Φ PELAGOS CAPITAL

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The Threat of Investor Apathy

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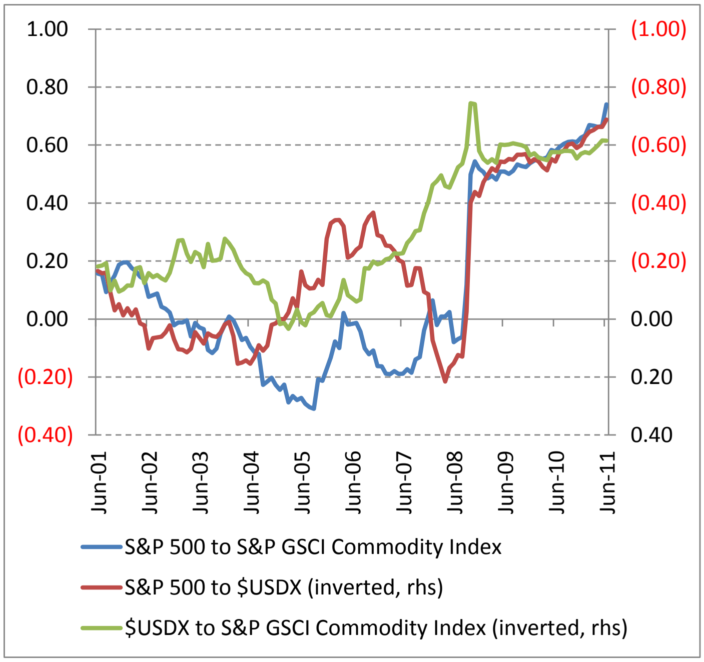
Volatility Market Highlights

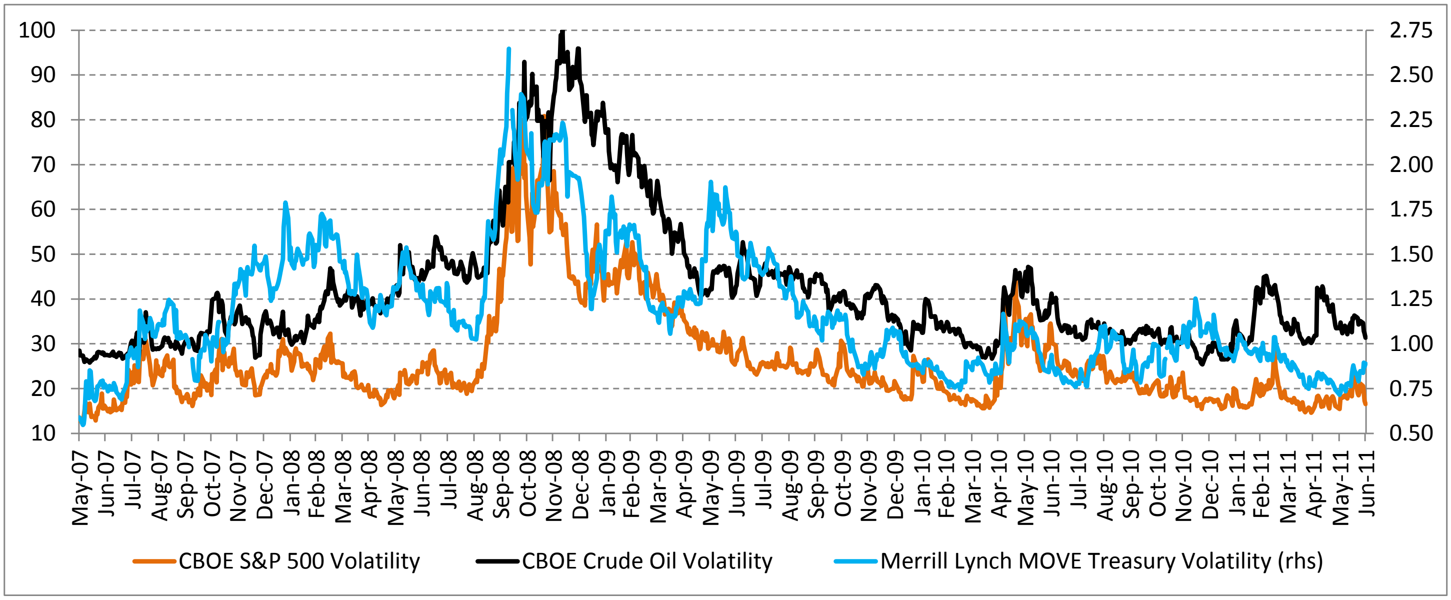
- *Cross-asset correlations have drifted towards perfection*
- *Volatility markets are evolving*
- *Cross-asset volatilities have a strong relationship*
- *Short-volatility hedgers facilitate feedback loops*
- *Dormant accelerants may amplify moves when provoked*
- *Converging forces are lurking*
- *European and Chinese structural issues may awaken volatility feedback loops across the world*

Rolling 36-month Correlation of Monthly Returns



Source: Bloomberg, Pelagos Capital

Volatility Indexes



Source: Bloomberg

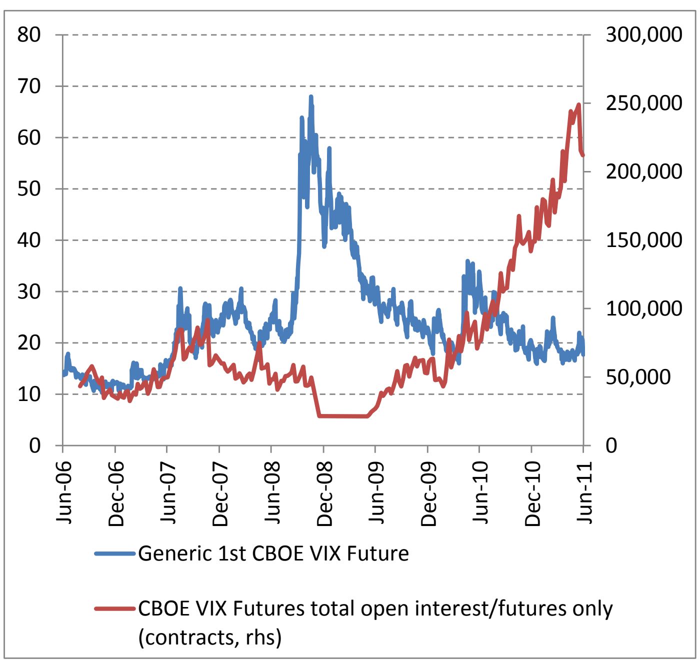
ZERO-SUM

Volatility price indexes, such as the CBOE VIX, are generally constructed by backing out the implied volatility of the option marketplace. Actual buyers and sellers create volatility metrics and volatility markets are driven by supply and demand, nuanced by the composition of market participants on either side. Most importantly, for every unit of volatility purchased a unit of volatility is sold and open interest increases by one. However, as the chart below suggests, large numbers of eager volatility sellers may mask anxieties otherwise visible through volatility indexes. The feedback loops may be creating a greater latent accelerant to the markets, on both the upside and downside, than anticipated.

FEEDBACK LOOPS

Buyers of volatility generally have a quantifiable risk for each trade. Prudent sellers of volatility hedge their risk, which is more challenging to quantify. For example, a seller of a call (put) option may hedge out risk through the purchase (sale) of an appropriate amount of the reference entity (e.g., stock, bond, future, or currency). Hedge ratios can shift quickly, and volatility hedging may become aggressive, adding tailwinds to both upward and downward market action. Thus, volatility hedging has the ability to create an accelerant in the form of feedback loops. Although recent history has shown that markets have the ability to absorb these feedback loops, market participants should not forget the role of "delta-chasing" in the 1987 crash. The volatility markets are maturing and most market pundits and practitioners alike may be overlooking and/or underestimating the clandestine volatility feedback loops. Inevitably, the modern colloquium on systematic risk will find a modern definition.

CBOE VIX Future and Open Interest



Source: Bloomberg

SPARK

There are currently three prominent market concerns that may provide fertile ground for a sharp sell-off across the global markets: European debt; Chinese real estate; and global liquidity. However, there will need to be a catalyst in order for the volatility feedback loops to provide acceleration. In sum, we have known challenges to economic growth on the horizon and the potential for market moves to be amplified. Market liquidity may be overwhelmed by sellers if and when a catalyst provides a trigger.

BUTTERFLY EFFECT

The collective global capital, commodity, and currency markets are a complex system where a small localized change may have dramatic effects elsewhere and lead to a change in the behavior of the system itself. For example, Thailand's 1997 revaluation of its currency set off a chain of events that led to the collapse of Long-Term Capital Management and its $3.6 billion bailout. The 2011 world is arguably more interconnected than it was in 1997 and we face latent issues today that, although visible and often debated, have yet to be fully comprehended. The combination of strong cross-asset correlations, low volatility, and tendency of policymakers to overcompensate is setting the stage for a structural change in the global capital markets away from today's dynamics.

FRAGILITY

Market turmoil has the ability to drive cross-asset correlations towards perfection (1.00 or -1.00) and it is reasonable to expect volatility to increase during such times. The risk-on/risk-off trade, created by a slush of global liquidity, has created a dynamic of higher cross-asset class correlations amidst a general decline in volatility. Although volatility is evanescent, cross-asset volatility has been persistently correlated through time, suggestive of a larger framework. As the volatility market grows so does markets' sensitivity to catalysts.

ASYMMETRY

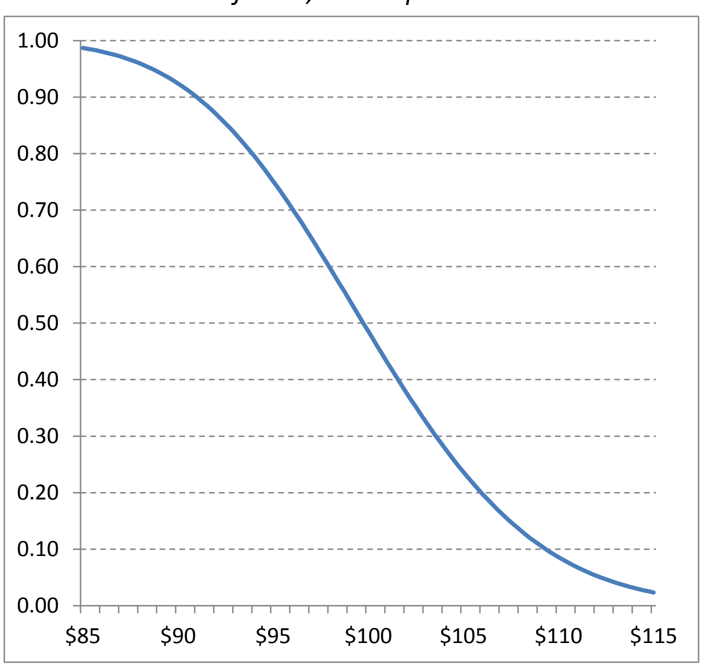
Volatility, in its most marketable form of a call or put option, is a zero-sum game. However, the return distribution for any single volatility play is generally asymmetric. Buyers of volatility should expect a positively skewed payoff distribution with potential loss more frequent than potential profit and potential profit greater in magnitude than potential loss. Sellers of volatility should expect a negatively skewed payoff distribution with potential profit more frequent than potential loss and potential loss greater in magnitude than potential profit. For an option buyer, the maximum potential loss is the option premium and for an option seller the maximum potential profit is the option premium. Sellers of volatility must take particular care in the management of their risk. As the chart below illustrates, volatility risk metrics behave in a non-linear fashion. The practice of delta-hedging is commonplace and taken to its extreme can lead to "delta-chasing" during large market moves.

THE HUMAN CONDITION

Volatility is an abstract concept but is far from esoteric in practice. Volatility has the ability to affect a wide range of market participants, from the sophisticated to the naïve. Volatility is priced in the form of "implied volatility" of prices created by buyers and sellers.

Delta of Short Put Trade by Underlying Price

Hypothetical at-the-money 30-day put sold on $100 crude oil future, ceteris paribus



Source: Pelagos Capital, 25% volatility assumption

Implied volatility is derived through pricing models, many of which are based on (imperfect) assumptions of perfect liquidity and continuous trading. From an asset class perspective, it is noteworthy that implied volatilities have demonstrated a strong relationship with each other across different asset classes through time. The transitory nature of volatility appears to affect cross-asset measures of volatility pricing in concert, as the price of volatility ebbs and flows. In the age of the risk-on/risk-off trade it is myopic, and perhaps dangerous, to view any given measure of volatility as asset-class specific. Conversely, it may prove wise to interpret such measures as reflections of the larger forces of volatility supply and demand, and to acknowledge that any given volatility trade is zero-sum. A surge in sellers or buyers may result in market moves of unanticipated magnitude.

CONCENTRATION KILLS

The risk-on/risk-off trade has been encouraged by Fed policy and a global environment of low interest rates. Cross-asset class correlations have intensified as implied volatility continues to be highly correlated across asset classes. As the potential benefits of diversification have been underscored, asset flows have played a role in driving correlations towards perfection. However, the risk-on/risk-off trade serves to increase systematic risk for the financial markets and the global economy. As more participants invest and trade in volatility, long and short positions grow in tandem. Volatility sellers are prudent to hedge out risk, on a periodic and ongoing basis, and the resultant feedback loop has the potential to amplify market moves. The potential concentration of volatility sellers, and their hedging tactics, may serve to intensify the level of systematic risk in the capital, commodity, and currency markets.

"WE CAN'T SOLVE PROBLEMS WITH THE SAME KIND OF THINKING WE USED WHEN WE CREATED THEM"

Albert Einstein

The search for uncorrelated assets brings many investors to the realm of volatility. Although volatility strategies often protect portfolios successfully, it is important to be aware of the dynamics of the volatility markets. As the global markets transition and growth assumptions are revised it is reasonable to expect correlations to drop in magnitude with notable spikes in the price of volatility. However, the feedback loop will likely create opportunities for those looking to position in accordance with longer-term fundamentals and cyclical views.

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