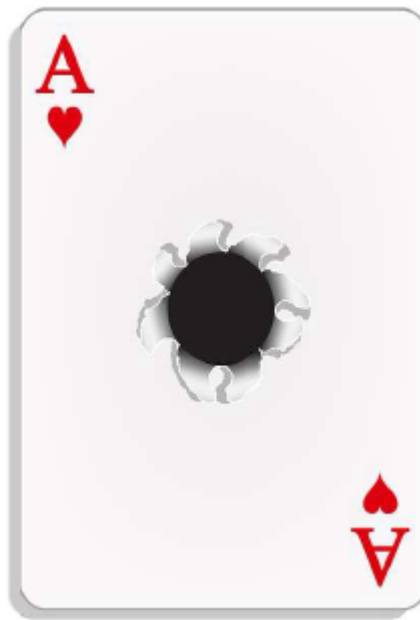


Convexity Maven

A Commentary by Harley Bassman

July 16, 2014

"Your Ace in the Hole"



While it is indoor work with no heavy lifting, professional investing is still a tough business where extra effort is required to materially exceed a benchmark. Which is why one should never sneer when offered a proverbial "Ace in the Hole" by the financial markets. Today's Commentary pulls the curtain back on the *Three to One Rule*, a trading opportunity that is well known by option nerds (a redundancy), but not so well advertised outside their ranks.

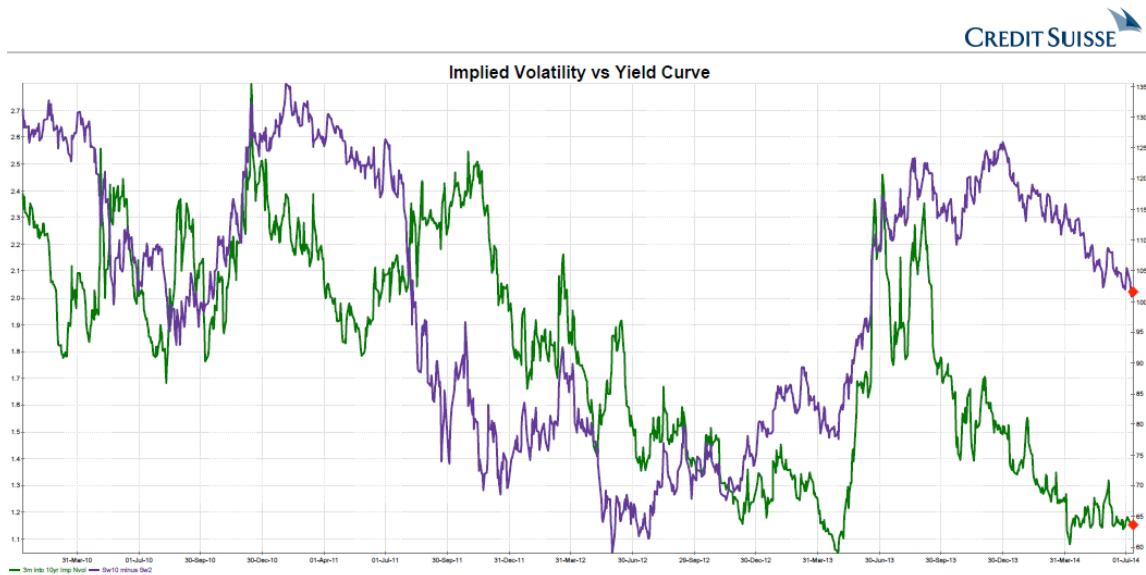
At its core, the *Three to One Rule* is a method to monetize the strong relationship between the relative proximity of an asset's Forward Price to its Spot Price and the Implied Volatility of an option on that asset. While it is not classic arbitrage, it often reveals an edge that can tilt the playing field; and that is often all one needs to bend the game in their favor.

Please do not parrot the notion that “Forward Rates are the market’s best guess of future interest rates”, I find this quite bothersome; no one paced the corner of Wall Street and Broad taking a poll. A Forward is simply the mathematical discounting of the Spot Curve to produce an “arbitrage free” price, no more, no less. That said, I will concede that the Spot Curve does contain meaningful information about how market participants value risk, as such, there is significant value to be gained by analyzing the shape of the Forward Surface.

When the Spot Curve is flat, the Forward Curve will also be flat at about the same level. However, when the Spot Curve gains some shape, Forward Rates diverge from Spot Rates. The steeper (or more inverted) the Yield Curve, the greater the distance between the Spot price and the Forward Price.

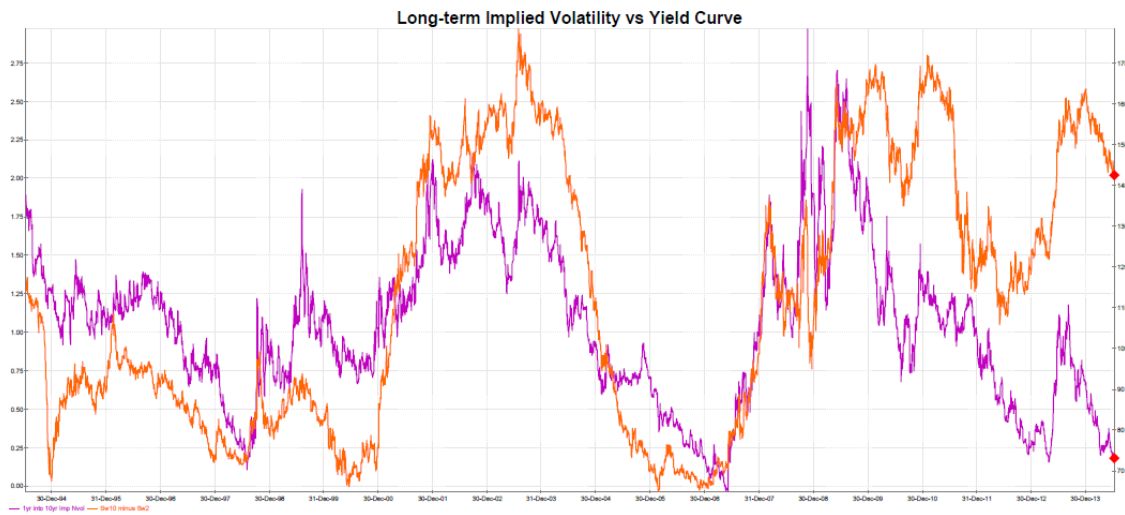
Until Brian Greene can find a wormhole into the Multi-verse, time can only travel forward, as such the future must become the present. With no consideration of whether the Forward grinds to the Spot or a Spot price heads to its Forward, a larger spread necessarily implies a greater uncertainty of the outcome. And since Implied Volatility tends to be a function of uncertainty (risk), option prices tend to rise in conjunction with a steeper (or more inverted) Yield Curve.

In the chart below, the **avocado line** is the 3m-10yr Implied Volatility while the **eggplant line** is the spread between the Sw10yr and Sw2yr rates.



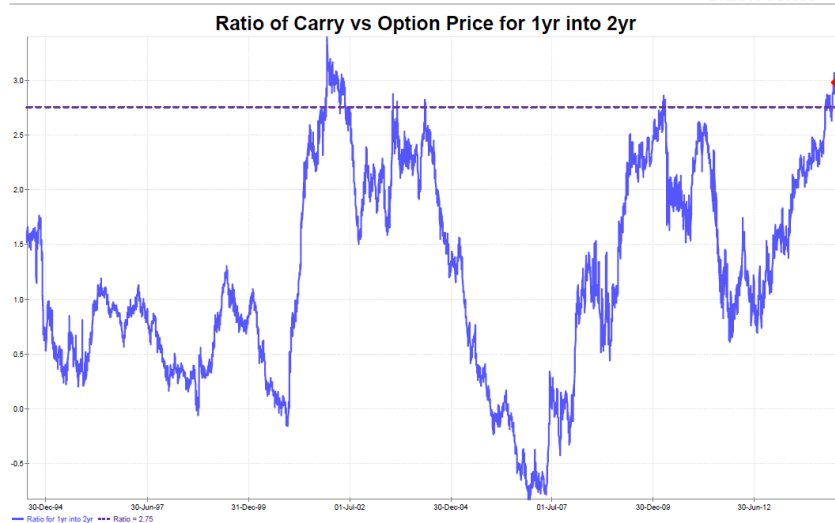
Notice how the start of “Taper Talk” in mid-2013 steepened the Curve and jumped Implied Volatility. What is anomalous is how the Curve has remained relatively steep while option prices have descended back to their cycle lows.

Taking the longer view over the past twenty years, the **orchid line** is the 1yr-10yr Implied Volatility while the **tangerine line** the Sw10yr vs Sw2yr spread. Again, notice the recent divergence in this decades-long relationship.



Described differently, the market is presently experiencing a wicked case of cognitive dissonance. The Sw10yr vs Sw2yr spread currently at 203bps in nearly a full standard deviation above its twenty-year average of 124bp. In contrast, the Implied Volatility of a 1y-10yr option at 73nv (nearing its all-time low) is 1.67 standard deviations below its average of 105nv.

From this dichotomy of risk vectors is the *Three to One Rule* born. Simply stated, the *Three to One Rule* is invoked whenever the cost of carry nears three times the option premium. The **periwinkle line** below is the ratio of one year of



“pure roll-down” versus the cost of a one-year swaption receiver option while the **-sgibeet line-** is set at a value of 2.75. [Three to one is great, but we usually consider 2.75 to 2.85 acceptable.] One might note that this is only the fifth time this ratio has exceeded 2.75 in twenty years.

While nifty charts make for good eye candy, they are usually insufficient to support a substantial investment, as such, let’s explore the fundamental underpinnings of this trading rule.

Let’s assume one has no opinion as to whether the Spot or Forward price will be realized in the future. So, if asked to weigh the odds of either outcome, the only rational guess is a “coin-flip”. Unless you can employ a trick coin, the fair pay-off for a “flip” should be 2 to 1. As such, it is completely anomalous that one can buy an option for a dollar that will pay out three if the rate structure remains unchanged. In essence, one is being offered a 3 to 1 payoff for a 2 to 1 risk. The option price is simply too low for the risk embedded in Yield Curve. It is this notion that underpins the usually tight correlation between the Yield Curve and Implied Volatility; and why pay-off ratios tend to remain below two to one.

Investment Implications:

There is rarely a free lunch, and these risk vector incongruities are here for a reason, *but there must be investment symmetry between the “value of risk” and the “price of risk”*; as such, this relationship must normalize, either by a flatter Yield Curve or by an increase in Implied Volatility. For investors who prefer not to buy options, the rational implication is to increase your exposure to Duration (extending out the Curve) while reducing your negative Convexity profile.

If buying options is in your tool kit, you should appreciate that the opportunity to take on a diversified set of 2 to 1 risks with 3 to 1 payoffs is similar to having an Ace in the Hole; it will not always win, but it sure tips the odds in one’s favor.

Buy 1yr into 2yr receivers @ 56bp, $K = 1.45\%$

One-year roll down = 82bp; $Dvo1 = 1.97$; Payoff ratio = 2.88x

Comments: This would be a fine replacement for “long greens”.

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