UNRAVELING THE VIX MYSTERY, PART 1
June 1, 2017

Summary Points

- **VIX** is the most widely followed indicator of stock market volatility, being based on the prices paid for S&P 500 Index puts and calls traded at the Chicago Board Options Exchange (CBOE). When writers of options demand high premiums to sell, and buyers are willing to pay up, **VIX** reflects this by increasing. Conversely, cheaper options produce lower values of **VIX**. Last month saw spot **VIX** drop below 10 twice, the lowest levels observed in over 10 years.

- **VIX** is not like most government statistics, which look backwards and capture events that have already happened. **VIX** is determined on a moment to moment basis by buyers and sellers of S&P 500 options, which can be highly variable.

- Spot **VIX** has very little predictive power for the direction of stock market changes in the short run. Time and again, history shows that **VIX** reacts to market moves. It does not predict them.

- Investors should recognize spot **VIX** on any given day is of limited utility in guiding their decisions. A better indicator is forward **VIX**, which reflects opinions about time horizons and portfolio insurance choices more relevant to most long-term investors.

- Traders can and do regularly influence measured **VIX**, and such trades may be more reflective of fund flows than they are fundamental volatility in the stock market. Next month we shall explore more deeply how trading in volatility based futures, options and exchange traded products may be distorting spot **VIX** and creating systemic forces in the stock market.

**VIX** is an increasingly widely followed, but little understood, measure of stock market volatility. It is calculated from the implied volatilities reflected in actively traded S&P 500 Index puts and calls. If sellers of these options are concerned about more price variability in stock prices over the life of the option, they will demand higher premiums. If buyers are willing to pay up, the price of all options will increase as will calculated **VIX**. The process works in reverse if expected volatility is falling.

**VIX** has been getting a lot of press lately as the reported levels of the index fell to historic low levels in early May. To many market observers there seems to be a disconnect. There is geopolitical uncertainty both at home and abroad. The U.S. economy is growing, but hardly at a reassuring pace. Why is the stock market as quiet as it has been? Is this just the calm before the storm?

There are a few basic truths about **VIX** that often get lost in any popular discussion:

- **VIX** is not like most government statistics, which look backwards and capture events that have already happened. **VIX** is determined on a moment to moment basis by buyers and sellers of S&P 500 options. Like all markets, supply and demand in these options shifts around on a regular basis.

- Spot **VIX** has very little predictive power for the direction of stock market changes in the short run. There will always be days like May 17 when the market drops by more than 1%. History regularly shows that **VIX** reacts to such changes in the market. It does not predict them.

- Investors should recognize spot **VIX** on any given day is of limited utility in guiding their decisions. It moves around far more than long-dated **VIX**, which is a much better indicator of market sentiment and the cost of insuring an equity portfolio over more relevant investment horizons.
The first chart shows the history of spot VIX over the last 15 years. Major spikes in the index correspond to periods of market stress like the second half of 2002 when the S&P 500 was on its way to a 50% total correction and the financial crisis triggered by the Lehman Brothers bankruptcy in September 2008. The brief spike above 40 in the second half of 2015 was prompted by concerns that the energy sector was tanking at the same time stocks in general were at record high levels. This is a great example of how options traders’ concerns can sometimes be overdone. There was no crisis beyond energy and despite markets stumbling in the first two months of 2016, the turnaround was quick and the year ended with solid equity returns globally. VIX promptly retreated.

The press is fond of speaking generically about VIX when in fact there are several relevant measures that can be observed. The most popular can be thought of as “spot” VIX, shown in the chart above, and it reflects the information in S&P 500 options due to expire within the next month. There are also several “forward” measures of VIX that capture options that extend out further. The general relationship is that forward VIX tends to be higher than spot VIX. Longer-dated options protect against a wider range of outcomes than do options expiring in just a few days, so people who write puts and calls demand to be compensated for the additional risk that the more distant maturities bring with them. This leads to higher premiums and in turn higher measured forward VIX.

These spot/forward relationships vary through time as seen in the table below comparing the VIX arrays from the middle of last month and the two previous years.
All three arrays are strongly upward sloping, but there are some important differences. The May 8, 2017 spot price of 9.77 was the lowest recorded value in over ten years. While the December futures price of 16.20 is lower than it was in either of the previous two years it is still 66% greater than the spot price. That compares to 45% and 42% premiums in 2015 and 2016. The steepness of the curve extending out seven months says that buying insurance against a stock market decline for the balance of the calendar year is not going to be done at bargain basement premiums despite the low levels of current VIX.

The second chart is identical to the first but only looks at 2017. Most of the year has been relatively quiet (long-term average VIX is near 20). There was a short period when the index was elevated in April when energy prices and related stocks were under pressure, but those levels moderated in early May as a strong earnings season generally moved stocks higher and calmed investors. The writer of long-dated options has to account for the possibility of sudden periods of elevated volatility like we saw in the middle of May, which means long-dated options and VIX should be more expensive than VIX reflecting just the immediate future.
When VIX closed below 10 on May 8, the press picked up the story and began to interview everyone who might have an opinion. People who were fundamentally bearish said that such low levels of VIX were the harbinger of an impending market correction or worse. Bulls dismissed such talk saying VIX was reflecting the recovering economy and corporate earnings, accurately reflecting an improving environment.

On May 17 the market opened down on news of President Trump’s firing of FBI Director Comey and the suggestion the White House might be trying to obstruct justice. The S&P 500 index had its worst day of 2017, falling 1.8%. Spot VIX immediately jumped from 10.65 to 15.59, a 46% increase in a single trading session. Loud market bears immediately surfaced proclaiming this was just the beginning.

Investors with a global perspective got another surprise that night when reports from Brazil suggested the existence of tapes recording the sitting president discussing a payment of hush money to another politician implicated in that country’s ongoing bribery scandal. On Thursday the 18th, Brazilian stocks tumbled 8.8%, an event that might have produced global contagion selling coming so close on the heels of the U.S. market stumble.

But that did not happen. U.S. stocks instead inched up that day and continued to regain lost ground for the next several sessions. VIX retreated back below 10 almost as quickly as it had advanced. Nobody should read too much about the future into either the quick spike or the equally brisk retreat.

The world of volatility trading has changed profoundly since academics first built the infrastructure to calculate VIX. There are many more stock index investors today than there were 25 years ago. There are futures contracts and exchange traded products based on VIX that allow direct trades on the value of VIX. Billions of dollars are now invested in hedge funds that specialize in trading volatility. Each of these evolutionary steps has likely affected the supply and demand for S&P 500 options and the level of VIX.

Next month we shall go into more detail how people trade S&P 500 options and futures, options and exchange traded products that are based on VIX. While most of these activities have very little to do with long-term investing, they play an increasingly important role in the noise that regularly surrounds the market. Differentiating between relevant volatility risks and short term fluctuations can help investors stay focused on the items most likely to produce long-term success.