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A Commentary by Harley Bassman:

THE CONVEXITY MAVEN

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Value Concepts from the Credit Suisse Trading Desk
May 21, 2012

"A Delicious Gift from the FED"

The primary tool the FED uses to meet its dual mandate of low unemployment and stable prices (inflation) is the adjustment of short-term interest rates via the FED Funds target level. As the FED raises and lowers this key overnight rate, its level is supposed to radiate out the Yield Curve to either add to or subtract from the economy's "Animal Spirits".

However, as the FED Funds rate reached zero near the end of 2008, the FED needed to dig deeper into its quiver to find additional tools to support the economy. Thus was born the notion of Quantitative Easing whereby the FED purchased securities well past the typical 0 to 30 day maturity to systematically grow their balance sheet and pump longer-term liquidity into the system. [Note: One may consider Operation Twist as a subset of QE policies]

While one can debate whether QE is a long-term inflationary event, what is indisputable is that unless these funds circulate within the system, QE will not be effective. This notion of "Velocity" is what underpins the classic Monetarist equation:

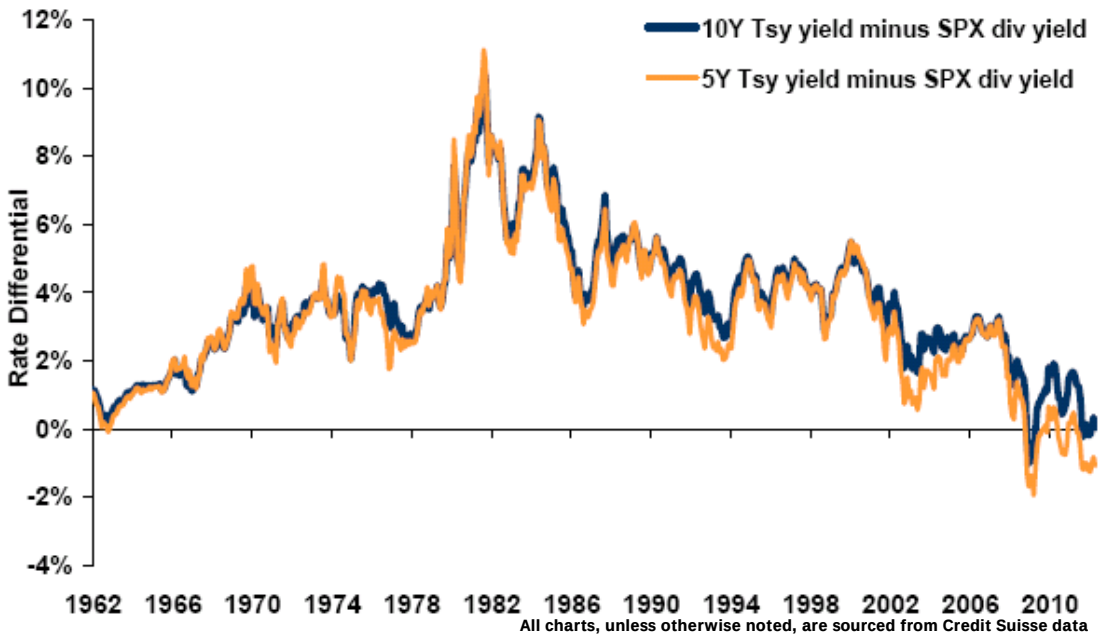
$$M*V = P*Q = GDP$$

Velocity is a difficult variable to measure and is usually discovered via induction, that is, if we know the supply of money and we know the size of the economy, we can deduce the velocity required to balance the equation. The goal of QE is to lower rates to such a level that investors move their funds out of safe Treasury bonds and Agency MBS and into other investments, such as equities, corporate bonds, CMBS, direct real estate, commodities, start-up business ventures, etc. In short, any investment vehicle that will circulate funds and increase Velocity. Multiple Government policies enacted in concert to create greater monetary pressure than what is required for the usual short-term financial adjustments is often referred to as Financial Repression. While these coercive policies can often be justified by various exigent circumstances, invariably there are unintended consequences.

Notwithstanding this introduction, our focus here is not a lesson in economics, but rather the incredible investment opportunities presently available as a result of the FED's QE policies. These relatively vanilla ideas owe themselves almost completely to the magic of QE and will vanish back into the financial ether when the heavy hand of Financial Repression is lifted.

Rate Differentials

What undergirds all financial market analysis is the concept of "Arbitrage Free" Forward pricing. This is the process of discounting forward (or anticipated) cash flows at the appropriate "risk free" interest rate.



All charts, unless otherwise noted, are sourced from Credit Suisse data

The chart above shows the first interesting outcome of QE: For the first time since the 1950s the Treasury Five year rate –the gold line- is below the dividend yield of the S&P 500 stock index. Moreover, as a result of Operation Twist, the current S&P dividend rate –the navy line- now cleanly exceeds the Treasury Ten year rate.

Why is this important? The arbitrage free forward price of the S&P is created via the rate differential of the expected dividend rate and the matched-term risk free rate. An S&P dividend rate above the Treasury rate creates a forward S&P price that is LOWER than the spot price. In the first lines below, notice how an S&P forward agreement is presently valued 7.8% lower than spot in five years

Current	Spot	Implied Div	Interest Rate	Forward	Chg from Spot
5Y Fwd	1305	2.83%	1.10%	1203	-7.82%
10Y Fwd	1305	3.19%	1.90%	1156	-11.42%
+100bps					
5Y Fwd	1305	2.83%	2.10%	1266	-2.99%
10Y Fwd	1305	3.19%	2.90%	1279	-1.99%
+200bps					
5Y Fwd	1305	2.83%	3.10%	1332	2.07%
10Y Fwd	1305	3.19%	3.90%	1417	8.58%
+300bps	Spot				
5Y Fwd	1305	2.83%	4.10%	1403	7.51%
10Y Fwd	1305	3.19%	4.90%	1571	20.38%

Sourced from Credit Suisse data

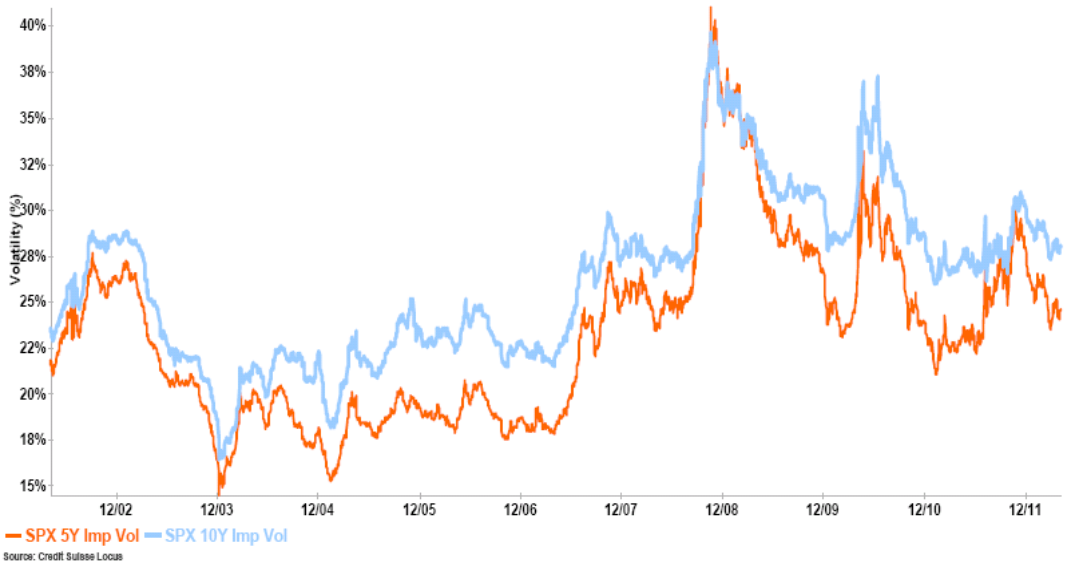
and 11.4% lower than spot in ten years. As a preview, consider how lower Treasury Rates decrease the forward price of the S&P thus making fixed strike calls cheaper and puts more expensive. This will soon become a valuable insight.

Elevated Long-dated Volatility

The VIX index is the benchmark measure of Implied Volatility for the stock market. Similar to our famous CIRVE Index for Rate Volatility, the VIX is basically the Implied Volatility for one month options on the S&P Index. Over the course of time, the VIX has recorded an average index level of about 21 versus the slightly lower Realized Volatility of the S&P of about 19. This 10% "premium" of Implied over Realized is fairly standard for options across most liquid markets. It reflects a mixture of the non-linearity of the payout function with the fact that investors are risk averse (as opposed to being mathematically risk neutral).

This brings us to the second risk vector that has been distorted by QE.

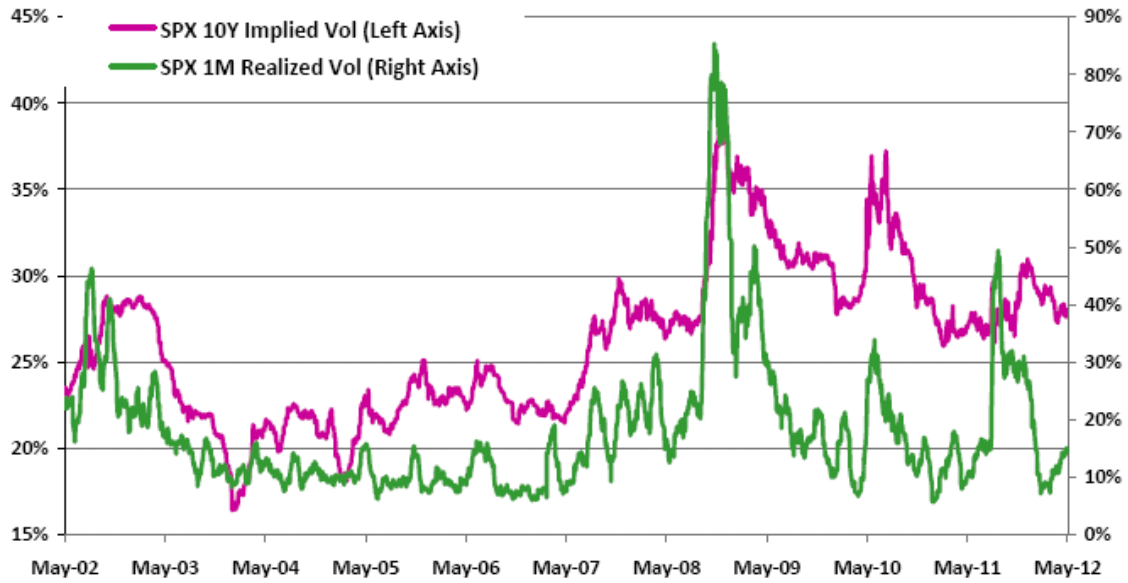
The VIX is a short-dated measure that captures the near-term relationship of fear versus greed. And while the VIX is more famous, an equally informative risk measure is what one might call the "Long-dated VIX". This would be the implied Volatility for –the tangerine line- five year expiry and –the turquoise line- ten year expiry options on the S&P.



One might expect these measures to hug closely to the long-term Realized Volatility of the S&P, and this was true until the FED embarked upon its path of

Financial Repression. For while the VIX, as expected, will be super sensitive to short-term risk events, both anticipated and realized, ultra long expiry options should not be impacted too much without a significant paradigm shift. During the five years preceding the demise of Bear Stearns, ten year expiry options on the S&P quoted an Implied Volatility of slightly more that 22.5%. However, since Financial Repression has been fully revealed, over the past three years this option has priced an Implied Volatility of almost 30%.

While a portion of this is certainly due to consistently greater Actual Volatility, as shown below, the spread between the Implied Volatility of long-dated options and Realized Volatility has widened significantly. Here, -the pink line- measuring the Implied Volatility of ten-year expiry options has remained elevated despite –the green line- of short-term Actual Volatility having descended back towards its mean.



Sourced from Credit Suisse data

The proximate cause, as is often the case in trading anomalies, has to do with regulatory accounting. As the FED has pressured Rates lower, long liability financial managers noticed a widening spread between the future value of their assets and liabilities. Specifically, insurance companies with equity exposure were coming close to having too little regulatory capital under stress conditions. Without digressing into actuarial science, suffice it to say that as rates declined, insurance companies had to consider adding duration, reducing equity exposure, or maybe both. Since buying thirty year bonds with a 3%-handle is not a career enhancing proposition, they often choose to reduce their equity exposure via the purchase of long-dated S&P put options. This accounting need has to be satisfied, almost without regard to the fact they are paying an Implied Volatility of over 30% while long-dated realized Volatility rarely exceeds 25%.

More interesting still is the fact that even though long-dated S&P Volatility has risen by over 50% since mid-2007, the positive spread between Ten-year expiries and Five-year expires has remained unchanged. This is highly unusual. In most markets, the shorter-dated "gamma" options lead the longer-dated "Vega" options as Implied Volatility rises and falls. Similar to Yield and Credit Curves, this risk vector should invert at the highs and steepen at the lows. As shown in the previous chart, even with Volatility reaching new highs this spread remained anomalously positively sloped.

The only reasonable explanation might be that buyers, pressured by regulation, chose to buy the longest expiry available to minimize the theta decay of the position. I posit that these buyers hoped that they could ride out the Financial Repression induced "Regulatory Straight Jacket" with the anticipation that they could close out the position some years down the road when the FED's mission was complete and Rate increases would reverse the asset/liability mismatch. The unfortunate "fly-in-the-ointment" is that when the time comes to sell these options, the Vega losses incurred will most likely exceed the theta decay cost of a cheaper five-year option. Such are the unintended consequences of Financial Repression.

The Opportunity

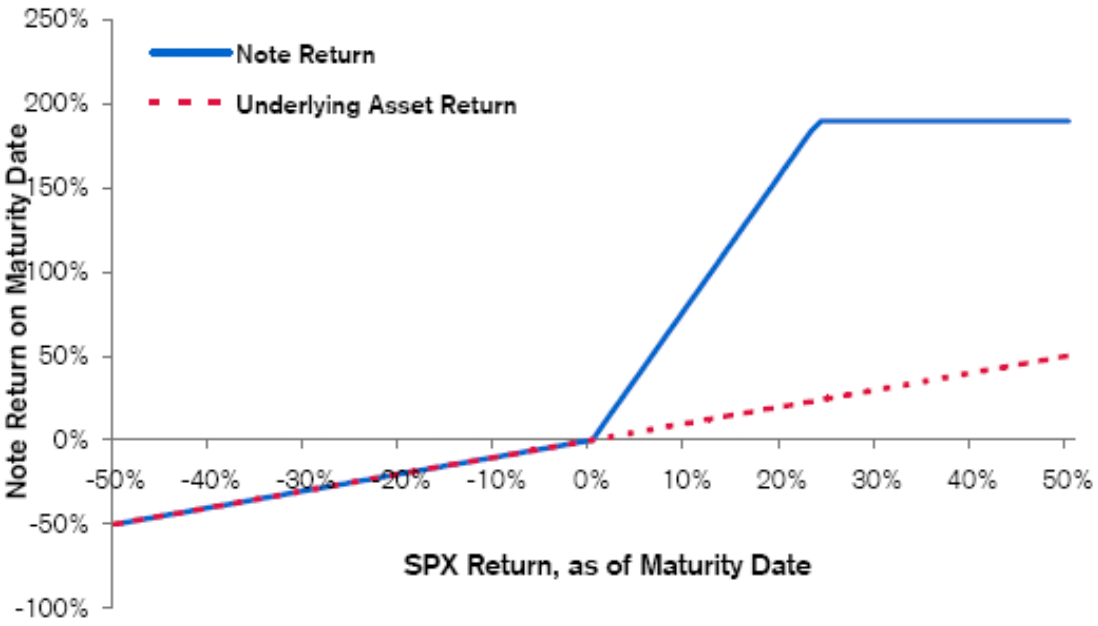
The best investment ideas are often the most simple. Here, we are transparently presented with the twin anomalies of a lower forward price for the large and liquid S&P index as well as long-dated options based upon this index trading nearly 50% above Realized Volatility. Even a novice could recognize that the trade is to buy the S&P in forward space and then sell a long-dated call option against it. Basically, a standard "Buy Write". Unfortunately, executing this trade as a package of vanilla derivatives can be problematic for many investors. The booking, accounting and margining involved can make this trade unpleasant for even the most sophisticated accounts.

As a superior alternative, one can invest in a Structured Note issued by a large Financial Institution that has these two risks transparently embedded.

Our best idea: One pays $100 today for a 10 Year CS Structured Note which pays no coupon. In ten years, if the S&P is 10% lower, you receive $90. If the S&P is 20% lower, you receive $80. You lose one for one on the downside. However, if the S&P is up 10%, you receive $180. If it is up 20%, you receive $260. You participate on an eight to one basis up to a total 186% return (a $286 final payout). As such, your maximum return occurs if the S&P rises by 23.25% over ten years or a 2.11% annual compounded rate. The maximum return will be achieved if the S&P merely keeps pace with the FED's target rate of inflation.

Because all cash-flows are embedded into the note, if the upper cap level is reached, one would earn slightly less than an **11.1% annually compounded return**, if held to maturity, over a decade.

Specifically for example, spotting the S&P at its current level of 1300, one would earn the maximum return when the index reached about 1600 ten years hence. To earn a similar total return by replication via ownership of the S&P futures, one would need the index to slightly exceed 3700 over a similar time span.



Sourced from Credit Suisse data

How many other diversified and transparent investments can produce a compounded return of over 11% for a decade? Not too many is the answer.

There are risks that you must fully appreciate.

1) You are taking issuer holding company credit risk;
2) This registered MTN issue will not be highly liquid;
3) The 8 to 1 leverage is terminal, not current. As such, in the early years, you will not realize the terminal return profile;
4) There are risk components other than just the S&P level, such as the level of Implied Volatility, Interest Rate level, and the credit spread of the issuer.

That said, there should be a place in every portfolio for this type of investment. To be clear, there is no magic here and the firm is working for a fair underwriting spread. This opportunity is strictly a function of:

1) The inversion of the S&P dividend rate to the Treasury rate;
2) An extremely elevated Implied Volatility level for long-dated options;
3) A relatively wide issuer funding spread;
4) No margin calls despite being functionally short options.

Finally, do not underestimate the value of compounding your return. There are plenty of high yielding investments that toss off a lot of cash in the early years. However, the inability to re-invest those cash flows at a similar rate effectively collapses your long-term total return. The true beauty of this Structured Note is the complete embedding of the risk vectors to create a true IRR investment vehicle.

As they say: "Don't fight the FED". *QE is offering you a Delicious Gift.*

Special Notes for Leveraged Investors:

Despite the fact that most financial investors have not earned an 11.1% compounded return over the past decade, and will have a difficult time doing so in this coming decennial period, it is unlikely that leveraged investors will purchase this structured note. As such, we encourage this type of investor to profit from these anomalies by direct transactions in the underlying risk vectors.

Using the chart on the third page as a reference:

Sell 100mm S&P Index, 5 years forward, at 1203
Buy 100mm S&P Index, 10 years forward, at 1156
Strong gains can be earned when Interest rates increase.

A more interesting version: Enter into a similar risk profile via a package of "risk reversals" where you are net short Vega in the ten-year expiry bucket. Please call your Credit Suisse representative for assistance in portfolio construction.

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