

Γγ

A Commentary by Harley Bassman:

THE CONVEXITY MAVEN

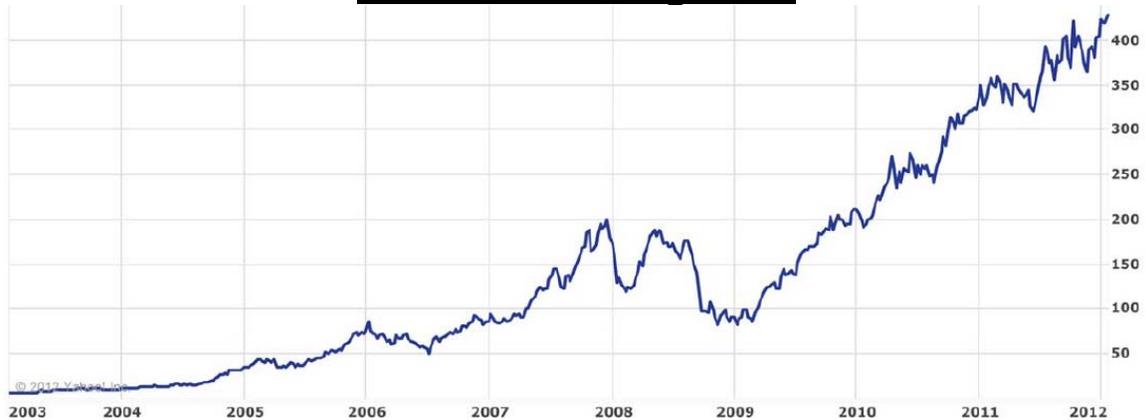
Not a Product of Credit Suisse Research
For Distribution to Institutional Clients Only

Value Concepts from the Credit Suisse Trading Desk
February 1, 2012

"Buying the Top....."



".....and Loving It !!!"



A Fable

Let us remind you of the fable of the Fox and the Scorpion. Once upon a time a Fox and a Scorpion met at the banks of a rushing river. The Scorpion asked the Fox if he would carry him across to the other side. The Fox demurred by noting that the Scorpion might kill him with a zap from his stinger. The Scorpion begged the Fox for a ride and noted that if he did sting the Fox as they crossed the river, they both would perish. After a moment of thought, the Fox agreed and the Scorpion hopped on the Fox's back for a ride across the river. As they reached the deepest part of the river, the Fox told the Scorpion to jump onto his snout for safety. Suddenly, as they neared the other side, the Scorpion jabbed his stinger deep into the Fox's nose fully injecting his poisons. Shocked, twitching and about to drown (and taking the Scorpion with him), the Fox gasped his last breaths as he asked the Scorpion why he had stung him. He simply replied, "I am a Scorpion; that is what I do."

And so might I summarize how many traders operate in the markets: They have their multi-variable spreadsheets scanning and screening for relationships that are two or three standard deviations away from their long-term means and execute countervailing trades to capture the eventual Reversion Towards the Mean (RTM). They are traders; this is what they do. The notion of "Buying the Highs" or "Selling the Lows" is antithetical to this type of investor. Yet before you reach the last page to this Commentary, we hope to convince you otherwise.

In a nutshell, we propose that the Zero Interest Rate Policy (ZIRP) of the FED, which has seemingly been guaranteed out to sometime in late 2014, has produced a paradigm shift that the markets have yet to fully appreciate. This paradigm shift creates the fundamental underpinnings of what we have previously advertised as our Best Rates Trade for 2012. So please keep an open mind as you read on and be prepared to buy the all time high, and love it.

I say Poe-tay-toe.....You say Poe-taa-toe

For as long as we have history, ten year expiry options, of any tail, have traded to a much lower Implied Volatility than three year (belly) expiry options. And this discount has not been insubstantial. In fact, long-expiry Volatility has generally priced 20% to 30% lower than belly Volatility. Most experts (in fact, all experts I have ever asked), have opined that this is because Interest Rates exhibit some sort of long-term RTM. In summary, since US nominal GDP tends to hover around 5%, we should expect the Spot Ten-year Treasury Rate to rotate around that level. Consequently, owning a long-dated option will never produce much terminal value since Rates will always be drawn back to that level.

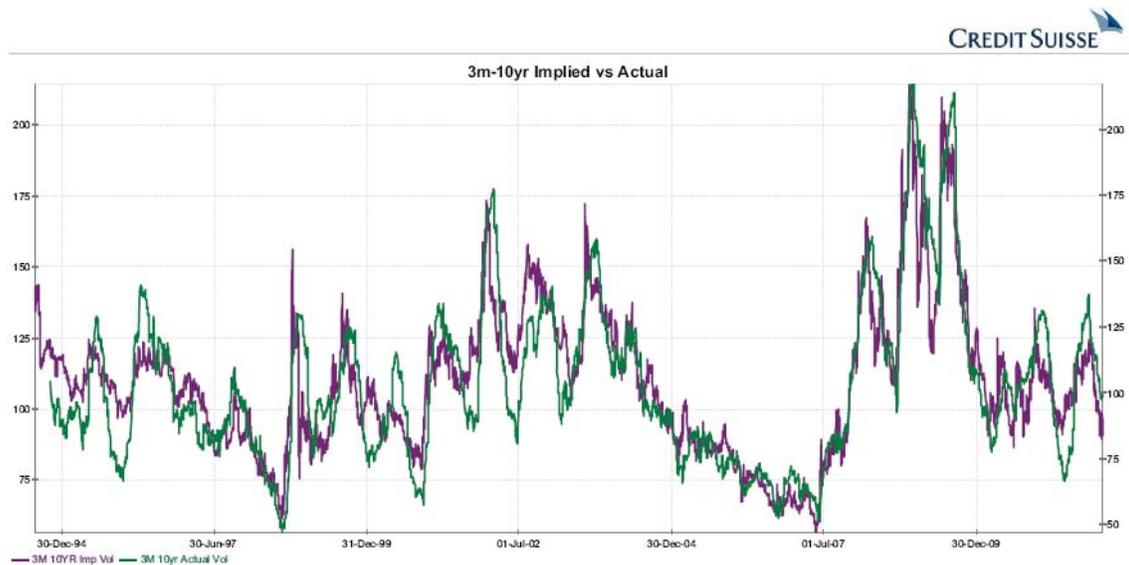
Moreover, since there is little mathematical Convexity (Gamma) in long expiry options, they cannot produce much non-linear hedge value; since this is one of the key virtues of owning an option, demand will always be tepid at best.

While this certainly sounds like a nice story, let me be the first to inform you that this hypothesis happens to be completely incorrect. While I will not dispute the possibility of RTM, it is of little relevance when trying to value an option.

So what might explain the large and persistent discount between long-expiry Volatility and belly-expiry Volatility? If not RTM, then what ?

As long time readers know, the key driver of Implied Volatility is always Realized Volatility. For while there is certainly a high correlation of Implied Rate Volatility to the Yield Curve, Credit Spreads, other risk measures such as the VIX, ultimately, Implied Volatility is the "rent one pays" to own the risk of Realized Volatility.

The chart below highlights the tight correlation between the **-violet line-** of Implied Volatility and the **-green line-** of its underlying Actual Volatility.



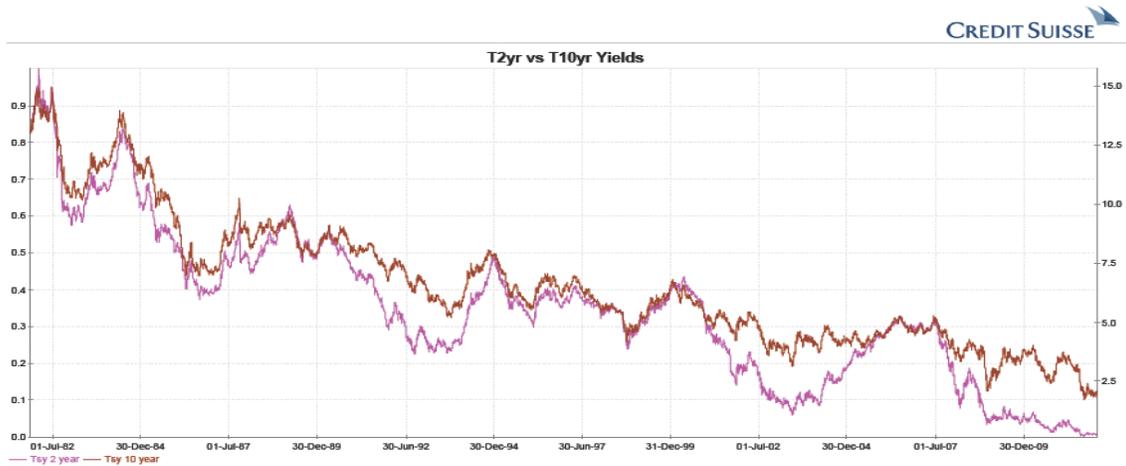
Once stipulated that Actual Volatility is the key driver to Implied Volatility, we can examine how this shapes the contours of the Volatility Term Surface.

When analyzing Volatility for a certain asset, one needs to examine its specific daily value movements. So a three month into Ten-year option should relate to the Actual Volatility of the Ten-year rate three months forward. This is because it is this Rate upon which one is buying an option. Similarly, one should consider the movements of the distant ten year forward Ten-year Rate when one trades

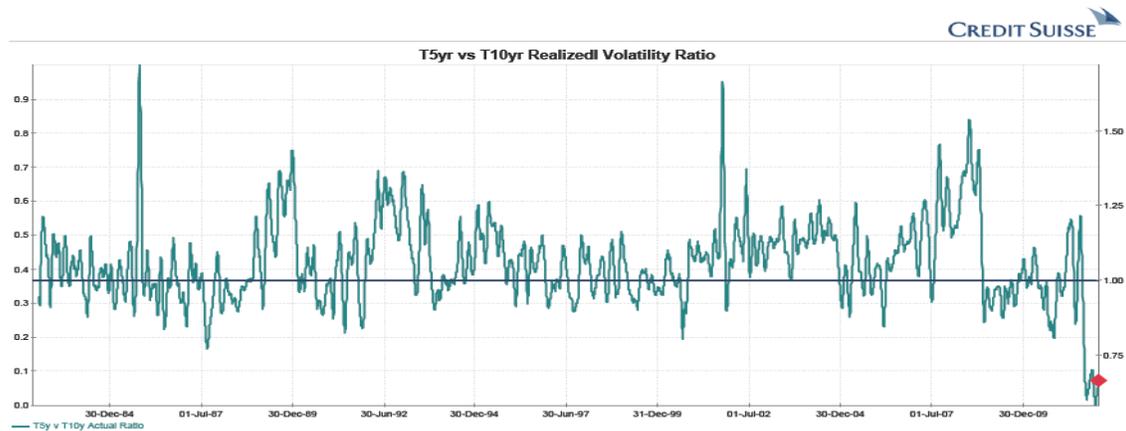
ten year into Ten-year options. While seemingly similar, the Actual Volatility of these two Rates can vary greatly.

Because of its proximity, the Volatility of the three month forward Ten-year Rate is nearly identical to that of the Spot Rate. However, the more distant Forward Rate is actually more dependent upon changes in the shape of the Yield Curve than in Spot Rate variability. This is because Forward Values are the creation of the discounting function. Now if the Curve moved in a parallel fashion, this discussion would all be for naught, but parallel transitions are rarely the case.

In the chart below, the **-pink line-** is the Treasury Two-year Rate while the **-maroon line-** is that of the Treasury Ten-year Rate. That the Two-year is more volatile is not random. At least since Paul Volker's time, the FED has used the Federal Fund's Rate as the key tool to affect Monetary Policy. As such, the FED has yanked the Overnight Rate up and down to achieve their desired effect.



These FED induced Rate vibrations then radiate out along the Yield Curve with diminishing amplitude. The result can be seen below where the **-teal line-** is the

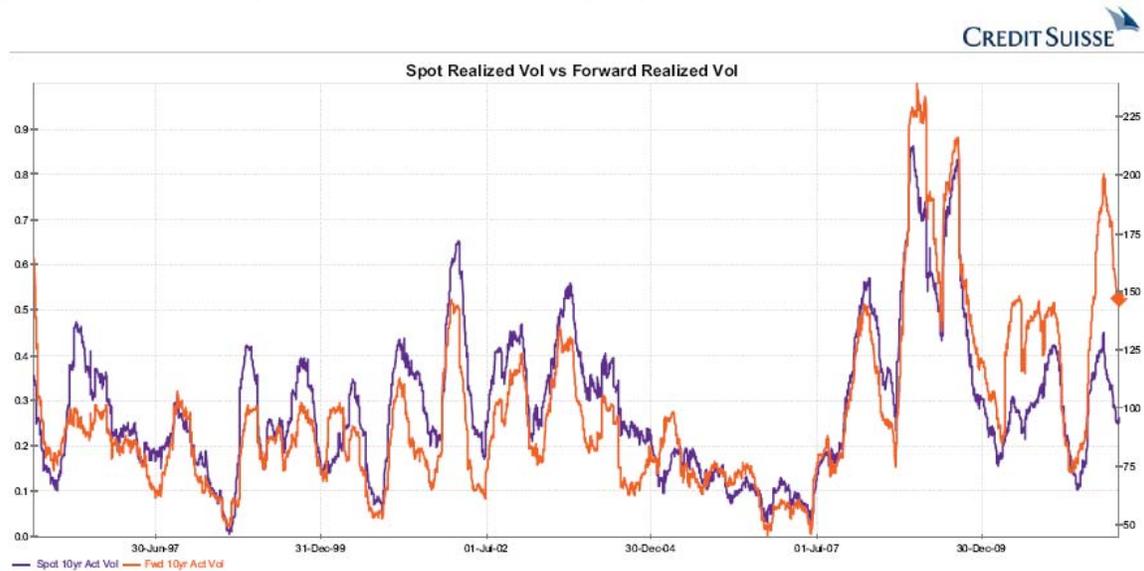


ratio between the Realized Volatility of the Treasury Five-year Rate and the Treasury Ten-year Rate. This ratio spends most of its time above parity with a long-term average of about 107%. While not shown here, this phenomenon continues out the Yield Curve where the Realized Volatility of the Ten-year Rate is usually greater than that of the Thirty-year Rate.

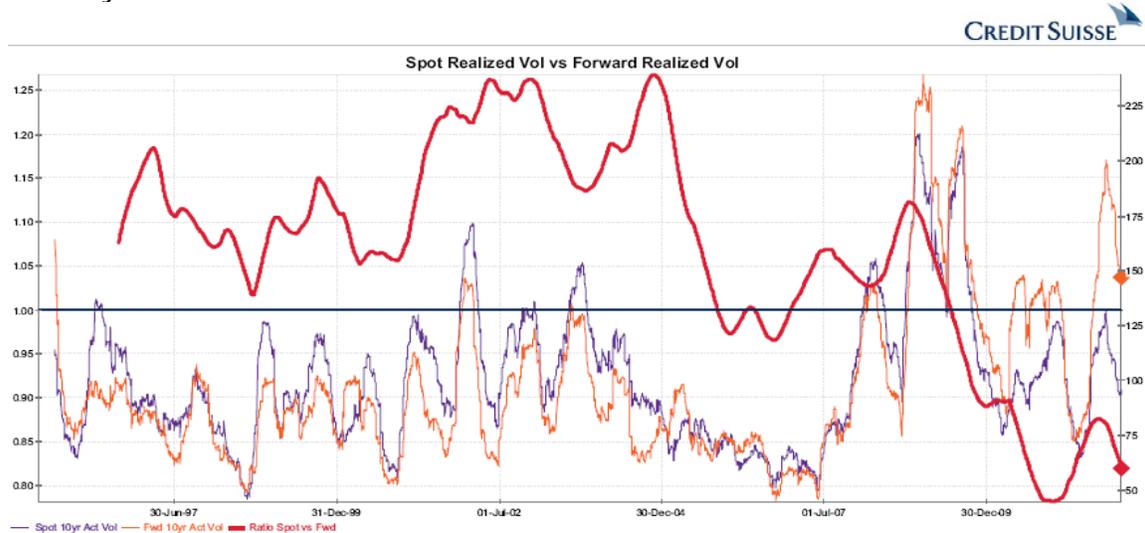
With this tidbit of market history tucked away, let's propose a theory and see if it foos to the facts. One of our pet peeves is the notion that Forward Rates somehow possess predictive powers. There is a plebeian believe that somehow Forward Rates are the market's best guess of the future, as if there was a Gallup Poll taken of all investors to determine their estimates of prices and values in the future. This is certainly not the case, no one chatted up those at Harry's Bar after the markets closed. *Rather, forwards prices are simply the back end of the discounting machine that produces the "arbitrage free" backbone for derivatives pricing.* As such, forwards are purely and solely a function of the Spot Curve.

Using simple bond math, we can assert that if the FED jammed the Funds rate up such that the Two-year increased by 100bps and the Ten-year increased by 50bps, the distant forward Ten-year rate would rise by much less than 50bps. Similarly, if the front-end declined in Rate by 100bps and the longer maturities decreased by 50bps, then distant Forwards would be lower by much less than 50bps. So if we can agree that the FED drives interest Rates, and that they impact short rates more than long rates, we can postulate that distant Forward Rates will be less volatile than spot rates.

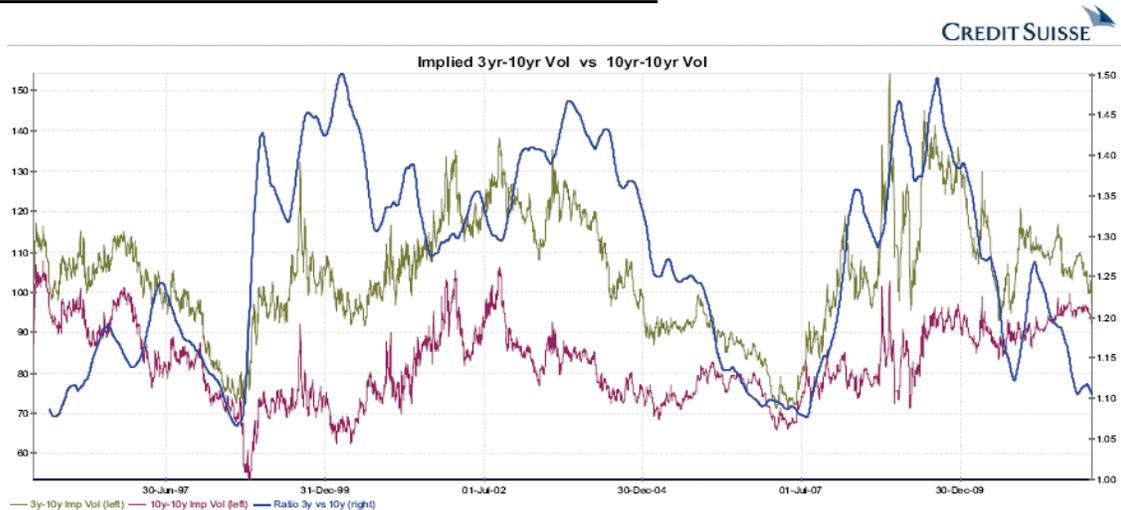
This seems to bear out. Below, the **-purple line-** is the Realized Volatility of the Spot ten-year Rate while the **-orange line-** is the Realized Volatility of the ten year forward Ten-year Rate. Until recently, Spot Rates have been more volatile



than Forward Rates. To summarize this relationship and prepare for the conclusion of our story, below we repeat the same chart but add the **-red line-** which is the one year moving average of the ratio of Spot to Forward Realized Volatility.

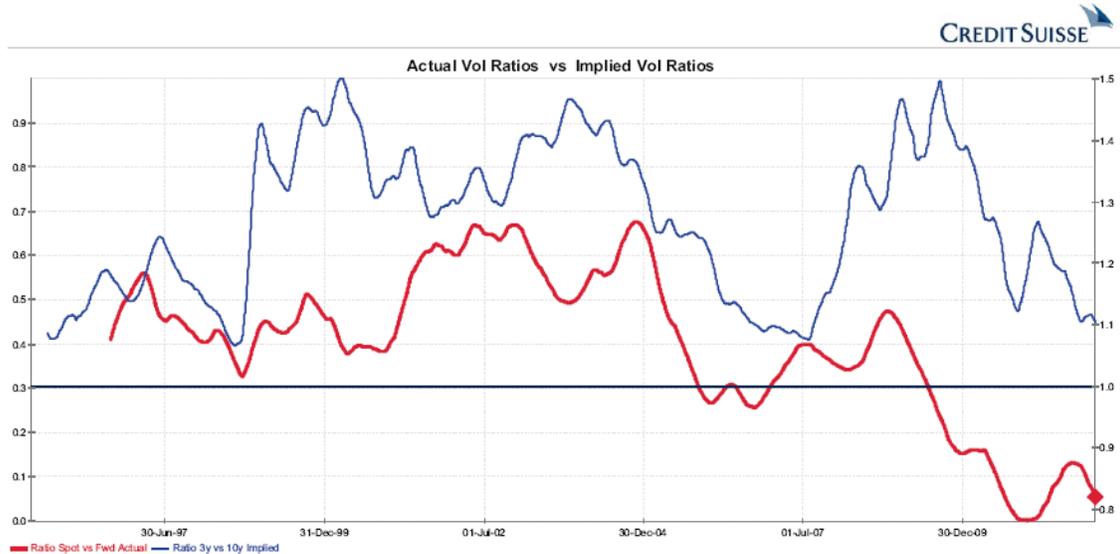


What stands out about the **-red line-** is how it only decisively crossed below parity after the FED slashed the Funds Rate to epsilon and declared the ZIRP. The secondary impact of this might surprise you. Harking back to the bond math that highlighted how distant Forward Rates would be less volatile than Spot Rates if the front-end led the markets, in contrast, distant Forwards become more volatile than Spot Rates if the front-end is pinned and the leading edge of the action is located further out the Yield Curve. This is now the case.



Now let's knit this story together to its conclusion. We noted earlier that the most highly correlated vector to Implied Volatility is Actual Volatility. Above, the **-olive line-** is the 3yr-10yr Implied Volatility while the **-magenta line-** is the Implied Volatility of a 10yr-10yr option. To simplify, the **-blue line-** is the moving

average of the ratio of the three year expiry option to the ten year expiry option. As promised, we will now bring the ~~red line~~ back for an encore and overlay it, below, upon the ~~blue line~~. To no surprise, in broad strokes, the Implied Volatility relationship follows the Realized Volatility relationship.



This is where it becomes interesting. Over the past year, the Implied Volatility ratio is refusing to follow the Actual Volatility ratio. This type of situation is not uncommon. There are plenty of times where investors in options sniff out a Black Swan in flight and fight the local trend. However, this is a case of misplaced anxiety. Not only did the FED promise last summer to keep Rates low (ZIRP) until mid-2013, but last week they indicated it may last until late 2014. To underpin that front-end anchor, they furthermore instituted “forward guidance” to provide a “heads up” for the eventual Rate increase. This rock solid anchor of the Fund Rate will unequivocally translates into an increase in the Realized Volatility of distant Forward Rates relative to the Volatility of Spot Rates.

Presently, 10yr into 10yr Implied Volatility is trading about 6% below 3yr into 10yr Implied Volatility. This is occurring despite the fact that the ratio of Actual Volatilities for the underlying Rates is 8% in the other direction, a 14 percentage point spread.

Under ordinary circumstances, it would not be unreasonable to assume that the cycles of the market will turn. In fact, a simple look that the last few charts could easily lead one to conclude that the five to seven year churn we have seen over the past twenty years is due for a twist. *Nonetheless, the FED is in no mood to let the natural process of the business cycle cure our national economic fever. The monetary equivalent of leeches will be applied to the economy via the relentless printing of fiat currency and the promise of negative interest rates until the FED harmonizes Auld Lang Syne in 2015.* As such, the Actual volatility

of distant Forward Rates will exceed that of Spot Rates for at least the next three years. To think otherwise is to engage in a futile battle against the FED.

My Favorite Trades:

Sell 100mm USD 3y into 15r payer strike = 4.00%

Buy 100mm USD 10y into 15r payer strike = 5.00%

Initial cost = 130bps, *one year pure roll down carry = +150bps*

Initial Delta = +10mm 10yr, one year forward = +2mm 10yr

Initial Vega = +36k / nv, one year forward = +53k/nv

or

Sell 100mm EUR 3y into 10r payer strike = 3.50%

Buy 100mm EUR 15y into 10r payer strike = 3.50%

Initial cost = 125bps, *one year pure roll down carry = +160bps*

Initial Delta = +12mm 10yr, one year forward = +3mm 10yr

Initial Vega = +37k / nv, one year forward = +55k/nv

Profiting from Stubbornness

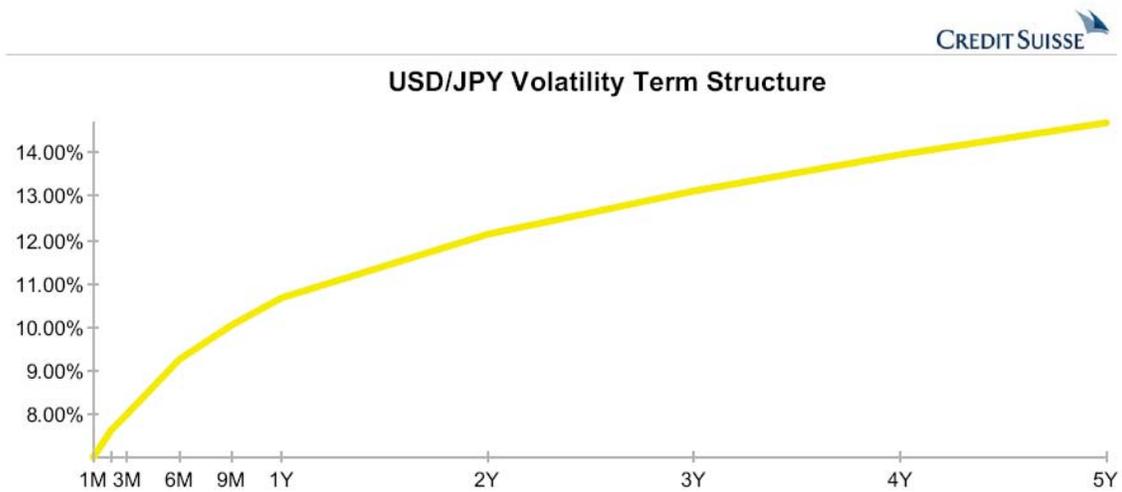
This is where we must confront the stubbornness of traders, and here we have two types of naysayers. The first group is the sort we described at the outset – those who screen for investments that are at the outer limits of their historical ranges and then execute countervailing trades. These investors are paralyzed from considering trades that involve “Buying at the Top”. While I must admit that this rule does have some merit, ultimately one must consider the risk process in its entirety. For although the discount of long expiry options to belly options is the most compressed it has ever been, **I will state for the record that come this time next year, this spread shall be inverted.** As the pressures of “Monetary Repression” increase, short-dated risk will decline at the cost of an increase in more distant uncertainty. As such, two and three year expiry options, presently the peak of the Volatility Surface, will compress and bend to the will of the FED. On the other hand, as the final denouement becomes more opaque, the demand for forward starting hedges will increase. The functional result of both trades is the purchase of a seven year payer option, three years forward, for the nominal cost of not much greater than a point.

While “Buying at the Top” is certainly uncomfortable, and certainly a hard sell to your boss, I would suggest you consider how difficult it might have been to buy various popular Tech stocks after they had decapulated, only to double again.

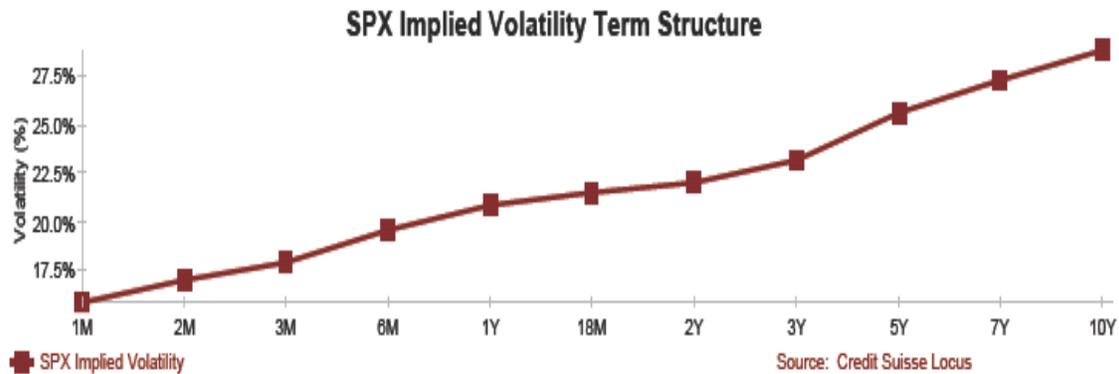
The other naysayers are the ones who will stipulate that while the fundamentals may be correct, the concept of RTM overwhelms all other vectors, and as such, the trade will ultimately be a loser.

My retort is two fold. First, it was never RTM that created the discount in longer dated options, it was the fact that the distant forwards were just much less volatile as a result of the implementation of FED policy. However, a now quiescent FED will remove that dampening and reshape the Volatility Surface.

Second, if RTM could contain USD long-dated Rate movements, then why should we not witness a similar profile for the Term Volatility of USD FX crosses ? Below, the **-yellow line-** represents the Volatility Surface for the US Dollar vs. Japanese Yen exchange rate.



Not to digress too much, but the FED's ZIRP has had a similar impact (for different reasons) on Term Equity Volatility; see the **-rust line-** below.



A Summary

- 1) To repeat my Mantra: The only solution is Inflation; as such, we will have inflation, the only question is will it be six months or six years;
- 2) The FED will use all tools available to them to implement "Financial Repression", the result of which is negative real interest rates to encourage spending, and finally, create the long awaited increase in Monetary Velocity;
- 3) Bernanke will hold office until 2014, as such, there is little risk his plans will be derailed;
- 4) An anchored front-end will increase Volatility in distant Forward Rates;
- 5) A Repressed Financial System will create increased uncertainty in the future as the markets speculate as to the date the "controls" will end;
- 6) An inverted Volatility Surface indicates that Forward Volatility can be purchased at a discount to Spot Volatility;
- 7) Both ideas "carry" on a pure "roll down" basis at about 150bps per year. This is unheard for a trade that is not notionally "Naked Short" options;
- 8) There are plenty of markets where the Term Surface is significantly positively sloped. The Fundamentals and the Technicals both point to a complete reshaping of the Rates Term Volatility Surface.

Finally, if you believe I think ill of the naysayers, you are mistaken. Considering the fact that all signs are clearly pointing to a massive increase in demand for both positive carry and forward risk insurance, these trades would not be available without the naysayers betting to the contrary. Like the Scorpion, it is their nature to "Sell the Top" that blinds them to the impact of the FED's ZIRP.

To be clear, I would not advocate "Buying the Top" as a career enhancing strategy. Moreover, I am none too fond of "Trend Momentum" investing. Nonetheless, there are times when today's offer-side will surely become tomorrow's bid-side;

Do not be afraid to "Buy the Top".

Harley S. Bassman
Credit Suisse US Rates Trading
February 1, 2012



Important Note to Investors

This material has been prepared by individual sales and/or trading personnel of Credit Suisse AG or its subsidiaries or affiliates (collectively "Credit Suisse") and not by Credit Suisse's research department. It is not investment research or a research recommendation for the purposes of FSA rules as it does not constitute substantive research. All Credit Suisse research recommendations can be accessed through the following hyperlink: <https://s.research-and-analytics.csfb.com/login.asp> subject to the use of approved login arrangements. This material is provided for information purposes, is intended for your use only and does not constitute an invitation or offer to subscribe for or purchase any of the products or services mentioned. Any pricing information provided is indicative only and does not represent a level at which an actual trade could be executed. The information provided is not intended to provide a sufficient basis on which to make an investment decision. Credit Suisse may trade as principal or have proprietary positions in securities or other financial instruments that are the subject of this material. It is intended only to provide observations and views of the said individual sales and/or trading personnel, which may be different from, or inconsistent with, the observations and views of Credit Suisse analysts or other Credit Suisse sales and/or trading personnel, or the proprietary positions of Credit Suisse. Observations and views of the salesperson or trader may change at any time without notice. Information and opinions presented in this material have been obtained or derived from sources believed by Credit Suisse to be reliable, but Credit Suisse makes no representation as to their accuracy or completeness. Credit Suisse accepts no liability for loss arising from the use of this material. Nothing in this material constitutes investment, legal, accounting or tax advice, or a representation that any investment or strategy is suitable or appropriate to your individual circumstances. Any discussions of past performance should not be taken as an indication of future results, and no representation, expressed or implied, is made regarding future results. Trade report information is preliminary and subject to our formal written confirmation.

CS may provide various services to municipal entities or obligated persons ("municipalities"), including suggesting individual transactions or trades and entering into such transactions. Any services CS provides to municipalities are not viewed as "advice" within the meaning of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. CS is providing any such services and related information solely on an arm's length basis and not as an advisor or fiduciary to the municipality. In connection with the provision of the any such services, there is no agreement, direct or indirect, between any municipality (including the officials, management, employees or agents thereof) and CS for CS to provide advice to the municipality. Municipalities should consult with their financial, accounting and legal advisors regarding any such services provided by CS. In addition, CS is not acting for direct or indirect compensation to solicit the municipality on behalf of an unaffiliated broker, dealer, municipal securities dealer, municipal advisor, or investment adviser for the purpose of obtaining or retaining an engagement by the municipality for or in connection with Municipal Financial Products, the issuance of municipal securities, or of an investment adviser to provide investment advisory services to or on behalf of the municipality.