

The predominant Fixed-Income story over the past few years has been the concurrent flattening of the yield curve and the massive decline in both realized and implied volatility. Many factors have contributed, primarily:

- 1) A measured and transparent 425bp rate hike by the FED
- 2) An increase in hedging pension liabilities
- 3) Massive structured note issuance with embedded Yield Curve options
- 4) Asian Central Bank recycling of the US trade deficit

Due to various factors, detailed below, we foresee the potential for not only an increase in realized absolute rate volatility, but also more importantly, a significant increase in both realized and implied relative volatility along the yield curve (Spread Vol). As such, we strongly recommend the immediate purchase of yield curve options. Moreover, as supported by our economic view, the purchase of yield curve caps in the near future may be extremely profitable. Finally, if you have executed conditional steepeners, this may now be a more efficient way to gather exposure to a steeper curve.

Recommended Trades

Single Look Straddle, 100mm notional = \$10,000 per bp payout

CMS2yr vs CMS10yr straddle 1yr expiry @ 30bps; K = 28bp

CMS2yr vs CMS10yr straddle 2yr expiry @ 38bps; K = 30bp

CMS2yr vs CMS10yr straddle 5yr expiry @ 48bps; K = 31bp

Single Look Curve Cap, 100mm notional = \$10,000 per bp payout

CMS2yr vs CMS10yr cap 1yr expiry @ 15bps; K = 28bp

CMS2yr vs CMS10yr cap 2yr expiry @ 19bps; K = 30bp

CMS2yr vs CMS10yr cap 5yr expiry @ 24bps; K = 31bp

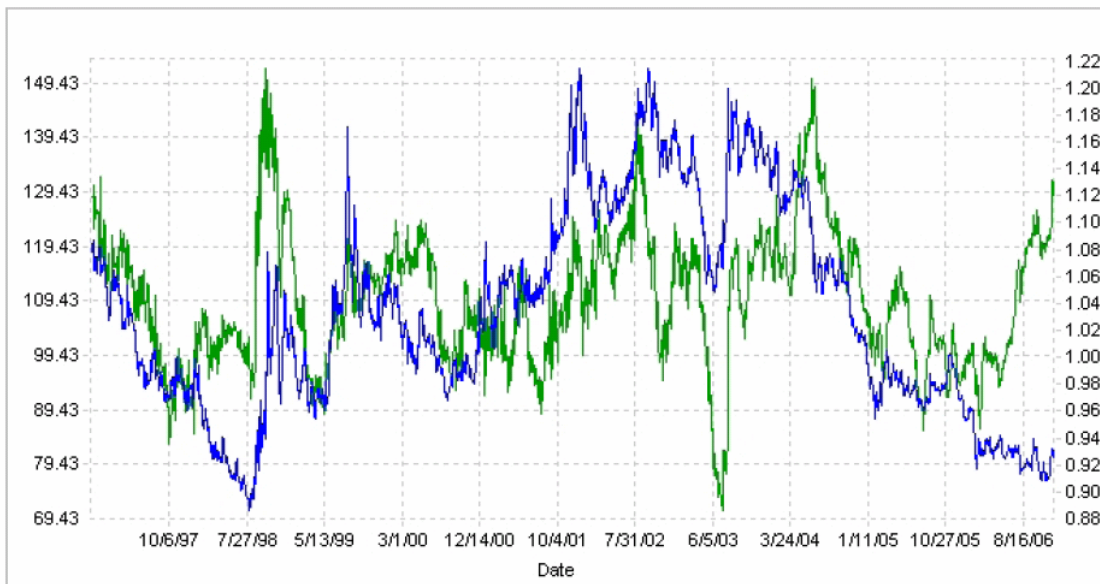
The chart below highlights a seeming disconnect between the “beta” of volatility tails versus the absolute level of Implied Normal Volatility (Ivol). The **green line – right** measures the ratio of 1y-2y Ivol versus 1y-10y Ivol. The **blue line – left** is the blended Ivol of 1y-2y and 1y-10y. Notice that sharp increases in this ratio are almost always accompanied by significant increases in the absolute level of volatility. This ratio bottomed at about 98% in late May and has since increased to 112% or 1.60 StdDevs above the long-term average, yet the absolute level of vol is almost unchanged at 81 Ivol. This is quite anomalous.

ML Analytical Plotting System



Comments:

Green right Ratio of 1y-2y Ivol divided by 1y-10y Ivol
 Blue left Blend of 1y-2y Ivol and 1y-10y Ivol

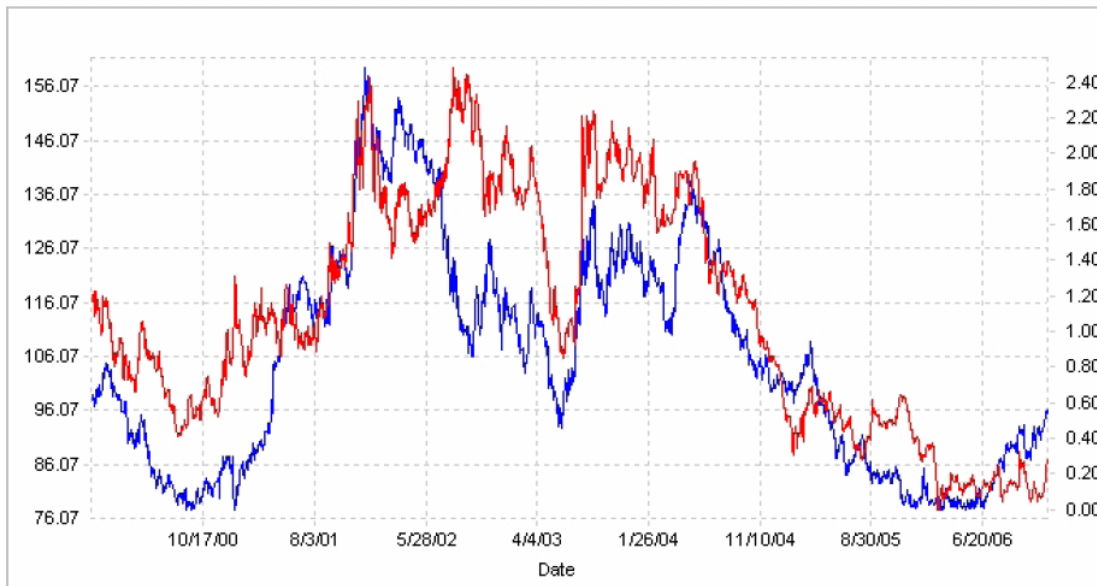


This next chart shows the strong relationship between the shape of the curve, **red line – right**, as measured by the difference between the spot 1yr rate and the 1yr forward 1yr rate, and the absolute level of 1y-2y Ivol, **blue line – left**. A PhD candidate could make the strong case that the absolute value of the shape of the yield curve, the level of credit spreads, and the level of implied volatility should all move in tandem since the RISK PREMIUM embedded in the duration, credit and convexity risk vectors should correlate in some grand manner. A simpler explanation may be that the “NET CARRY” across risk categories should equilibrate as “alpha seekers” allocate capital across various risky assets in search of excess return. But no matter which way you view the world, the current absolute curve level of 54bps is not at all consistent with an Ivol level of 86Nvol. The last time we had an absolute slope of 54bp, the Ivol level was closer to 100 Nvol !!! (If you are a Lognormal Vol user, then current the 18.5% should be closer to 23%.)

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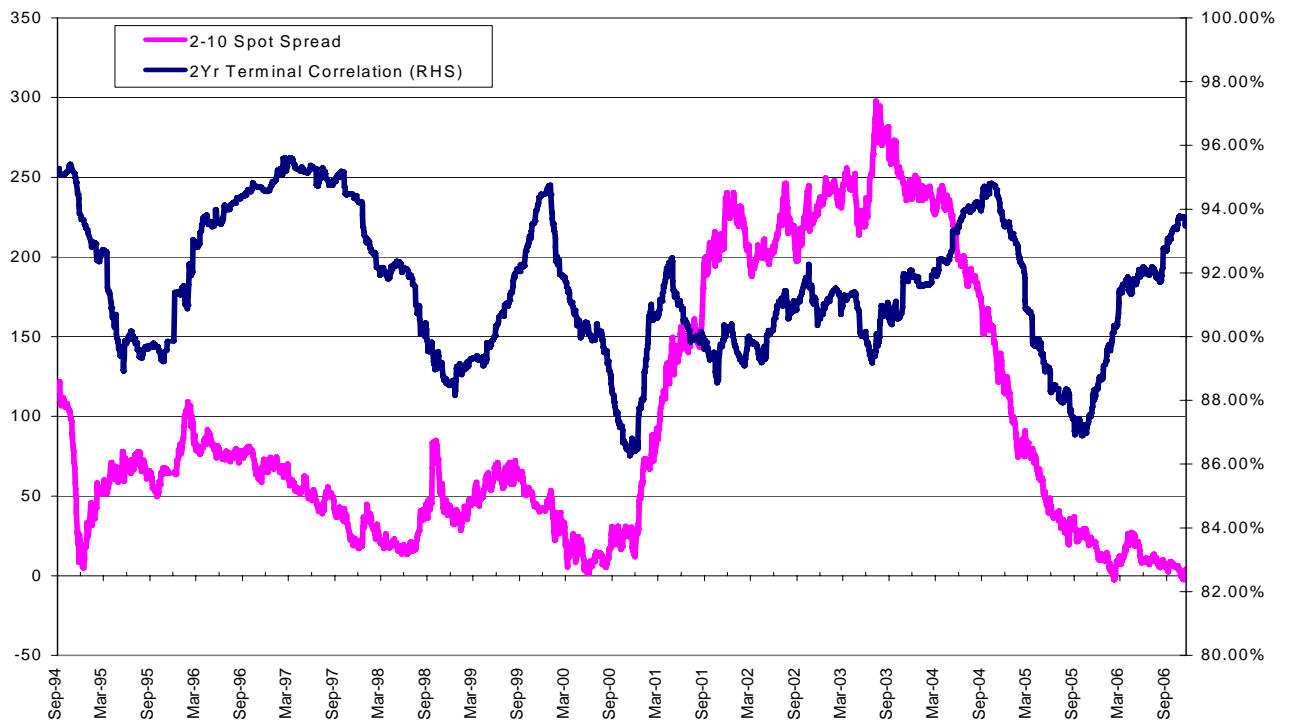
Comments:
 Blue right Absolute Curve Shape [1y rate 1y fwd minus 1y spot rate]
 Red left 1y-2y Ivol



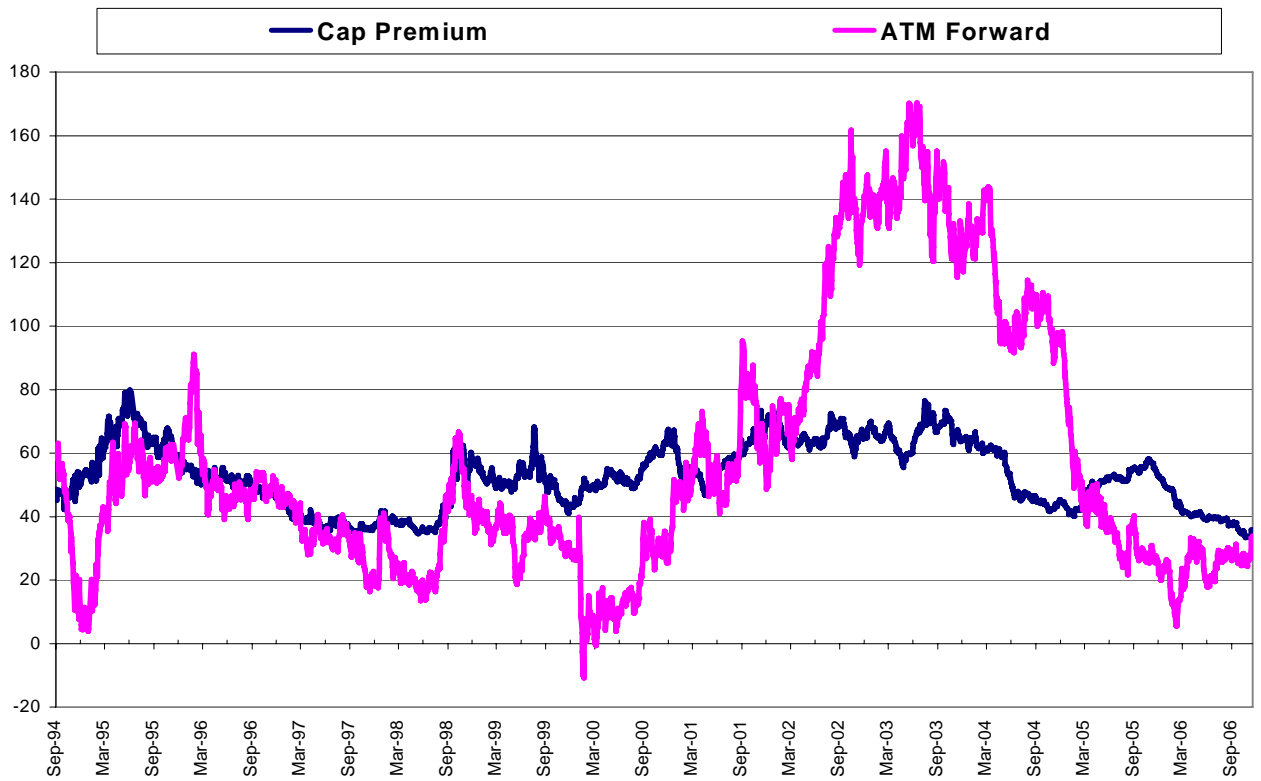
A quickie lesson in Spread Vol:

Spread Vol formula: $\text{SQR}[\text{Vol A}^2 + \text{Vol B}^2 - 2 \cdot \text{Correlation} \cdot \text{Vol A} \cdot \text{Vol B}]$

Do not become too tied up in the details. The bottom line is that Spread Vol will rise if either Vol A or Vol B rises or if the correlation of the two declines. We expect all of the above to occur. Look at the chart below. The **pink line - left** is the spot spread of CMS2yr vs CMS10yr. The **blue line - right** is the realized "walked" correlation of these rates. Correlations decline as the curve moves through an inflection point. With the spot curve resting at single digits, we are now peaking near the all-time highs in correlation. Since correlation is the key driver of Spread Vol, you would expect that Yield Curve options should also be near their all-time lows.....and you would be correct. (see final chart.)



Here, the blue line – left shows the mid-market straddle price for a two-year expiry CMS2y vs. CMS10y single look option. The pink line – left is the convexity-adjusted Forward Spread (the at-the-money strike). As expected, this Yield Curve option price is near its all-time low while the spread strike is at the lower edge of its range.



Additional Comments on Spread Options

As noted at the top of this discussion, there has been a massive issuance of structured notes with embedded yield curve options. This has created a tremendous inventory of spread vol for Wall Street dealers. To the extent that a measured FED and an aggressive pension community has exerted forces that have flattened the curve in a grinding fashion, the Street has had a difficult time distributing this risk. However, this is now creating a grand opportunity. Wall Street positions can exaggerate a situation when there are no other fundamental events to offset. However, when large fundamental changes occur, Wall Street positions will never be impactful enough to change the course of the market.

We are currently at an inflection point on many levels:

- 1) The relative level of the Bond market versus the Stock market;
- 2) The FED's rhetoric versus the recent economic data;
- 3) The shape of the yield curve versus the absolute level of lvol;
- 4) The "beta" of the vol surface versus both absolute and relative lvol.

Since buying Spread Vol is the MOST levered way to purchase volatility, we strongly urge you to purchase either straddles as an investment in volatility or caps as a powerful way to bet on a steepening curve over the next few years. The attached appendix provide additional Fundamental, Technical and Macro comments from the ML Strategy team to help you structure, time, and execute the optimal way to express your view.

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US Rates Strategy
December 8, 2006

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