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EXPIRING MONTHLY

THE OPTION TRADERS JOURNAL

The Power of OTM Options

FOUR PRINCIPLES OF VIX-Based Hedging

Using VIX Exchange-Traded Products as Hedges

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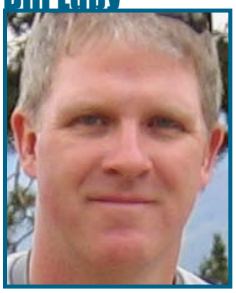


Bill is a private investor whose research and trading interests focus on volatility, market sentiment, technical analysis, and ETFs. His work has been has been quoted in the Wall Street Journal, Financial Times, Barron's and other publications. A contributor to Barron's and Minyanville, Bill also authors the VIX and More blog and an investment newsletter from just north of San Francisco. He has been trading options since 1998.

Prior to becoming a full-time investor, Bill was a business strategy consultant for two decades and advised clients across a broad range of industries on issues such as strategy formulation, strategy implementation, and metrics. When not trading or blogging, he can often be found running, hiking, and kayaking in Northern California.

Bill has a BA from Stanford University and an MBA from Carnegie-Mellon University.

Jared Woodard

Jared is the principal of Condor Options. With over a decade of experience trading options, equities, and futures, he publishes the Condor Options newsletter (iron condors) and associated blog.

Jared has been quoted in various media outlets including The Wall Street Journal, Bloomberg, Financial Times Alphaville, and The Chicago Sun-Times. He is also a contributor to TheStreet's Options Profits service.

In 2008, he was profiled as a top options mentor in Stocks, Futures, and Options Magazine. He is also an associate member of the National Futures Association and registered principal of Clinamen Financial Group LLC, a commodity trading advisor.

Jared has master's degrees from Fordham University and the University of Edinburgh.

Mark Sebastian

Mark is a professional option trader and option mentor. He graduated from Villanova University in 2001 with a degree in finance. He was hired into an option trader training program by Group 1 Trading. He spent two years in New York trading options on the American Stock Exchange before moving back to Chicago to trade SPX and DJX options For the next five years, he traded a variety of option products successfully, both on and off the CBOE floor.

In December 2008 he started working as a mentor at Sheridan Option Mentoring. Currently, Mark writes a daily blog on all things option trading at Option911.com and works part time as risk manager for a hedge fund. In March 2010 he became Director of Education for a new education firm OptionPit.com.

Editor's Notes

Mark Sebastian

We at Expiring Monthly would like to apologize for the tardiness of this issue. We pride ourselves on not only having the best option related content, but also on timely stories and delivery. Rest assured, your January issue will be delivered at its regular time next month. The good news is that this issue is worth the wait.

During the month of December the markets saw a major shift in volatility. While the months of August, October, and November saw large spikes in volatility, and market movement; December brought an easing of volatility as the market anticipated less noise out of Europe and a somewhat relaxed holiday season.

The theme for this month's magazine is hedging and December is jam-packed with important discussions and ideas on hedging. First, Jared delivers a great piece on principles of VIX-based hedging. He carries this idea forward with a Follow That Trade using a tactical VIX hedge.

Next, Bill Luby delivers a deep discussion on the VIX ETPs. He discusses the ETPs' validity as portfolio hedging products and comes to a few interesting conclusions.

Sandwiched around our feature, Andrew Giovinazzi writes two articles on managing gamma: one on managing the deltas associated with short gamma, the other on deltas associated with long gamma.

In our feature, I delve into the power of out of the money puts. I tell an anecdotal story of how OTM puts have helped me, point out why they may not be priced properly, and walk through a couple examples where OTM puts have far out-performed expectations relative to the pricing model.

Finally, we are joined once again by guest contributor Russell Rhoads from the CBOE. He talks about the CBOE VARB-X Strategy Benchmark™. And in our Back Page, Bill discusses the benefits of calling trading a career.

Looking ahead to 2012, there is a lot in store for Expiring Monthly. We are going to have more hard-hitting interviews, an increased number of guest columnists, and some special deals for our readers. Our hope is that 2012 is going to be Expiring Monthly's most interesting and thought provoking year yet.

As always, readers are encouraged to send questions, comments or guest article contribution ideas to editor@expiringmonthly.com.

Happy New Year.

Mark Sebastian
Contributing Editor

Ask the Xperts

The Expiring Monthly Editors

Q: *I have many times found iron condors compelling. However, I have also gotten burned by them. For example, traders like you will say that the risk in a given condor spread is limited to the distance between the strike prices of the short and long call (or short and long put) less the initial credit received. But I know from experience that if the stock goes against you, closing out that short leg will cost much more than you initially paid for it. So how is the spread actually defined-risk?*

—M. W.

A: Take the example of an iron condor spread with strike prices at 27.5, 30, 82.5, and 85. So we are selling the 30 puts and 82.5 calls and covering those short options with strikes 2.5 points away. The spread cannot become more expensive than $2.50.

Assume the stock is trading at 29.9 the Tuesday before expiration, and assume that implied volatility is where it is right now, around 120% in this example. The 27.5 put will be worth about 0.77, and the 30 put will be worth about 1.75, which equals a spread value of $0.98. Not only will we not be paying some outrageously expensive price to exit; we won't even be paying the maximum possible loss, nor anything close to it. If IV is 20% higher, the spread will be a few cents more expensive. Conversely, let's say IV gets completely crushed, down 80%. With the stock at 29.90, the 27.5 put will be worth about 0.08, and the 30 put will be worth about 0.71 = spread value of 0.63. So, a risk-defined spread really is a thing, it's not just some fuzzy notion.

—Jared

.....

Q: *I am comparing the movement of various VIX tickers day to day and just can't figure out which is the best one to mirror the actual one I want to mirror. I am also not sure why there are such discrepancies:*

$VIX.X — yesterday was -0.87 (-3.6%). Close @ 22.65

VXF12 (Jan VIX futures contract) — yesterday was -0.75. Close @ 25.95

. . . so these 2 are not that dissimilar

However, the VIX mini futures contracts which are VMF12 for Jan and VMG12 for Feb only moved by around 30–40 cents on the day and this is what I don't understand.

What I am trying to mirror is $VIX.X and am in a position where I don't know which contract to use. I want to reduce risk, hence I am using the mini versus main VIX contract.

—Vimal

A: Trying to match the movements of the cash VIX ($VIX.X) to the front month VIX futures is an important exercise, particularly since all of the VIX products (futures, options and ETPs) are priced off of the VIX futures.

I see a couple of issues involved in your situation. First, keep in mind that the cash VIX has a fixed maturity of 30 days, while the front month VIX futures will have an expiration of anywhere between 0 and 30 days, depending upon where we are in the VIX futures/options expiration cycle. With one day until expiration, the front month futures match the cash VIX by about 99% and of course the two converge right at expiration. At the beginning of the cycle, when the VIX front month futures have 29 or 30 days until expiration, they only move about 65% as quickly as the cash VIX does. So, during the course of the expiration cycle, the speed of the VIX front month futures relative to the cash VIX accelerates from about 65% to about 100%.

The bigger issue I think you are encountering is one of liquidity. On the day you asked (December 29th), the regular VIX January VIX futures contract (VXF12) traded 5,891 contracts and

showed an open interest of 50,313. In contrast, the January mini-VIX futures contract traded 13 times and had an open interest of 35. My guess is that because of the low volume in the mini-VIX futures, the closing price was stale print from somewhere during the early or middle part of the trading session and thus not reflective of market values at the close.

Going forward, I would use the regular contract for monitoring current and end-of-day prices. To the extent possible, I would also favor the regular contract for trading, due to the superior liquidity and tighter spreads.

—Bill

Q: What would you say is a realistic goal for a trader in a given year?

Thanks,
Adam

A: That depends on a lot of things: risk tolerance, capital that is being traded, experience. It really depends from trader to trader. That said, I think it's important to point out a few things:

The less money one is trading, typically the easier it is to get high returns. When there is little at risk it is very easy to achieve a high percentage return because most traders do not worry about losing a few thousand dollars here and there. It's a little silly but the less at stake, typically the fewer traders really worry about what they are making or losing. This all changes once those dollar signs get real.

For traders trading over 150,000 dollars a year it is not very realistic to shoot for 100% returns unless he or she has a very high risk tolerance. Those trading millions should have even lower expectations. To put things in perspective, hedge funds are ecstatic when they return close to 30% in a year and are typically shooting for closer to 20. Any trader who is told that 5% a month on real money is asking for it.

Hope that helps,
Mark

Four Principles of VIX-Based Hedging

Jared Woodard

IN 2011, investors continued to look to volatility-linked products to hedge their stock portfolios. Investors who are just coming to these products or who are already using volatility products as hedging vehicles can benefit from the following four principles.

1. Hedge your actual risk.

It should go without saying, but it is important to confirm that the return profile of your chosen volatility product(s) actually provides a desirable hedge against your core portfolio. I spoke with a trader several weeks ago who was using VIX ETNs like VXX and VXZ to hedge a portfolio that included stocks, bonds, some illiquid closed-end funds, and precious metals. Equity volatility instruments are appropriate hedges against downside risks in stocks, not the whole universe of investable assets.

Within the realm of equities, the standard approach is to weight risk estimates across stocks based on the long-term beta of each individual security. While I use beta estimates myself, I can foresee two problems. First, there is the familiar phenomenon of "correlations going to one" in a crisis, such that long run beta of a stock versus the market will not be realized. Since volatility products used for portfolio hedging should be sensitive to the real capital at risk in a volatile downturn, beta estimates may be too low in general. Second, in recent years equity markets have been marked by much higher than average correlation, especially among large-cap stocks. An investor relying on long-term beta estimates will be insufficiently hedged if current real correlation is higher than the coefficient used in the beta formula.

2. Volatility-linked products are preferable to conventional index options for purposes of hedging.

I have mentioned this feature before (see "VIX Futures and ETPs: Declaring Independence from Strike Prices"), but it warrants emphasis. The best reason to trade volatility-linked products is that the value of those products is independent of the prices of their benchmark assets. A trader who buys a put option to hedge against downside risk and volatility commits to two claims: 1) that actual price volatility in the future will be higher than options currently imply, and 2) that the asset in question will be lower than the strike price of the put at expiration (or will be lower than some intermediate level at a given anticipated exit date). However, few investors actually want or need to target specific price levels. Volatility products allow them to express the same thesis about volatility, freed of any commitment to a specific strike price.

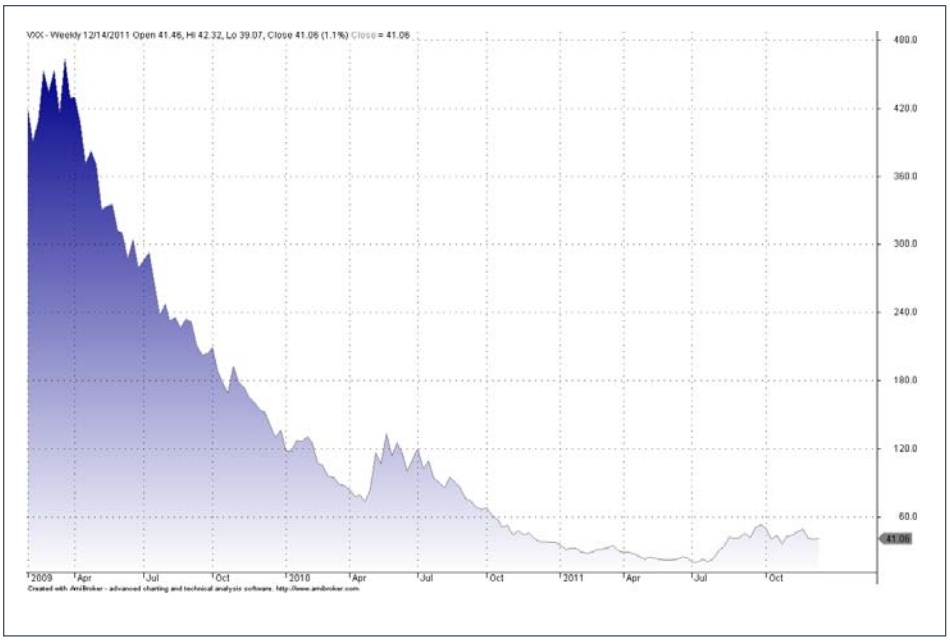
What about using VIX options instead of futures or ETPs? Historically, the risk premium in VIX options has been even higher than that of SPX or SPY options, which means that VIX call buyers are paying an even heftier cost than they would if they had purchased SPX puts instead. A trendy strategy this year has been to trade 1x2 VIX call spreads, made popular by Jeremy Wien at Credit Suisse. While

Since volatility products used for portfolio hedging should be **sensitive to the real capital at risk** in a volatile downturn, beta estimates may be **too low** in general.

this strategy has some attractive elements, it has underperformed simpler methods involving ETNs and futures.

3. Buy-and-hold VIX hedging is too expensive. The phenomenon of VIX futures contango and the negative roll yield associated with VXX will be familiar to most regular *Expiring Monthly* readers. When the VIX term structure is in contango, holding positions in the first and second VIX futures contracts (or holding VXX or other short-term ETPs) will incur a steady cost independent of the absolute level of volatility. See figure 1 for an illustration of how this cost has affected the performance of VXX since inception. Notice that the ETN has stabilized in 2011 due to higher that average market volatility but also due to periods of flat and backwardated futures term structure in the last half of the year. Whether VXX will resume its downward slide will depend on those same two factors, but a historically-minded trader should tilt the scale in favor of a return to contango.

If buy-and-hold volatility hedging is too expensive, then, what is a stock investor to do? I think the best approach is some form of tactical asset allocation or market timing.



CSI data, Amibroker

FIGURE 1 *VXX weekly prices, 2009–2011*

The VXH allocation algorithm I developed is just one potential version of this; traders could opt for even simpler hedging regimes based, for example, on familiar technical or quantitative rules like a monthly moving average, the Golden Cross, standard deviation / Bollinger bands, or etc. Adopting a trend-following approach to volatility has the natural advantage of setting hedging allocations in small size when volatility is low or not rising quickly, helping to keep costs down.

4. Find your duration sweet spot. Despite the higher contango-related costs, short-term VIX futures, VXX, and other volatility products have the significant advantage of responding quickly to market declines: they are more expensive, but provide more bang for the buck. Conversely, longer-dated products respond less quickly to market downturns but are cheaper to hold in flat or rising markets. Many traders have looked to a 3–5 month duration as a preferable blend of the two tendencies, and that compromise makes sense to me, especially from the standpoint of passive hedgers. A trader using technical criteria or some objective rule set for sizing hedge positions, on the other hand, might be willing and able to afford allocations to short-term products. **EM**

Using VIX Exchange-Traded Products as Hedges

Bill Luby

INVESTORS WHO ARE looking to hedge their long equity exposure with the CBOE Volatility Index (VIX) have three choices in the VIX products space: VIX futures; VIX options; and VIX exchange-traded products (ETPs). In the September 2011 issue of *Expiring Monthly*, in "Trading the Expanding VIX Products Space," I discussed how the proliferation of VIX ETPs had created a proliferation of new opportunities for those who are interested in pursuing a wide variety of volatility strategies.

This month, I intend to extend that discussion of VIX ETPs to incorporate their use as hedging tools. In part one, which will appear in the January issue, I introduce some of the VIX ETP hedging alternatives and discuss their performance in two types of bear market moves. In part two, I will drill down on the performance of the VIX ETPs and discuss approaches for using these as hedges and sizing the hedges.

One of the difficulties of analyzing the effectiveness of VIX ETPs as hedges or even as speculative trades is the lack of any meaningful historical data. Two VIX ETPs, VXX and VXZ, were launched in 2009. Of the remaining 29 VIX ETPs, 10 were launched in 2010 and 19 have been launched this year. As luck would have it, however, 2011 has seen two textbook volatility events that can be used as a backdrop for evaluating the success of hedging strategies for VIX ETPs. The first of these is the Japanese earthquake, tsunami and nuclear disaster, which was relatively brief and reversed in couple of weeks. This is the most frequently encountered type of volatility event. The second volatility event is the ongoing European sovereign debt crisis, and in particular the sharp bearish moves in equities from late July through early October. This longer downturn and persistent high volatility is very unusual, but is the type of market environment that any hedging strategy needs to account for.

Types of VIX ETP Hedges

Looking across the universe of VIX ETPs, there are five general types of VIX ETPs that are worth considering as hedges:

1. Short-term long VIX futures ETPs (VXX, VIXY, etc.)
2. Mid-term long VIX futures ETPs (VXZ, VIXM, etc.)
3. VIX futures ETPs with a dynamic long VIX futures allocation (XVZ)
4. Self-hedging products, with dynamic long SPY and long VIX futures components (VQT)
5. Leveraged short-term long VIX futures ETPs (TVIX, UVXY)

The two most popular VIX ETPS, VXX and VXZ will be centered on this analysis. XVZ represents a third category of VIX futures ETPs and is particularly interesting due to the manner in which long VIX futures positions are dynamically allocated. Unfortunately, because XVZ was not launched until August 17, 2011, data are not available to evaluate this product in the context of the Japanese volatility event or the European sovereign debt crisis. I refer to the fourth VIX ETP general type as a "self-hedging product" because VQT is essentially a long SPY position which is hedged by a dynamic long VXX position that is sized according to market conditions. As such, VQT is not so much a hedging tool for a long equity position as it is a possible replacement for long equity portfolio, with a built-in hedge. The fifth and final type of VIX ETP hedge is essentially a leveraged +2x version of VXX. It is included here partly for completeness and partly to illustrate how leverage can impact the performance of hedging products.

VIX ETP Performance During Japan Disaster and Recent European Sovereign Debt Crisis

In analyzing the performance of VIX ETPs during the March Japan disaster

VXZ is a slightly better performer during the Japan crisis, while the round-trip performance during the European sovereign debt crisis favors VXX by a wide margin.

and the August to October chapter of the European sovereign debt crisis, I evaluated SPY, VXX, VXZ, VQT and TVIX when the markets were at a recent pre-crisis peak, on the day when the SPY closed with its maximum drawdown (also known as ***maximum adverse excursion*** or MAE) and again when the SPY made its first significant post-crisis peak. Figures 1 and 2 below capture the closing prices for these five ETPs at the pre-crisis peak, at the MAE and at the post-crisis peak. In addition, the performance from the pre-crisis peak to MAE is recorded, as is the "round trip" from the pre-crisis peak to the post-crisis peak.

Note that when it comes to VIX ETPs, the performance of these products is most sensitive to changes in the VIX futures in the short-term, but is dominated by changes in the VIX futures term structure and associated roll yields over a long-term time horizon.

In the figures, all four VIX-based ETPs are negatively correlated with the SPY during the European sovereign debt crisis, but VQT is positively correlated during the Japanese disaster, as the dynamic allocation of the VIX futures component results in a large long VIX futures position just as the VIX spike peaks and begins to reverse. This divergence in performance for VQT across one brief and one extended period of elevated volatility is confirming evidence that VQT is not an effective hedge against a minor (-6.2%) drawdown, but is more effective during an extended period of elevated volatility, when the VIX futures are likely to be in ***backwardation*** and benefiting from a positive daily roll yield.

Looking at the MAE data, the leveraged hedge, TVIX, is the top performer in both instances as SPY falls from peak to trough. Note that when evaluating the round trip performance, however, TVIX is the worst performer during the Japanese crisis. TVIX also falls short of returning twice the performance of VXX in the round trip data for the European sovereign debt crisis (122% to 75%), even though TVIX was up almost three times as much as VXX from the pre-crisis peak to the MAE. Here is the essence of a leveraged ETP: when compounding is in the desired direction, returns will

	2/18/11 Before	3/16/11 SPY MAE	4/1/11 After	*2/18–3/16* MAE	*2/18–4/1* Round Trip
SPY	131.77	123.59	130.59	**-6.21%**	-0.60%
VXX	29.03	37.63	29.09	**29.62%**	0.21%
VXZ	54.11	63.33	54.66	**17.04%**	1.02%
VQT	113.91	111.49	113.07	**-2.12%**	-0.74%
TVIX	37.52	60.19	35.63	**60.42%**	-5.04%

FIGURE 1 *SPY and VIX ETP Movement Around Japan's March 2011 Disasters*

	7/22/11 Before	10/3/11 SPY MAE	10/28/11 After	*7/2–10/3* MAE	*7/2–10/28* Round Trip
SPY	133.04	109.24	127.79	**-17.89%**	-3.95%
VXX	20.73	56.84	36.26	**174.19%**	74.92%
VXZ	47.74	75.21	57.79	**57.54%**	21.05%
VQT	112.07	122.04	129.85	**8.90%**	15.87%
TVIX	16.75	100.90	37.25	**502.39%**	122.39%

FIGURE 2 *SPY and VIX ETP Movement as European Sovereign Debt Crisis Deepens, Late 2011*

receive a significant boost; when the directional movement is unfavorable or mean-reverting, the leveraged ETPs will typically underperform by a substantial margin.

Turning to VXX and VXZ, note that in both instances, VXX outperforms VXZ from the pre-crisis period to the MAE. Looking at the round-trip performance data, however, VXZ is a slightly better performer during the Japan crisis, while the round-trip performance during the European sovereign debt crisis favors VXX by a wide margin. This type of performance divergence is largely due to the VIX futures term structure, where VXX experienced positive ***roll yield*** during the European sovereign debt crisis, while VXZ was subjected to negative roll yield during the same period.

Initial Thoughts on Sizing the VIX ETP Hedges

While specific VIX ETP hedging strategies and sizing approaches will be the focus of part two of this article, to be published in the January edition of this magazine, I want the graphic below to serve as a sort of preview of coming attractions.

Very simply, Figure 3 presents what I call the X factor, which is the ratio of the gain in each VIX ETP relative to the loss in the SPY from the pre-crisis high to the MAE, with the data presented for both the Japanese crisis and the European crisis. The minimum % hedge column is the minimum portfolio allocation for each ETP to hedge SPY against its MAE losses in both the Japan and Europe scenarios. In all instances, the minimum hedge allocation is derived from the Japan scenario, as ***VIX convexity*** is responsible for the outperformance of the VIX ETPs during the European sovereign debt crisis.

Conclusion

There are a handful of VIX ETPs which are well-suited to serving as

VIX and More

	X Factor Japan	X Factor Europe	Minimum % Hedge
VXX	4.8	9.7	17.3%
VXZ	2.7	3.2	26.7%
VQT	(0.3)	0.5	n/a
TVIX	9.7	28.1	9.3%

FIGURE 3 *2011 MAE Break-Even VIX ETP Hedge*

DEFINITIONS

Maximum Adverse Excursion *The maximum loss incurred in a position during the period studied. Often known as MAE for short.*

Backwardation *A downward sloping futures term structure in which the front months are more expensive than the back months.*

Roll Yield *The amount of return generated rebalancing a portfolio of futures contracts to maintain a constant maturity. Typically an ETP will rebalance its portfolio on a daily basis by selling near-term contracts and buying an equal amount of longer-term contracts. If the near-term futures are less expensive (contango) the result is a net loss and is known as negative roll yield; if the near-term futures are more expensive (backwardation), the rebalancing results in a gain and termed positive roll yield.*

Contango *An upward sloping futures term structure in which the front months are less expensive than the back months.*

VIX Convexity *This tendency of VIX to accelerate to the upside on a per-unit basis as SPY/SPX falls but to decline in increasingly smaller increments as the SPX rises.*

hedges for a long equity portfolio. In part one of this article, I have introduced five VIX-based ETPs that are suitable as hedges and examined their performance during the Japanese earthquake/tsunami disaster and the recent selloff that was triggered by concerns about the European sovereign debt crisis. I also briefly touched upon the issue of sizing these VIX ETP hedges.

In part two of this article, I will evaluate the performance of the VIX ETP hedges in more detail, discuss constant (always on) hedges vs. threshold (triggered by market movements) hedges and expand my thinking on the subject of sizing of hedges. Finally, I will revisit VQT and XVZ and explain why I find these to be attractive hedging alternatives to VXX and VXZ. **EM**

Further Reading

"The VIX ETNs: VXX and VXZ," *Expiring Monthly,* March 2010.

"Exploring the VIX Futures Term Structure, Part I," *Expiring Monthly,* August 2010.

"An Interpretive Framework for VIX Futures (Second in a Series)," *Expiring Monthly,* September 2010.

"VIX Futures: Putting Ideas into Action (Third in a Series)," *Expiring Monthly,* October 2010.

"Cheating with Partial Hedges," *Expiring Monthly,* May 2011.

"VIX Convexity," *Expiring Monthly,* June 2011.

"Trading the Expanding VIX Products Space," *Expiring Monthly,* September 2011.

Gamma'd If You Do and Gamma'd If You Don't

Andrew Giovinazzi

What Is Gamma?

The Greek letter gamma evokes all kinds of ideas in my head. Mostly some of the worst short gamma days I had in my floor trading life. Walk home after the close and in the morning you have your face kindly ripped off from a gap up or down. Of course that is the first hint of what gamma is. It is the Greek that tells you how your position is behaving relative to a move in the underlying security. Are you getting longer or shorter the underlying (known as delta) based on a move in the security itself? Since I opened the can from my memories of a short gamma position we will talk about trading those below. How do you trade these things? Besides getting your face ripped off is there anything you can do in the meantime?

Where Is the Position Placed?

We will take our hypothetical short -100 gamma position and go about trading it. By -100 gamma that means for every $1 move in the underlying your position will collect 100 deltas in the direction *opposite of the movement.* **In short as the name rallies the position gets shorter and if the name declines the position gets longer.** You wonder what "placed" means? That is the idea of the surrounding factors that go into that -100 gamma position. Is the implied volatility relatively high or low? Is the implied volatility going in or out? Is the gamma coming from a small front month position or a larger back month position? Are you moving to the short strikes or the long strikes? These things matter because it might give you a clue as to how aggressive you need to be if things start to go awry. We will answer all these questions below.

What Is the Goal of the Position?

The goal of the position is to make money. That sounds glib but it is true of course. You make money on short gamma when the daily option decay outweighs any adverse underlying movements. That is a key construct. Kind of like getting paid for showing up. Also, you want the value of the options you sold to create the short -100 gamma position to decline. There has to be a setup for that kind of action to take place. If the realized volatility is still running around, you might want to hold off a bit. You can get more nuanced of course. Let's say you want to be short a name and want some short gamma as well because of favorable pricing. If the name is not going down to your liking you have the advantage of collecting decay. Or maybe you want to be short a name but have some short gamma at a target area. Even an adverse move can be covered by gamma that is *sold well.* Now we are talking about placement. Have your goal lined up first and that will start to dictate how you trade a short gamma position.

How Can You Trade It?

There are some things I look for first of all when I put on a short gamma position. First of all I try to take one side of the market out if I can help. By this I mean as an example, "this stock is a pig and at no time do I want to own deltas." In my mind I would always want to be synthetically at least small short deltas in the name somehow even if I was short a few puts. The biggest risk in a short gamma position is "the gap". Ultimately you have no control over that except that you have sold gamma well enough to cover the movement. If you have a gap in the direction of your bias you can reestablish the delta easy enough by adjusting with options or stock. Things are going in your favor. It gets dicier in a move in the opposite direction. At worst I would create a longer gamma position with the delta I want inside the short gamma position. That way if I was totally wrong my losses are stopped out.

When Do You Trade It?

Knowing when to adjust short gamma is tough and easy at the same time. By

(continued on page 26)

The Power of OTM Options

Mark Sebastian

In 2005 as a trader at Group 1 Trading, I stood in the Best Buy pit. We traded a lot of products: Best Buy, Lexmark Printing, Sepracor, and an Irish biotech company called Élan. The biotech with the help of Biogen had one product that it was marketing and selling. It was called Tysabri. Tysabri was and still is a break-through medication for patients that have multiple sclerosis. The drug is one of the best drugs for fighting this debilitating disease. At the time, there was not believed to be any side effects of the drug . . . On February 26, 2005, it was announced that this drug had in fact caused several people to die from a rare disease caused PML. The drug was going to be immediately pulled from the market.

FIGURE 1

The next day the stock was down over 18 dollars, and my position was up about 155,000 despite the fact that I had gone out long deltas, short gamma, and short vega. Why?

Let's rewind to a few days earlier. ELN (Élan's ticker) was trading a little above 27.00 a share. I was short the 25/27.5 put spread and short the 22.5/20 put spread at the same time. I do not have the original position in front of me, but I believe the position looked something like this: -200 27.5 +200 ELN 25 puts -100 ELN 22.5 puts +100 ELN 20 puts +100 ELN 17.5 puts, mostly in March. I was also short some stock against this position, but its effects on this story are marginal. I noticed that the 22.5 puts were trading for around .15 and that the 20 puts were essentially worthless. I looked at my DPM (Designated Primary Market Maker) and asked him where his market was on 300 of the March 22.5 puts, he said he would sell them to me at .20 a contract. I said I would pay .175 on splits and he sold them to me; the 20 puts and 17.5 puts were essentially worthless.

I lost about 40k on my short ATM put spread that I had on. However, once ELN blew through the 20s and the 17.5s that all changed. The 27.5 and 25 puts were both complete in the money and basically canceled out any loss beyond that defined spread. 100 20 puts that I was long from the old 22.5/20 put spread were now worth about 110,000 dollars and the 17.5 puts were worth about 85,000. Thus I made over 150,000 dollars in a single day.

I have always had mixed emotions about the day, because the profit came out of news of someone's death. However, as time has passed I have decided I didn't profit because someone died from PML, I profited because I didn't let myself stay short a bunch of 'unit puts'.

The Unit Put

On the floor, we like to call cheap out of the money puts and calls 'units'; we sometimes would also call them bullets. We considered them to be super important to be not long. The power of cheap out of the money puts cannot be underestimated. It almost never pays to be short cheap out of the money options. The model thinks about cheap options sort of like the following game of cards:

> Two men are going to play a card game. They will play it over again for eternity. Here are the details: There are 100 cards. 99 of the cards have a value of 0. One card has a value of 100.00. One of the men will pay the other for the chance to draw one card. If he draws a 0, he gets nothing, if he draws the 100, the other man must pay him $100.00. Theoretically, the card game is worth 1.00 (100x1/100). Since the two men are playing over and over again, if the man dealing the cards charges 1.10 over time he will make a lot of money.

The problem is that is not the way options work on a multi-sigma event. Multi-sigma events are more like this card game:

> Two men are going to play a card game; they will only play it once. Here are the details: There are 100 cards. 99 of the cards have a value of 0. One card has a value of 1,000,000. One of the men will pay the other for the chance to draw one card. If he draws a 0, he gets nothing, if he draws the 1,000,000, the other man must pay him $1,000,000.00. Theoretically, the card game is worth 10,000.00 (1,000,000x1/100). But, what do you think the one man should charge the other to play the game? Remember, this game will only be played once. The odds are the same, but if the 1,000,000 card is drawn, the man on the hook for the money will have no opportunity to make the money back. My guess is that it would take a lot more than $10,000.00 to get someone to be the dealer in this game.

While the differences between the two games might be subtle they are very important and point to where a model works one way, but man thinks another way. Traders cannot afford catastrophic losses and the model does not take that into account; because of this, the model will always undervalue these cheap out of the money puts.

The Pay Out

Going further let's move into how these puts pay out. One of the major points of the book *The Black Swan* is that the normal distribution is not the correct way to price options. While stocks and indexes tend to have one and two standard deviation moves with about the regularity that a normal distribution predicts, beyond that the model falls apart. Taleb theorizes that three and four sigma events are more rare but black swans (five sigma plus events) are far more likely to occur than the pricing model predicts. Essentially, once a stock breaks that two standard deviation move, it has a much higher chance of moving five standard deviations than a normal model predicts. Herein lies the power of the unit put, while the model puts a far out of the money put as worth .05–.10, odds are that put is worth more than that model predicts because of the multi-sigma event and psychology (even in the event that the multi-standard deviation event doesn't happen).

To put matters into figures, a three standard deviation move should happen .001 of the time or less; yet since 2008 the following days have been more five standard deviation plus moves (Table 1).

Let's take a look at two examples of multi-sigma events: the flash crash which was an actual multi-sigma event, and the meltdown in Japan which ended up NOT being a multi-sigma event. In both cases the process for units gaining a large amount of value was the same.

Date 1	Price 1	Next Day	Price 2	Move
09/26/08	$1213.27	09/29/08	$1106.42	106.85
10/10/08	$899.22	10/13/08	$1003.35	104.13
10/27/08	$848.92	10/28/08	$940.51	91.59
10/14/08	$998.01	10/15/08	$907.84	90.17
04/13/00	$1440.51	04/14/00	$1356.56	83.95
11/28/08	$896.24	12/01/08	$816.21	80.03
08/05/11	$1199.38	08/08/11	$1119.46	79.92
10/08/08	$984.94	10/09/08	$909.92	75.02

TABLE 1

1. The underlying gets a jolt down
2. The ATM IV moves up incrementally
3. The Skew curve Pops
4. OTM puts gain gamma (Remember for options that are far out of the money, when IV goes up, the gamma of the options actually increases. This is the case until the options reaches about a 15 delta.)
5. The underlying jolts down more
6. ATM IV up more
7. Skew up more
8. OTM put gain more gamma
9. ETC

The process of an OTM put gaining value is like a snowball picking up steam. Before the trader knows it, an option that was worth .25 is now worth 25.00.

The Flash Crash

On April 26th, with the SPX trading 1212, a trader could have bought the May 925 puts for .25 (the market was .20–.30 at the close). The option essentially had no Greeks:

Exp	Strike	Bid	Ask	Delta	Gam...	Theta	Vega
MAY 10	925	.20	.30	-.01	.00	-.04	.05

The next day, the market took a drop of 28 points, a more than 2% move and based on an ATM IV of 15% just under a 2.5 standard deviation move. With a delta of less than one our option should be worth less than .50. Notice the pricing of this option at day's end, though. The BID is through where our predicted theoretical value had us ending up.

Taking us to the Friday after the flash crash, the market has dropped to 1110, a full 100 point drop and based on our starting IV of 15% a clear five sigma event. Using the option calculator available on the CBOE's website[1], on a move down of 100 points our 925 put, with 14 days to expiration and an IV of 15 should be worth nothing. Even increasing the IV to how much the ATMs picked up (about 30%) the put is only worth about .65. What was the May put worth on May 7th?

Exp	Strike	Bid	Ask	Delta	Gam...	Theta	Vega
MAY 10	925	4.50	6.00	-.08	.00	-.76	.31

Incredibly, the option is worth about 5.00, a return of 2,000% for the trader that was smart enough to own these unit puts.

Taking a look at March 2011, let's take a look at how the threat of a multi-sigma event can cause an OTM put to explode. On March 14th, with SPX at 1296 and three days to expire, a trader could buy the SPX March 1175 puts for .25.

Exp	Strike	Bid	Ask	Delta	Gam...	Theta	Vega
MAR 11	1175	.20	.25	-.01	.00	-.21	.04

When the Japanese crash occurred, even though we didn't have the multi-sigma event in the market, traders (remembering the flash crash) ran for protection. We gain so the snowballing effect on S&P options. By the 16th, even with only one day to expire, the March 1175 puts were worth over 1.25. A return of 400% without the market ever even coming near those puts and only one day to expire!

Exp	Strike	Bid	Ask	Delta	Gam...	Theta	Vega
MAR 11	1175	1.10	1.45	-.06	.00	-1.49	.10

The lesson here is two-fold: If one were able to develop a cheap way to constantly own cheap out of the money puts when the VIX is low this system would likely pay for itself pretty quickly. *(continued on page 26)*

The CBOE S&P 500 VARB-X Strategy Benchmark™ and Being Short Volatility

Russell Rhoads, Guest Contributor

RECENTLY I WAS LISTENING to two market experts talk about volatility and the approach they each had to trading around volatility. Specifically, they disagreed on whether traders should consistently be short volatility. One stated that he felt individual traders should never be long volatility. The second stated that he fully disagreed and felt traders should be willing to be both long and short volatility. This conversation got my mind spinning about who was right. Well, then I recalled the CBOE publishes indexes based on a variety of volatility-related strategies. This leads me to the CBOE S&P 500 VARB-X Strategy Benchmark™.

The CBOE S&P 500 VARB-X Strategy Benchmark is quoted with the ticker VTY and updated after the stock market close each day. The index is constructed to track the difference between S&P 500 implied volatility and the subsequent realized volatility on the S&P 500. Historically the anticipated level of market volatility has been higher than what actually occurs in the market place. This historical relationship is what causes traders to make the statement that individuals should always be short volatility. The index shows a method of taking advantage of the difference between implied and realized volatility involves systematic short positions in CBOE S&P 500 Three-Month Variance Futures (VT) contracts held to expiration. Before diving into the nuts and bolts of the strategy, an introduction to these contracts is probably worth a few words.

Three-Month Variance Futures were introduced at the CBOE Futures Exchange in 2004. These contracts are quoted based on the outlook for realized volatility in the S&P 500 Index and are cash-settled based on a calculation of realized volatility. The realized volatility calculation is based on the actual volatility of the S&P 500 from the Friday of the previous contact expiration to the Friday of the expiring contract expiration. For example, the December 2011 Three-Month Variance Contract was settled based on realized S&P 500 volatility from September 16, 2011, to December 16, 2011.

More often than not the implied volatility of S&P 500 index options has been over-priced relative to the subsequent realized volatility. Because of this consistent overpricing of implied volatility many market participants like to be consistent sellers of volatility. The VTY shows the performance of consistently being short volatility through taking a systematic short position in Three-Month Variance Futures contracts. The chart below shows the performance of the VTY since inception in 2004 to late December 2011.

The striking thing about this chart is the dramatic drop in this strategy

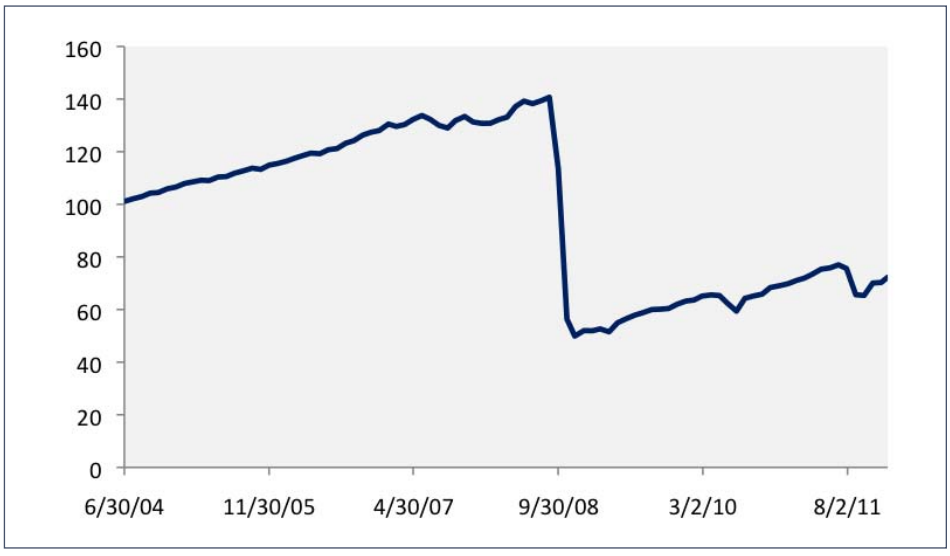


FIGURE 1

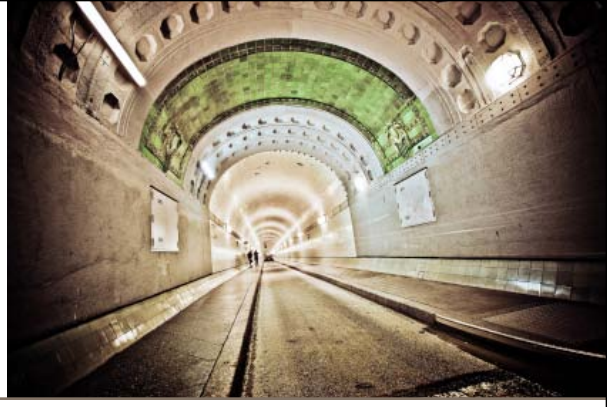
that occurred in 2008. For those with short memories the last few months of 2008 was a period of very high market volatility. The VTY actually fell from over 140 at the end of August to the low 40s in late November. Again, the VTY involves a strategy that consists of being short implied volatility. This drop in that turbulent time period shows that *always* being on the short side of volatility may not be a good hard and fast rule. The drop of the VTY in 2008 shows that there are times when being long volatility is the way to go. More recently, in August 2011 the VTY dropped over 13% for the month. Again a time those with long volatility exposure would have reaped the benefits of this position.

On the other side of the argument, going back to mid-2004 there are now 90 months covered by the VTY—in 69 of these 90 months the VTY has been higher on the month. This means over 75% of months, being short implied volatility would have been a profitable method of trading. This gives some credence to the argument that it is best for traders to focus on being short volatility instead of trying to play both sides.

One of my mentors likes to say a strategy works until it doesn't. Being short volatility works the majority of months, at least according to the performance of the VTY. Being short volatility has worked more often than not, but when it doesn't, the effect can be a painful experience for those on the short side. **EM**

Russell Rhoads, CFA, is an instructor with The Options Institute at the CBOE. He joined the Institute in 2008 after a career as an investment analyst and trader with a variety of firms including Highland Capital Management in Memphis, Caldwell & Orkin Investment Counsel, TradeLink Securities and Millennium Management. He is a financial author and editor having contributed to multiple magazines and edited several books for Wiley publishing. Also he is the author of three books, in 2008 he wrote Candlestick Charting For Dummies, Option Spread Trading *was released in January 2011 and* Trading VIX Derivatives *was published in August 2011. In addition to his duties for the CBOE, he instructs a graduate level options course at the University of Illinois-Chicago and acts as an instructor for the Options Industry Council. He is a double graduate of the University of Memphis with a BBA ('92) and an MS ('94) in Finance and also received a Master's Certificate in Financial Engineering from the Illinois Institute of Technology in 2003.*

When the Days Are Too Short and the Nights Are Too Long:
Trading Long Gamma



Andrew Giovinazzi

TRADING LONG GAMMA is one of the least understood practices for the active option trader. Whereas short gamma is relatively easy, sell juice and wait until it expires worthless, and then on to the next trade (if it were only always that easy). Pass Go and collect the money. For many buying premium the pattern is more like buy the juice, wait, cry, rejoice, bemoan and blow it out and resign with a small defeat. The reason being of course is that there is a lot of watching on the part of the trader there and not a lot of *action*. Here is a description of long gamma and the breakdown of trade selection and some of the action that goes with it.

First there is the obligatory "What is gamma?" Gamma is the rate of change of delta. If delta is the velocity of the position, gamma is the acceleration for all of you physics minded folks. Looking at gamma as a figure, long gamma is a positive number that means you accumulate deltas in the direction of the underlying. Long gamma has an increasing delta as the underlying moves up and a short delta as the underlying moves down. How can you lose when you can be right in any direction? The answer is decay which is known as theta and the clock starts ticking the moment you buy an option. To make money trading long gamma the idea is to finance the position until something good happens, say a greater than two standard deviation move that will make the position worth more than the trader paid for it.

How does an option trader finance a position? The answer is generating income by scalping stock, trading options against the position or riding a wave up in implied volatility. This last statement is packed with information. Why? Because the option trader is now looking at other factors in putting on a position which lends itself to trade structure.

Scalping Stock

This is the idea of buying stock when the underlying goes down and selling it back out when the underlying goes up. A hypothetical position of 100 gamma means the position will add approximately 100 deltas with each $1 move up in the underlying. As the underlying moves down by a $1 the 100 gamma position gets shorter 100 deltas from the initial point. Note that a long gamma position can create a short delta position. It just depends on the direction of the underlying and the starting point. Generally look to trade (buy in or sell out) about half the deltas on decent (around one standard deviation) moves. A stock can be flat for the day but generate sold income if there is enough movement. Don't forget the afterhours market either. You can turn nights into income generators by placing orders away from the market there. The first thing an option trader should think about when looking at a possible long gamma position is, "How tradable is this underlying?" Does the name move? What does one standard deviation equate to? This also goes to size and commissions. Is there a reasonable commission structure to finance the long gamma if scalping stock is a must? Think about 200 gamma minimum (depending on the underlying stock price) positions to generate the needed deltas to trade the underlying. There has to be enough to trade to make it worthwhile. Long gamma is also a backspread-type of position so this idea lends itself to the right trade structure like a straddle or strangle. For an option trader to educate themselves take a 10-lot position in standard option analyzer software and buy a straddle and progressively more out of the money strangles. Get a feel for the gamma that is bought and the realistic chances of financing it by scalping. Right out of the gate there is an improved sense of the right type of trade where trading the stock will make sense.

Trading the Options

The advent of the weekly options by the CBOE has made trading options

against backspread/long gamma type positions much more interesting. Where scalping stock is a way to finance decay, selling options against a long gamma position achieves a similar goal. The big difference is that there is a reduction in the overall gamma number for the life span of the sold contracts. Any good size intraday move can generate a pop in the volatility of the more near term options. Selling some of these more out of the money options against the position will go a long way to financing a winner in the target long gamma month. Depending on conditions, keep the short options on or buy them back for less and reload for the next day. Trading more short term options against any long gamma position adds flexibility to the trade and fundamentally alters the structure of the initial position.

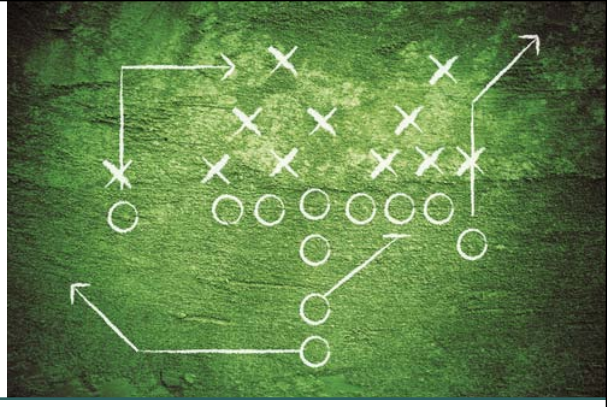
Riding the Wave in Implied Volatility

Going back to the straddle vs. strangle idea, traders will understand that the strangle is very dependent on moves in implied volatility. If implied volatility flies, both the straddle and strangle will shine and this is in general where taking action and exiting is probably best most of the time. If implied volatility collapses, the strangle will suffer because the gamma starts to disappear. At least the straddle has the advantage of an increase in gamma and a chance for later scalping if the implied volatility drops a bit. The strangle-type position will have trouble on a big decline in implied volatility. Don't get me wrong: the straddle price will suffer too; just that there is still a better shot at financing the position overall and the point is tradability of the resulting position to recoup the losses.

In general, by understanding the different, active ways to make money with long gamma positions, traders can get a better sense of picking the right trade structure for a position that has a better chance to win. By asking a few extra questions before a trade is put up, long gamma can be a little less painful and every once in a while huge fun. EM

Tactical VIX Hedging

Jared Woodard



IN THE LAST FEW YEARS, so many exchange-traded, volatility-linked products have launched that it takes a chart or table to keep track of them all. However, they are generally missing a component that is, in my view, essential for cost-effective hedging of a stock portfolio: rules for tactical allocation. "Tactical allocation" just refers to the practice of devoting capital to an asset only under certain conditions. If you have ever scaled into or out of a position based on a moving average or some other similar criterion, you are already familiar with tactical allocation. In the case of portfolio hedging, the idea is to devote capital to a hedging vehicle—in this case to volatility-linked products like VIX futures—in response to changing market conditions.

An investor relying on VIX or historical volatility alone to generate hedging signals would have been in excessively large hedge positions for the last few months of 2011.

For this month's Follow That Trade, I am looking in more detail at the allocation levels for the VIX Portfolio Hedging (VXH) strategy to illustrate this notion of VIX hedging using tactical rules. The baseline orientation is that we have a long equity portfolio we want to hedge and so we devote cash or margin worth 8–10% of the value of the portfolio to be used for hedging. VXH makes allocations to VIX futures contracts and/or VXX shares, and the real value of the strategy is its ability to vary exposure to those volatility products in response to market inputs.

Here are two qualities that an attractive hedging strategy should have. First, it should minimize drag, by which I mean the underperformance of a hedged portfolio versus an unhedged portfolio during bull markets. The majority of the time, we want our hedge position to be as small as possible, because hedging typically incurs costs. A smaller hedge position means a weaker drag on our performance during flat and rising stock markets. Second, because markets can turn south relatively quickly, however, another desirable feature is the ability to scale into larger hedge positions just as quickly. These qualities are in tension with one another: a strategy that increases the size of the hedge position too quickly will incur higher costs and treat every market hiccup as a looming crisis, while a strategy that reacts too slowly will achieve low drag but will also prove ineffective during genuine market downturns. The trick is obviously to find a suitable balance.

Figure 1 compares the reactivity of three estimates of broad market turmoil. The levels for VIX and for a one-month close-close estimate of S&P 500 historical volatility should be familiar to most readers (in light and dark green, respectively). The black line shows the allocation level for

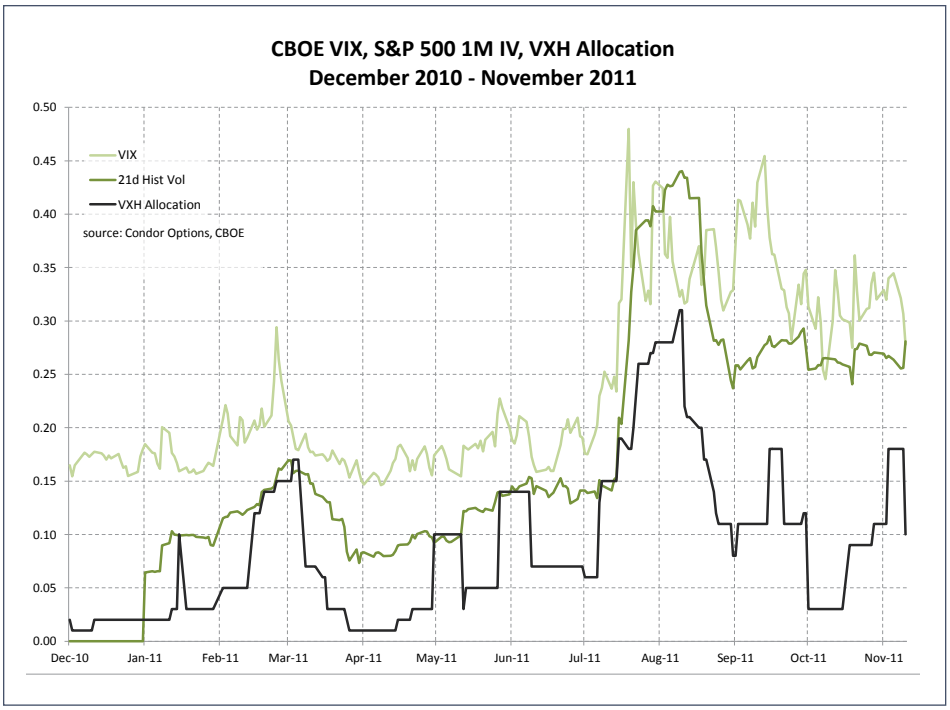


FIGURE 1 *CBOE VIX, S&P 500 1-month historical volatility, and VXH allocation levels, December 2010–November 2011*

the VXH strategy. The VXH allocation can technically fall anywhere between 1–100%, and as you can see it climbed above 30% in late August. I want to assess how well VXH met the two criteria explained above in relation to the VIX and HV estimates. First, regarding minimized drag, note the wide gap between VIX and VXH at various points, e.g. December 2010 and January 2011, April 2011, and September–November 2011. VXH always runs "cooler" than VIX, but the divergence is often substantial. The ability of VXH to climb down quickly from elevated levels in the last part of the year made all of the difference between preserving gains made earlier and giving them up as markets recovered. An investor relying on VIX or historical volatility alone to generate hedging signals would have been in excessively large hedge positions for the last few months of 2011; this illustrates, again, that quickly reducing hedge exposure is just as important as increasing it. With respect to the second goal, the tactical rule set behind VXH reacted quickly in March and in August to offset losses in the core equity portfolio.

One of the most important benefits of a tactically-allocated hedge strategy will not appear in any simple annual return comparison because, most of the time, market declines are not catastrophic and the world does not end. But those return comparisons will miss the fact that tactically hedged portfolios will achieve a lower volatility of returns. The volatility of returns

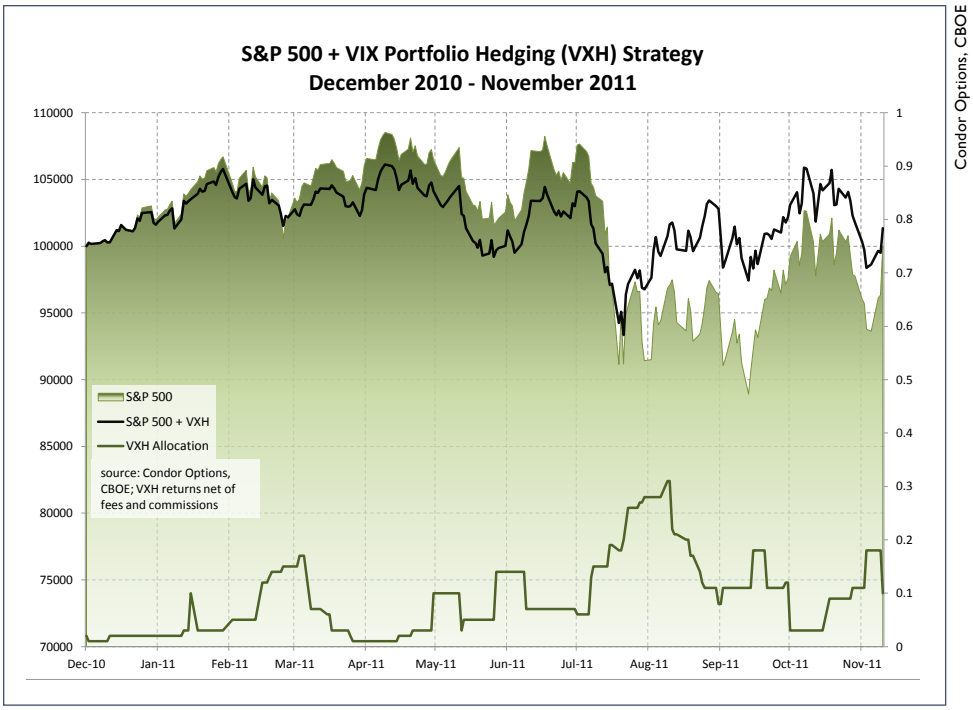


FIGURE 2 *S&P 500 and S&P 500 hedged with VXH, 2010–2011*

matters because it is the whipsaws from large nominal gains to crushing losses and then back again that make some investors want to leave the market altogether. While a tactically hedged portfolio might not reach the same heights as an unhedged peer, if those peaks are followed by sudden valleys, the value provided by a hedge becomes more evident.

Figure 2 compares the returns of an unhedged S&P 500 portfolio (green area) with those achieved by a tactical VXH allocation (black line). Again, by ramping up VIX futures exposure in mid- and late August, the hedged portfolio saw smaller drawdowns and a more stable equity curve. As the market stabilized, hedge exposure quickly fell to 11% and then even 3% by late October. Compare this style of allocation with the discretionary hedging advocated by the Roubinis of the world: even though the European sovereign debt crisis was as ugly as ever in September and October, because the market had stabilized in terms of price and several volatility relationships, a large hedge position was not indicated.

The criteria laid out here and the method of meeting them via responsive allocation levels can be used to inform any hedging strategy. The volatility-linked products available now and the low commission rates available for such products means that the time for conventional hedging strategies is long over. **EM**

The Value Added of Being a Trader

Bill Luby

RARELY DOES a week go by that I do not field at least one question about the feasibility of trading as a career. Most of the questions are from relatively new traders, but even experienced traders seem keen on knowing what I think about minimum account sizes, expectations regarding profitability and related issues.

Listening to the questions and comments, it appears as if all traders envision a hockey-stick trajectory for their trading career. Sure, they might lose money for a few months, perhaps even half a year, but once they get the hang of it, their account size is bound to grow exponentially. No doubt this will be the case for a select few, but a large majority of new traders will never be sufficiently profitable to make a career out of it and most will probably not make it through a full year if they expect trading profits to pay the bills.

While quite a few traders focus on their performance in terms of absolute dollar gains or percentage returns, I think they are often deluding themselves by setting such a low bar as a baseline. For the sake of comparison, when I think about the economics of being a trader, the first thing I consider is that if you are not consistently beating a benchmark like the S&P 500 index after a year or two, you should probably put your money into some index funds and find another career. Further, instead of considering profits in on an absolute scale, what if one were to consider the appropriate trader value added as the performance margin relative to the SPX multiplied by one's account size? In this context, a highly laudable performance such as beating the SPX by 1% per year pales even when applied to a $10 million trading account, where the trader value added turns out to be $100,000 per year—and if one works 2000 hours per year at the craft (most assuredly a lowball number for most traders), the $50/hour wage sounds much less compelling, particularly if you expect it to pay the rent in places like New York or Chicago.

When it is natural to reflect upon recent performance goals, be sure to include some non-financial goals alongside of those financial goals.

I dwell on the financial aspects of trading, because the financial upside is a large part of the appeal for most traders, but even a financial successful trader should stop to consider the collateral damage trading may be causing in terms of a broader quality of life, such as the impact on personal relationships, the physical and emotional toll, the opportunity cost of not trying something else and peripheral issues, such as the disruptions that uneven cash flow are likely to trigger.

But I have no intention of sounding like the Grinch.

On the contrary, trading has a multitude of benefits, including substantial work flexibility, the ability to be your own boss, tremendous profit potential, a unique set of intellectual challenges and a host of other psychic benefits.

My point is simply that during a time when it is natural to reflect upon recent performance goals, be sure to include some non-financial goals alongside of those financial goals. Also give some thought to cashing in your chips. At some point, the incremental value of the next $1 million (or whatever units you are keeping score in) will pale in comparison to some things like free time and a host

of as yet untried destinations and experiences.

I was reminded of all of this during a recent conversation with Joel Burnstein, the winemaker at Marilyn Remark Winery in Monterey County. Joel used to trade options on the Pacific Stock Exchange, but by far his best trade was when he traded in conversions and reversals for the likes of grenache and petite sirah. Let's just say he has no regrets.

To sum up, when thinking about the value added of being a trader, put the financials in terms of a benchmark and make sure the holistic picture is at least as favorable as the financial one. If this is not the case, perhaps 2012 should be the year to redouble your efforts on developing end-of-day strategies at the expense of an intraday focus.

As Michael Stokes is fond of pointing out, don't waste a good life trading. EM

Gamma'd If You Do and Gamma'd If You Don't *(continued from page 13)*

adjusting I mean *getting back to more flat deltas or the desired deltas*. That also means buying into rallies and selling into drops. That is the tough part unless you have enough of a bias. For our example of -100 gamma the ideal would be to keep your deltas inside of you total short gamma -100. As soon as you move outside the band adjust half by reducing your delta exposure. This should keep you nimble and survive a few short gaps.

Gamma vs. Vega: Are You Fixing the Right Problem When You Adjust?

How to adjust is really the next question. Gamma for most purposes is a shorter term Greek but any option has a gamma component. The near term, at the money strike will always have the most gamma and quickly adjust the problem. The farther you go out you start to tip the balance between a gamma hedge and new vega exposure. Buying a big chunk of options 3 months out, while solving the gamma issue, brings in a whole host of issues with vega (volatility risk). All gamma is not created equal. It is usually best to hedge apples with apples when possible. If you need a whole bunch of deltas, using deep options over stock gives the advantage of a self-stopping position because of the embedded synthetic short option in any stock trade. For the deeper option the gamma does not show up until you move to the strike which will do little good from a gamma point of view. How the strikes are placed will dictate how you adjust so just try to minimize the new problems and risks you might create in any adjustment.

Are you damned if you do and damned if you don't adjust your short gamma positions? The goal is to collect decay and survive the options collapse. By using how your position is structured and creating a plan and stick to it you can survive much more than you think with a whippy environment like we have been having. If you can keep the tail risk controlled too, you might just get to keep your face right where it was on the close the day before. EM

The Power of OTM Options *(continued from page 17)*

The cost of being short a put worth less than .10 is far greater than many traders realize. It, in the end, does not pay to be short cheap out of the money puts.

While the above might seem pretty obvious, I think about every trader, me included, is guilty of holding short options for too long. I can tell several stories where I lost thousands of dollars because I did not close cheap out of the money puts. We have laid out why it does not pay to be short these puts over the long haul, learn from our collective wins and mistakes. EM

[1] iVolatility.com Options Calculator at CBOE's website.