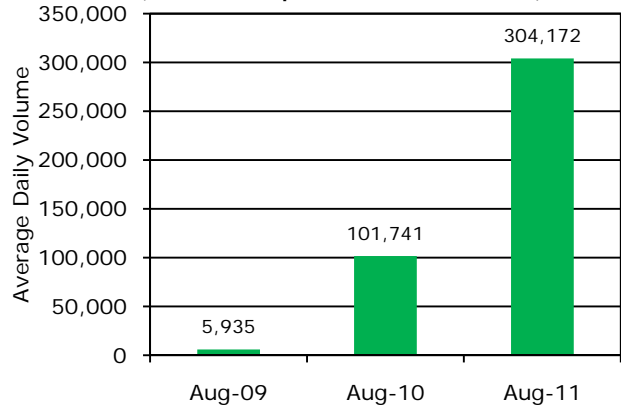
*E.g.*, a trader expects the spread between Dec-13 (at 99.18) and Dec-14 Eurodollar futures (at 98.45) to narrow from 73 bps (= 99.18 – 98.45). Our trader could act on this expectation by establishing a position consisting of a Mid-curve bear call spread on Dec-13 futures; and, a Mid-curve bull call spread on Dec-14 futures. This position provides limited downside risk in the event that the calendar spread should widen rather than narrow.<sup>5</sup>

Buy 99.50 Dec-13 Green Mid-curve Call  
 Sell 99.25 Dec-13 Green Mid-curve Call  
 Buy 98.50 Dec-14 Blue Mid-curve Call  
 Sell 98.75 Dec-14 Blue Mid-curve Call  
**Net Debit = 3 bps or \$75**

Holding the position until expiration in December 2013, if the Dec-13/Dec-14 calendar spread should narrow to 50 bps or less, a maximum gain of 22 bps or \$550 per spread will be realized (= 25 bps – 3 bps net debit at \$25/bp). If the spread should widen to 100 bps or more, a maximum loss of 28 bps or \$700 per spread is implied (= -25 bps - 3 bps net debit). Unlike a futures calendar spread which implies unlimited losses or gains, this strategy offers the advantage of limited risks as well as potential profits.

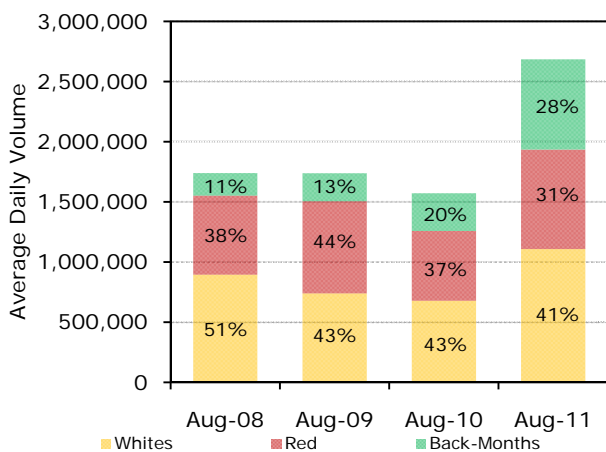
**Volume Shift** – At least for the moment, uncertainty regarding Fed monetary policy has largely been excised from the very shortest end of the yield curve as a result of the Fed’s August 9<sup>th</sup> statement suggesting that they expect to hold monetary policy steady until mid 2013. However, that does not imply that there are no risks implicit in the yield curve. Rather, it simply suggests that risks – and associated opportunities – are pushed “out on the yield curve” into back month Eurodollar futures.

**Green Mid-Curve Option Volume**  
 (Ex: Dec-11 Option on Dec-13 Futures)

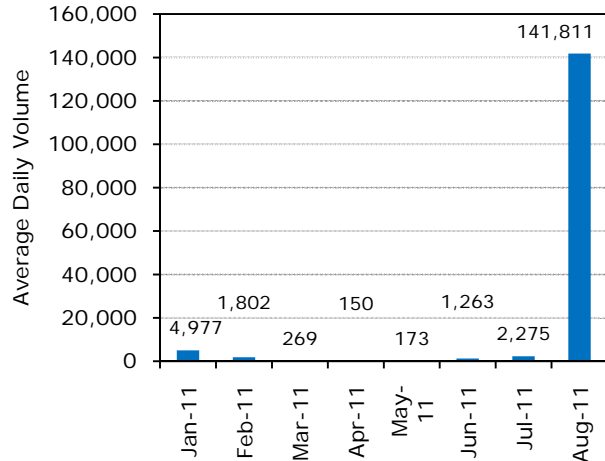


This shift or transference of interest from nearby to back month futures is quite evident when we examine volume trends in the market. In August 2008, some 51% of aggregate Eurodollar futures volume was recorded in the 1<sup>st</sup> year or in the “white” contract months. Some 38% of the volume was recorded in the 2<sup>nd</sup> year (“reds”) while only 11% of the volume was recorded in the “back-months” extending from 3 to 10 years out the curve.

**Eurodollar Futures Volume**



**Blue Mid-Curve Option Volume**  
 (Ex: Dec-11 Option on Dec-14 Futures)



<sup>5</sup> See [www.cmegroup.com/education/25-proven-strategies](http://www.cmegroup.com/education/25-proven-strategies) for additional information on this and other option strategies.

This pattern was substantially different by August 2011 when only 41% of the volume was recorded in the whites with some 28% moved into the “back months.” This represents a notional value of some \$800 billion in average daily volume (ADV), up from \$200 billion in 2008.

This pattern is observed in Eurodollar futures. But it is also apparent in an examination of Eurodollar Mid-curve option activity. Note that volumes have advanced dramatically in green and blue Mid-Curve options by August 2011.

**Concluding Note** – Interest rate markets continue to entail substantial investment risk. While the Fed appears intent on stabilizing monetary policy and anchoring the short-end of the yield curve, the longer-end of the yield curve continues to be driven fundamentally by growth and inflation prospects. We have ample reason to believe that uncertainties on those fronts will continue to roil the marketplace.

As a result, we have witnessed a shift or transference in opportunity and activity from nearby

to deferred Eurodollar contract months. This pattern is observed in Eurodollar futures but even more dramatically in Mid-curve Eurodollar options.

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