The Zen Strategist

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Investing While Sitting Still

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The Volatility Issue

"There's been a lot of talk about this next song. Maybe…maybe too much talk."—U2, *Sunday Bloody Sunday*

Volatility, or the lack thereof, has been much in the news lately. The Wall Street Journal, Financial Times, and Bloomberg have each run long features on the continued plumbing of generational lows in volatility measures such as the VIX, with vague yet mildly apocalyptic[1] warnings about what could happen when things finally reverse. The FT, for example, refers to "an unlikely doomsday scenario of how the volatility complex could turn a manageable wildfire into an unholy inferno."

For my money—and yours!—such warnings are, as a general rule, not particularly useful. But we are not talking about averages here. The question today is whether historically low volatility is telling us something actionable, or is yet more sound and fury…signifying nothing.

It is true that the VIX index is at historic lows, but also that this, in and of itself, tells us little. The fact that investors are collectively complacent is not prima facie evidence that worry is in order. Maybe things are just going well.

That said, a big part of the reason vol is so low is that as it has continued to fall, a growing number of investors have discovered that selling it is the easy path to instant riches (more on which below). As a result, every time vol has risen of late—e.g., before the first round of the French election— it has almost immediately been met by waves of selling.

Well, now we may be getting somewhere.

When everyone is on one side of a trade, there is often opportunity. I believe we are close to reaching that point, if we haven't already, with selling vol strategies. The "best" trades in this area are horribly overcrowded, and as a result are like a lit fuse.

Before we discuss how to play this, however, a brief primer.

How to Measure (and Trade) Volatility

While most investors have heard of the VIX index, far fewer understand what it actually measures. It is often referred to as the "fear gauge," with high readings suggesting investors are worried about volatility, and vice versa. Thus, the reason people are today concerned about the low levels of VIX is that it indicates investors are too complacent, particularly in the face of high valuations, political upheaval, geopolitical concerns, etc.

The purpose of VIX is relatively straightforward[2]—it seeks to provide the expected, or *implied*, volatility for the S&P 500 over the next 30 days by measuring the prices of S&P 500 put and call options. Said differently, the VIX measures how volatile investors expect the market to be over the next month or so. Importantly, while many investors equate a high VIX with worries about stocks falling, volatility can of

[1] I'm not actually sure if something can be "mildly apocalyptic," but I really like the way it sounds…
[2] The underlying mechanics are pretty complex, but the *idea* is pretty basic.

course be in either direction. This is perhaps best seen around earnings release dates for high-vol stocks such as Tesla, which will often have extraordinarily high levels of implied vol *not* because traders are worried specifically about the stock falling, but because they expect it to move strongly in one direction or the other.

That said, a big down move in the market tends to coincide with a rising VIX and vice versa; many are the stories about options traders who correctly called a large up move, only to see the value of their calls *decline* as implied vol fell.

The VIX has been around since the mid-to-late 80s, but because of the way the index is constructed you cannot actually buy it[3]. Futures and options on the index (yes, the volatility of volatility…) have traded since the mid-2000s, while most ETFs that offer exposure to the VIX "complex" only came into existence after the global financial crisis (see below for a partial list). This makes backtesting a bit more difficult, but hardly impossible.

TICKER	FUND NAME	ISSUER	EXPENSE RATIO	AUM	SPREAD %	SEGMENT
VXX	iPath S&P 500 VIX Short-Term Futures ETN	Barclays Capital	0.89%	$1.09B	0.05%	Alternatives: Volatility
XIV	VelocityShares Daily Inverse VIX Short-Term ETN	Credit Suisse	1.35%	$547.82M	0.02%	Inverse Alternatives: Volatility
UVXY	ProShares Ultra VIX Short-Term Futures ETF	ProShares	1.32%	$437.42M	0.05%	Leveraged Alternatives: Volatility
SVXY	ProShares Short VIX Short-Term Futures ETF	ProShares	1.28%	$356.79M	0.04%	Inverse Alternatives: Volatility
TVIX	VelocityShares Daily 2x VIX Short-Term ETN	Credit Suisse	1.65%	$196.85M	0.19%	Leveraged Alternatives: Volatility
VIXY	ProShares VIX Short-Term Futures ETF	ProShares	0.84%	$151.03M	0.06%	Alternatives: Volatility
ZIV	VelocityShares Daily Inverse VIX Medium-Term ETN	Credit Suisse	1.35%	$83.40M	0.11%	Inverse Alternatives: Volatility
VIXM	ProShares VIX Mid-Term Futures ETF	ProShares	0.84%	$39.42M	0.13%	Alternatives: Volatility
VXZ	iPath S&P 500 VIX Mid-Term Futures ETN	Barclays Capital	0.89%	$34.33M	0.07%	Alternatives: Volatility
XVZ	iPath S&P 500 Dynamic VIX ETN	Barclays Capital	0.95%	$12.19M	0.39%	Alternatives: Volatility
VIIX	VelocityShares Daily Long VIX Short-Term ETN	Credit Suisse	0.89%	$11.87M	0.16%	Alternatives: Volatility
VMIN	REX VolMAXX Short VIX Weekly Futures Strategy ETF	Exchange Traded Concepts	1.45%	$8.09M	0.82%	Inverse Alternatives: Volatility
VMAX	REX VolMAXX Long VIX Weekly Futures Strategy ETF	Exchange Traded Concepts	1.25%	$2.17M	1.04%	Alternatives: Volatility
TVIZ	VelocityShares Daily 2x VIX Medium-Term ETN	Credit Suisse	1.65%	$1.78M	0.29%	Leveraged Alternatives: Volatility
VIIZ	VelocityShares VIX Medium Term ETN	Credit Suisse	0.89%	$1.16M	0.13%	Alternatives: Volatility
IVOP	iPath Inverse S&P 500 VIX Short Term Futures ETN	Barclays Capital	0.89%	$549.66K	2.72%	Inverse Alternatives: Volatility
XXV	iPath Inverse S&P 500 VIX Short-Term Futures ETN	Barclays Capital	0.89%	$431.50K	1.90%	Inverse Alternatives: Volatility

In sum, the VIX is a non-investable index that has been around for a few decades, during which time a growing number of strategies to capitalize on it have evolved.

How Do Volatility ETFs Work?

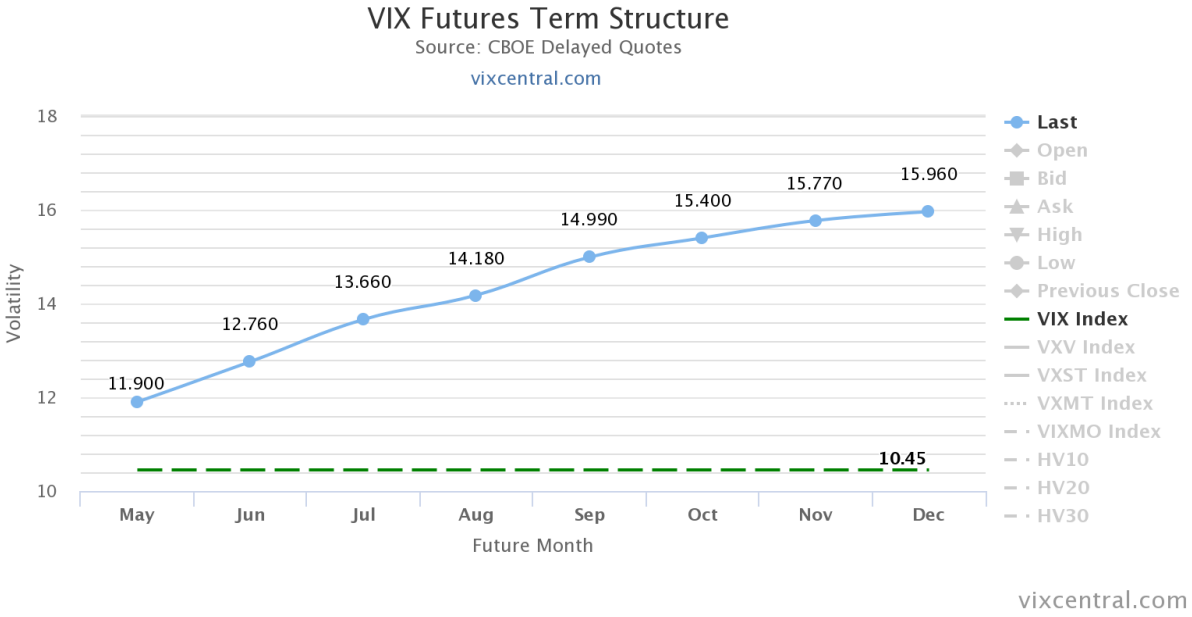
One of the first questions people typically have when they stumble on this area is why the returns of volatility ETFs do not necessarily track the day-to-day moves in VIX. For example, on May 3 the VIX fell by a little over 1%, but the XIV ETF, which provides inverse exposure to volatility futures, also fell…by 2%. The UVXY ETF, meanwhile, which gives 2X *long* exposure to VIX futures, rose 4%.

What is going on?

The answer is that, since VIX itself is not investable, vol ETFs use the VIX futures curve to construct a synthetic one-month volatility exposure. Thus, day-to-day returns are driven not by VIX, but by movement along the curve.

[3] This is true of all indexes, but many, e.g. the S&P 500 or Russell 2000, are relatively easy to replicate by buying a representative number of the stocks in the index. A similar strategy for the VIX would require far too much capital and rebalancing to make it cost-effective.

For example, here is what the curve looked like on May 3, with VIX trading at 10.45:



As you can see, the curve is in contango (later months higher than closer months), which is pretty typical for this market, and a big part of what drives the stellar returns on short vol ETFs. As mentioned, these ETFs are constructed by buying and selling a mixture of VIX futures to construct that one-month exposure, and thus changes in those futures prices drive their returns. However, it is the *shape* of the curve that is responsible for the relentless push lower in prices.

Put simply, so long as the VIX is below the curve—historically about 75% of trading days—futures prices will *inexorably* move lower as time moves forward[4] and they converge with the VIX. On the other hand, periods when VIX is above the curve leads to compounding returns for long ETFs—as prices *rise* to converge with VIX—and steep losses for short strategies.

In sum, long volatility ETFs—e.g. VXX and UVXY—tend to drip lower most days (and over time), but with periodic, and often violent, spikes higher, and vice versa for short ETFs such as XIV and SVXY.

Money Lying in the Street?

My interest in this area dates to late 2010, when I and a colleague began work on a paper colloquially titled *The Benefits of Selling Volatility*[5]. The premise was, and is, disarmingly simple: there has always existed a gap between *implied* volatility—what people expect volatility to be—and *realized* volatility—what it actually is. This gap, with implied vol being higher than realized, is robust across time periods, developed markets, most asset classes…in Zen terms, it just *is*.

[4] It is worth noting that many Zen practitioners—not to mention Albert Einstein—believe time to be an illusion created by human perceptions. But for our purposes we will hew to the traditional understanding.
[5] A summary of the paper is available on the CBOE website: https://www.cboe.com/micro/buywrite/Cambridge-2011-HighlightsfromSellingVolatility.pdf

Thus—and it is difficult to overstate this point—you can boost returns, *more or less for free*, by systematically selling volatility against a long equity portfolio[6].

My first reaction to this apparent fact was skepticism. What could possibly explain such an obvious mispricing…and free lunch? Clearly we must have missed something…

In fact, the answer, like the strategy itself, is almost ridiculously simple.

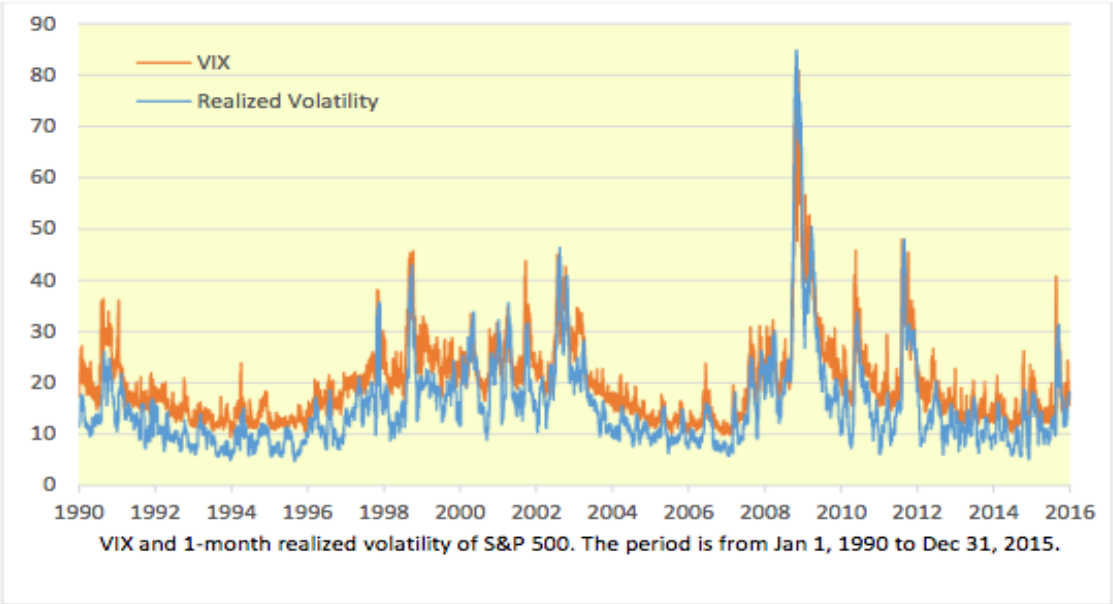
Options function like insurance.

As anyone who has traded options can attest, you tend to be far more price sensitive as an options *seller* than as a *buyer*. The reasons are pretty straightforward: the seller gets only the premium, and has more or less unlimited risk (more with calls than puts, but in both cases it is a large potential liability), while the buyer is often betting on some sort of event that, if it occurs, will drive the price of the options far past the strike price.

Or as Bloomberg columnist Matt Levine once put it: "Traders should overpay for options, versus actual realized volatility, because they're buying insurance, and insurance costs money."

As shown below, implied volatility tends to be higher than realized volatility *most* of the time…even during crisis periods.

EXHIBIT 4 – VIX INDEX MINUS SUBSEQUENT S&P 500 1-MONTH REALIZED VOLATILITY (1990-2015)



VIX and 1-month realized volatility of S&P 500. The period is from Jan 1, 1990 to Dec 31, 2015.

[6] There are a variety of ways to do this, but the most common method, as detailed in my paper, is to sell out-of-the-money puts and calls while holding a mixture of T-bills and a broad equity index.

As noted, one way to capitalize on this is through a plain vanilla strategy of selling options against an equity portfolio. But there are far more juicy returns to be had through more direct strategies. The basic (ahem) options for selling vol are:

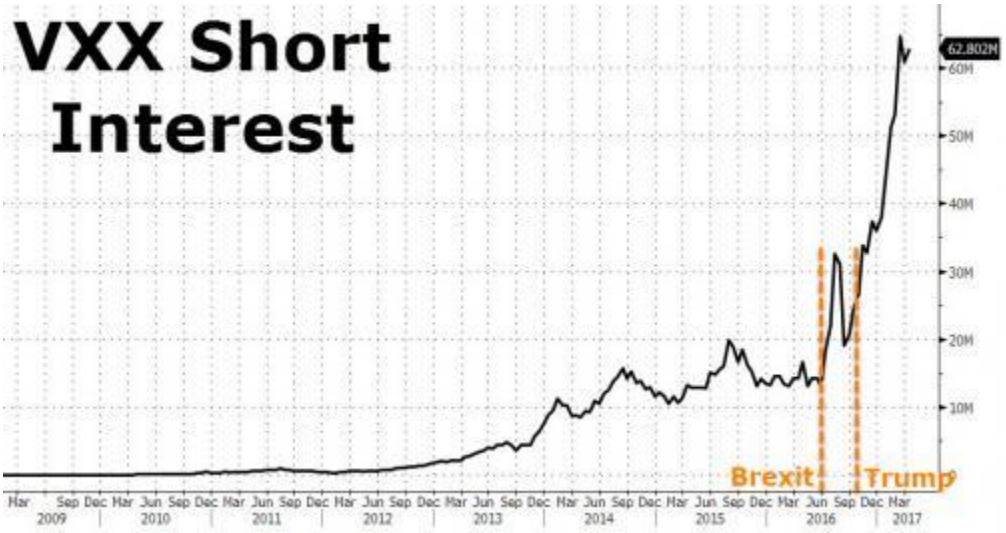
- Sell short a long volatility ETF (e.g. VXX or UVXY) or buy a short volatility index (e.g. XIV or SVXY).
- Sell long-dated calls on short volatility ETFs, or sell long-dated put on long ETFs.

There are also a variety of strategies for implementing these positions. Some traders wait for a vol "event"—e.g. the 2015 China mini-crisis—and then load up on short vol ETFs (or sell short long ones). Some use a systematic approach—e.g. a friend of a friend who "sells 100 shares of VXX every Friday." And some simply take big short positions in long-dated calls and hope for continued calm.

Leveraged ETFs such as UVXY have a similar makeup to the leveraged ETFs discussed in prior issues (e.g. DUST) in that the boosting of *daily* volatility will lead to steeper losses over time…but at the cost of higher short-term risk.

Everybody in the Pool?

As noted, selling volatility has become *very* popular of late—see below for the run-up in short interest on VXX—as even the historically low levels of VIX have been well above the levels of realized volatility.



Such extreme popularity in this type of strategy is worrying to say the least. Bluntly put, at some point there will be an "event" that causes vol to spike…and stay high for more than a day or two.

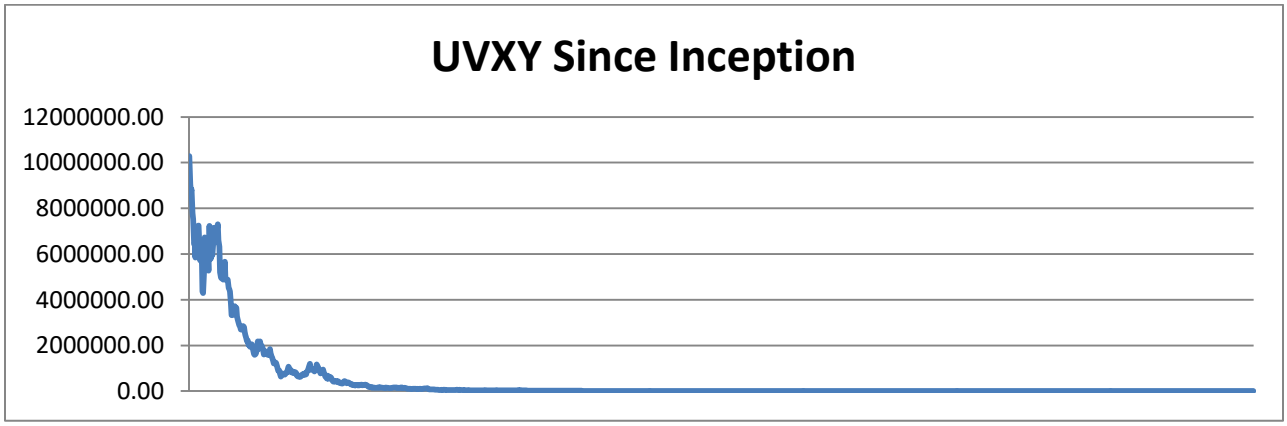
Or as a friend of mine recently said about short vol traders—riffing on the old adage about nickels and steamrollers—"it's like they're standing in the street saying: 'Hey look…another nickel!'"

Well, perhaps gold coins would be a better moniker. Consider the following:

The SVXY ETF, which tracks the inverse return of the VIX futures index, rose from 121 on April 13—the last trading day before the French election—to 150 on May 1, for a *two-week return* of 24%. UVXY, which is a 2X leveraged *long* strategy for VIX futures, fell from 21.46 to 13.1 over the same period, for a whopping 37% return. (Don't even ask what that is annualized…)

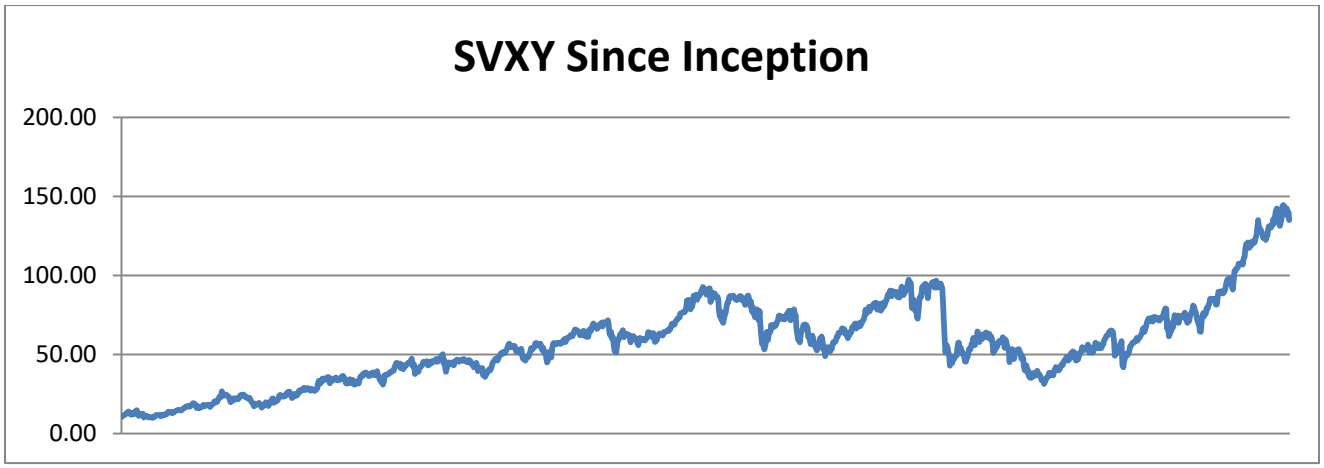
Well…since you did ask, over the past year SVXY has nearly tripled ($51 to $147), while UVXY has fallen by…wait for it…97% ($420 to $13)! Returns for selling long-dated options on such strategies have been even better, as premiums have collapsed along with vol.

Longer-term, here is a chart (which I swear I am not making up) of UVXY since its 2011 inception:



Yes, those prices are correct; it currently trades for about $13.

Meanwhile, here is SVXY since its 2011 inception:

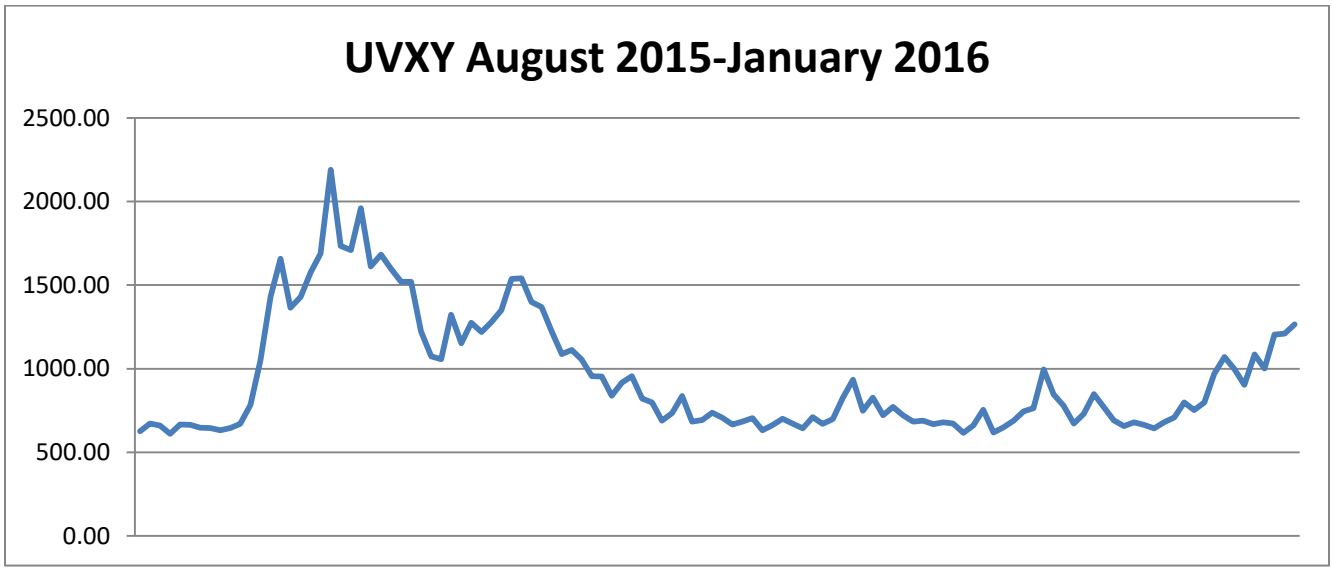


The starting price is about $13, and today it trades for around $150.

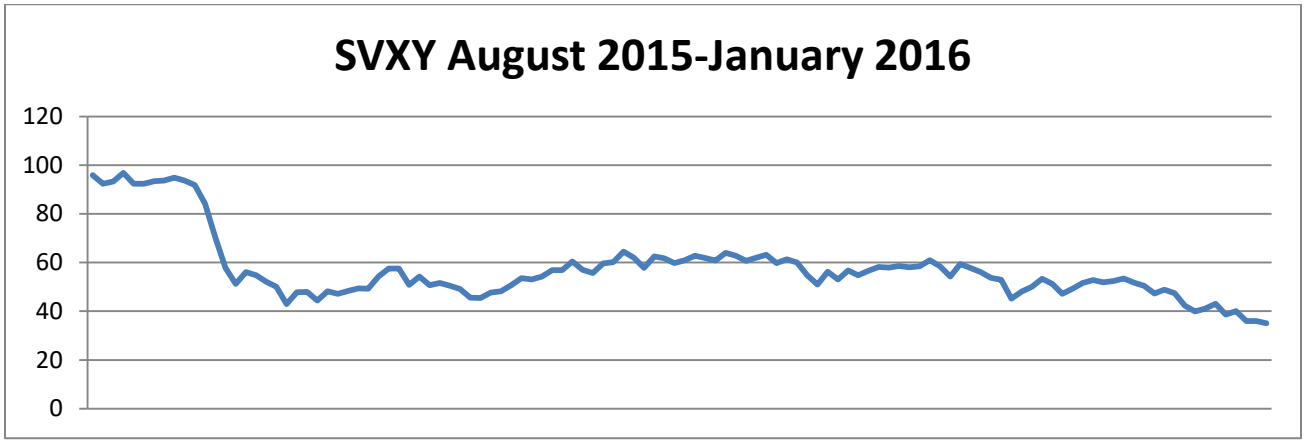
The obvious question at this point is…assuming you have the fortitude (and capital) to ride out the inevitable spikes, why not just lever up and buy SVXY, short UVXY, and be done with this whole investing business? Or, given that long-term options exist on both products, why not sell puts/buy calls on SVXY, or vice versa on UVXY?

The answer is that such strategies do in fact make a lot of sense. (Well, perhaps except for the levering up bit.) But they require patience and timing…or, as we like to say in this publication, waiting for the fat pitch. Investing while sitting still necessarily involves a lot of…well, sitting.

Here, for example, is a chart of UVXY for the six months starting just before China's 2015 near-implosion.

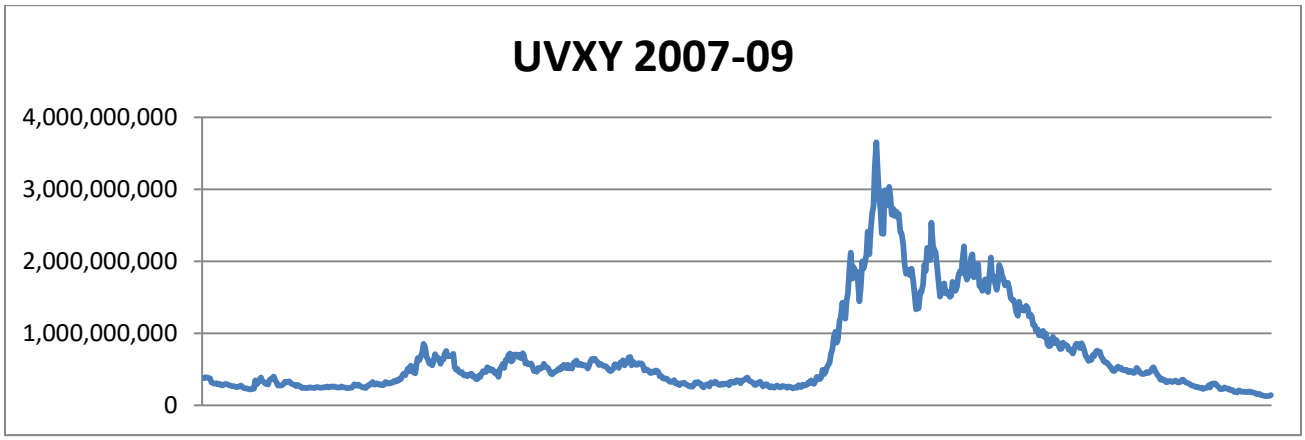


And here is SVXY for the same period:

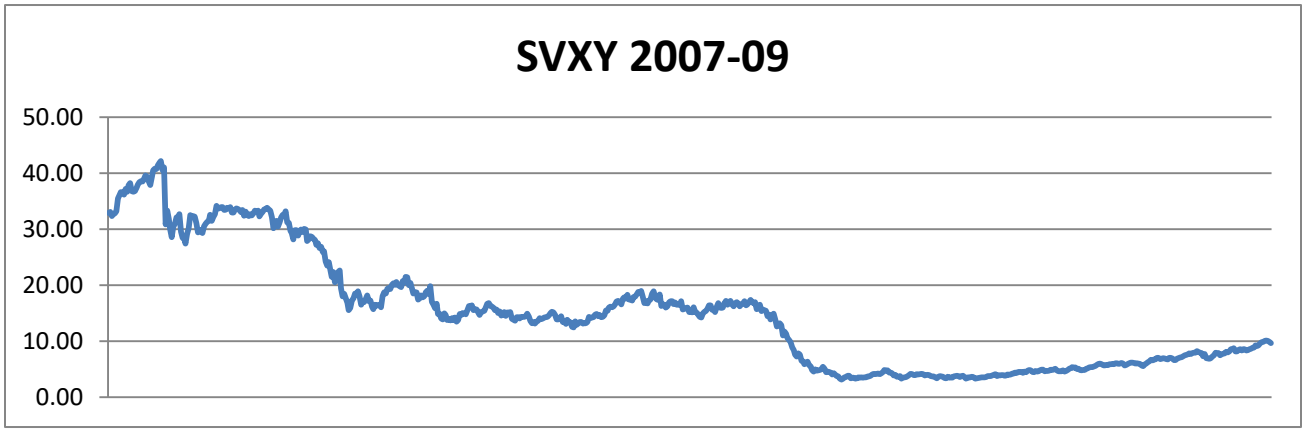


Hopefully the point is clear: these strategies can be very profitable over long periods of time…but can also ruin you in the short term. Or even the not-so-short term.

Here is backtested data for UVXY for the entirety of 2007-09:



And here is SVXY:



That represents about a 15X max return for UVXY, and a more than 90% peak-to-trough decline for SVXY. I don't care who you are…nobody survives being on the wrong side of that trade.

So What to Do?

Well…what if you could get on the *right* side of that trade?

To anticipate the obvious objections, yes, this recommendation is a *speculation*, not a long-term investment. But Zen is about seeing the world through clear eyes, and when I survey the investment landscape I see many things to worry about…and not much value.

Herewith, my volatility recommendation:

Buy the December 2017 UVXY call with a $20 strike

As of this writing it sells for about $3, so you need the UVXY to rise by about 80% (from $13 to $23) to break even. But this is a bet on something "breaking" sometime this year, which is *always* a low-probability wager. The most likely result is for it to expire worthless, so size it accordingly.

For those looking to minimize costs, I would suggest something called a "bull call spread," where you buy the $20 call and sell the $30 call—currently priced at about $2—which caps your upside, although still giving you a potential profit of 900%. I.e., if UVXY trades at $30 or above, you will bank $10 on the $20 call, less your $1 in net premium. Any further rise would see gains and losses offset.

Another benefit to the bull call spread is that it allows you to boost exposure to that $20-$30 range. I.e., let's say you planned to buy 10 $20 calls at $3, for total cost of $3000. Instead, you could buy 30 $20 calls and sell 30 $30 calls, for the same outlay ($9000 spent on long calls, $6000 collected on short calls).

Another way of thinking about this is that the "break-even" point for the straight purchase strategy is $50, versus $30 for the top of the bull call spread. For example, let's use that $3000 cost example:

Straight purchase at $50: $30,000 value (10 options at $50 - $20 strike) - $3000 cost = $27,000 profit

Bull spread at $30: $30,000 value (30 options at $30 - $20 strike) - $3000 cost = $27,000 profit

While you are leaving additional gains on the table (if the price goes above $50), the chances of UVXY going up more than 4X from current levels—as a reminder, this was its max gain in 2015, and you had to get the timing exactly right—are pretty slim. One other advantage to the spread is that, in the event the trade "works," it takes behavioral issues off the table, as there is no benefit to holding the position once UVXY breaches that $30 barrier[7].

[7] This is not entirely true, as prior to expiration the time value of the higher strike option will likely cause the gap to be smaller than it will be at expiry. Still, in my view it makes the behavioral aspect less pronounced.

As mentioned, the most likely result is that you will be stuck holding a worthless option. And to be honest, I don't really enjoy making this type of recommendation. It is not only speculative and highly dependent on unknowable events, but also a bet on bad things happening.

That said, the timing feels right. Anytime something is dubbed the "magic money tree"—as the FT just dubbed the XIV—it's time to take the other side of that trade.

In Conclusion

The relentless decline in volatility, both implied and realized, is *the* story in global markets today. It *could* turn out to be, as the kids say, a "big nothingburger," but I find the circular logic inherent in many defenses of these vol-selling strategies quite troubling. While it may not be the modern equivalent of portfolio insurance in 1987[8]…or Long-Term Capital's epically-leveraged "nickels in front of steamrollers" strategy…or 2007's CDS squared…well, then again, maybe it is.

Again, I don't really enjoy making this recommendation, and please don't confuse this with "rooting for" chaos. But if there is a common theme in markets today it is that risk (i.e. something bad and unexpected happening) is badly underpriced. As in poker, investors must play the hand they are dealt…and from a traditional risk asset framework, we are collectively staring at some pretty thin-looking rags.

DUST update

Finally, a brief update on the DUST options position initiated last month. As promised, this position has gone against you, as the vol-crushing market has gone hand-in-hand with a smackdown of anything considered "risk-off" such as gold stocks.

Thus, the options we sold last month for $2.80 now trade for about a dollar higher, as DUST has, after falling from $28 to $24 right after the recommendation, soared above $35 as gold stocks have flirted with their 52-week lows. Indeed, the GDX recently suffered its biggest weekly outflow *ever*, a remarkable stat considering it topped outflows from not only the 2008 crisis, but at any point during the 2011-15 bear market that saw the index lose an eye-rubbing 80% of its value. Such panic selling generally (although not always…) occurs around market bottoms as investors give up hope.

I still like this trade, and in fact would recommend doubling down (or initiating a position) here. While it is of course possible the market euphoria lasts the rest of the year (or longer!) or that the US achieves some sort of "peace" with North Korea, or that gold companies simply cease being operating concerns…the risk-reward here remains strongly positive. (Remember, you don't need gold stocks to go up for the trade to work; you simply need them to not fall off a cliff…again.)

In addition, this is similar to the UVXY trade in that both are *hard* to do. Who in their right mind would today bet on gold stocks *not* going down…and volatility going up??

[8] Google this if you don't know the reference. Trust me.

Well, as many a trader will tell you, more often than not those are the trades that turn out the best…

Thanks for reading, and here's to doing less!

Eric Winig

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