

# TREND Following

WITH THE CBOE VIX Premium Indexes

> VIX FUTURES & ETPS: DECLARING INDEPENDENCE FROM STRIKE PRICES

### EXPIRING MONTHLY THE OPTION TRADERS JOURNAL

#### EDITORIAL

Bill Luby Jared Woodard Mark Sebastian Mark Wolfinger

#### DESIGN/LAYOUT

Lauren Woodrow

#### CONTACT INFORMATION

Editorial comments: editor@expiringmonthly.com Advertising and Sales Expiring Monthly President Mark Sebastian: marks@expiringmonthly.com Phone: 773.661.6620

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# About the **Expiring Monthly Team**

#### Bill Luby



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.

His first book, Trading with the VIX, is scheduled to be published by John Wiley & Sons in 2011.

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.

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.

#### Mark Wolfinger



Mark grew up in Brooklyn and holds a BS degree from Brooklyn College and a PhD (chemistry) from Northwestern University. After working as a research chemist for Monsanto Company, in December 1976 he packed his belongings, left a career as a research chemist behind, and headed to Chicago to become a market maker on the trading floor of the Chicago

Board Options Exchange (CBOE).

Over the next 23 years, he worked primarily as a market maker, and also held a variety of positions in the industry.

After leaving the CBOE (2000), he became an options educator and stresses conservative methods, as detailed in his newest book, *The Rookie's Guide to Options*.

He currently resides in Evanston IL with his life-partner, Penny.



## Editor's **Notes**

**Bill Luby** 



In last month's options expiration cycle the two big issues were a growing European sovereign debt crisis and concerns about global economic growth.

This month's feature, authored by Jared Woodard, covers one of my favorite overlooked subjects, the CBOE VIX Premium Indexes. Jared examines the VIX Premium Strategy Index (VPD) and the Capped VIX Premium Strategy Index (VPN) as potential trading strategy vehicles and puts the two of them through some revealing backtesting.

Jared also takes on another of my favorite subjects, VIX Futures and ETPs, and highlights the benefit these product have over longer time frames because the products are note wedded to equity strike prices and thus do not lose relevance due to price drift.

Mark Sebastian talks about when the environment is advantageous to own options outright or use spreads, drawing upon Cabbage Patch Kids and baseball cards for inspiration. Mark is also responsible for this month's Follow That Trade and he discusses one of my favorites, fading VIX calls after a big VIX spike.

It seems as if I am the only one not talking about the VIX this month. Instead, I unveil a theoretical framework for evaluating volatility events that I call event theta.

Mark Wolfinger discusses why shortcuts are usually more expensive than anticipated, particularly for the new options trader. He also pens his final Wolf Against the World column and shares his thoughts about the benefits of a dialectical learning process.

Once again, the EM team returns to answer reader questions in the Ask the Xperts segment and Mark Sebastian pens the Back Page piece in which he talks about sandbagging and the role of hoarding information in trading.

As always, readers are encouraged to send questions and comments to editor@expiringmonthly.com.

Have a good expiration cycle,

Bill Luby Contributing Editor





The Expiring Monthly Editors

**Q:** If you buy a call that is deep in the money—so deep, in fact, that people stop trading it—at expiration, what happens? Are you just out of luck? What happens if you have sold that option?

-ML

**A:** When trading options, you are never out of luck. Someone will always stand ready to buy or sell those deep ITM options. That means you can always get out of the trade before expiration arrives.

However, the price may not always be fair or attractive.

Let's say you own the November \$40 call and the stock is currently \$48. You should be able to sell your calls (or cover a short position) at a price that is within 5 cents of \$8. If you cannot sell at \$7.95 or higher or if you cannot buy at \$8.05 or less, then do not allow the market makers to steal from you.

Exercise your call and sell the shares. That way you will get the \$48 price for the stock, which is the same as collecting \$8 for the option. Yes, there will be the added commission charge.

If you sold the call and cannot find a cheap offer, buy the shares (very late in the afternoon on expiration Friday) and deliver those shares when your account is assigned an exercise notice. If your account is so small that you cannot buy the shares, that can present a problem. But try to buy the \$45 calls at \$3 or the \$35 calls at \$13 if you cannot get the \$40 calls.

—Mark W.

Q: Sometimes I hear stock traders discussing very complex position sizing methods, using terms like "semi-martingale" and "pyramiding." Is there something you use or recommend? —I.H.

.....

**A:** The literature on money management is interesting, and that is one area where I would certainly like to spend more time. I am no expert, but several friends who are swear by Ralph Vince's Optimal F method.

In managed client accounts and in my own trading, I am usually content to allocate capital using a combination of fixed percentages and my own discretionary confidence in a trade or strategy. For example, if there is a strategy that is active most of the time, I might allocate a set percentage of total capital to whatever trades that strategy indicates.

For occasional or special event trades, the size would also depend on whether the trade is similar to existing positions (i.e., facing the same direction in terms of price or volatility exposure). No matter what the details, I am usually never risking more than 2% to 3% of an account on any one trade.

One nice aspect of riskdefined options spreads is that you can allocate capital based on the maximum possible loss in a spread and know that no matter what happens, your account is not going to blow up because of an error with a stop order or anything like that.

—Jared

**Q:** I have heard you talk about "the book." What is it, and why should I care?

.....

—Bruce

A: "The book" is a floor trader's term for working orders. These are customer orders that are sitting on an exchange that are not filled by market makers.

One example in which a trader might have a book order is if the trader is in the habit of entering a closing order as soon as he or she executes an opening order. The closing order that is not yet filled is sitting in a "book" of one of the exchanges.

This is important to you because these book orders can affect the midprice on which so many traders rely to analyze a fair value of an option. This is especially relevant in the big indexes such as the S&P 500 or the Russell 2000. This is why it is always important to



make sure the midprice is pure and not affected by a boo on either side.

A book offer can affect a price substantially.

—Mark S.

**Q:** Hey, Bill. A couple of quick questions for you:

(1) Do you know where front month VIX peaked during the Japan-induced selloff earlier this year?

(2) It seems to me that VIX front month futures usually don't move nearly as much as the VIX index on a % basis. Is that true? Do you have any feel for how much VIX front month futures would typically go up on, say, a 10% pop in the VIX index?

(3) Do you have any idea where front month VIX futures would likely be trading if the VIX index were to make a truly huge spike to, say, 40?

-Ross

**A:** Hi, Ross. Here is where art and science intersect. Let's see if I can help a little.

(I) The intraday high on the front month VIX futures was 26.40 on March 15.The highest front month VIX futures closing price

was the next day (expiration) at 25.14

(2) A good rule of thumb is that front month VIX futures move about 50% as much as the VIX index, so a good guess is that the front month VIX futures would move about 5% if the VIX index were to spike 10%

(3) For larger VIX spikes the VIX futures would begin to price in some mean reversion and not move as much as the index. So . . . assume the VIX index and VIX front month futures both close today at 22. If the VIX index spikes to 40 in a week, I would expect VIX futures to be in the 29-30 range. Perhaps a little higher if most of the spike happens at the end of next week and probably a little lower if most of the VIX spike happens in the beginning of the week.

Of course every VIX spike is a little different and understanding the fundamental factors underlying the spikes is important, as discussed in my Crises, Event Theta and Risk Assessment article later in this magazine.

—Bill





#### FOR THE NEW OPTIONS TRADER

# There Are No **Shortcuts**

Mark D Wolfinger

Options are a special investment vehicle, unlike any other. They allow you to measure various risk parameters and then if and when you own a position whose risk is at an uncomfortable level (too much time decay or too much money can be lost if the stock moves three points, etc.), then risk can be reduced.

When trading stocks, the only way to reduce risk is to sell some shares (or use options!).

With this ability to monitor and manage risk, it should be far easier to earn profits when using options than traditional investments (stocks, commodities, currencies, etc.). However, there is still much to learn, and my warning today is to be certain that you do not take shortcuts. Sure, we all believe we are ready to begin trading this minute, but the more prepared you are, the better your chances of success.

#### **Getting Started**

From my perspective, the best way to get started with options is to pick up a book or two and become aware of the basic concepts of what an option is and how it works. Next, you can attend free webinars offered by your broker or one of the option exchanges. Do not allow the fact that these are free webinars make you underestimate their value. Some are excellent. It takes a bit of patience to discover who offers quality webinars. But they are out there.

Next, find a blogger or two who speaks to you, someone who writes at a level you can understand. Ask questions. Decent people willingly reply to questions from their readers. Follow that blogger for ideas: Food for thought. If anyone suggests that you must pay to receive answers, run away as fast as possible.

As your knowledge expands, pick up more advanced books that explain additional concepts. Absorb them at your own pace. Not now. Save them for when you are ready.

There is no need to spend thousands of dollars to get a good options education. If the free sources are insufficient for your needs, there are some high quality services that are relatively inexpensive. Your goals are to learn to use options effectively and to understand them well enough to make money trading

## Options are a special investment vehicle, unlike any other.



them. It takes effort. It takes certain skills—not everyone possesses.

#### **Take Your Time**

I encourage you to go slowly and learn at your own pace. I encourage you to make practice trades in a paper trading account. I especially encourage you not to take shortcuts.

For example, be sure to take the time to understand the option Greeks and how they work. They are your friends and will prove to be helpful. The math may be complicated, but fortunately, all the calculations are done for you, and your task is to understand the messages being sent. I guarantee that it is worth the effort.

This is my final contribution to the For the New Options Trader column, and I want to be certain to leave you with the idea that options can be used as conservative investment tools and at the same time, offer the opportunity to earn substantial profits.

Your task is to understand these tools before attempting to use them. Nothing destroys an optiontrading career more quickly than the overeager beginner who believes there is nothing special to learn and who jumps right into the deep waters. Do not let that happen to you, please. I wish you good trading.



# Toys Can Teach You About Options

Mark Sebastian

One of my favorite aspects of trading options is the number of available trade combinations. In spreading, traders have the ability to pinpoint a specific function of options. A trader may want to play volatility, trade a direction or trade no direction.

There are so many ways of piecing option trades together, that for newer and even not so new traders developing the right strategy for the right situation can often become a problem. While writing the correct strategy for the right function could be a dissertation, we can discuss one specific approach to trading. When should a trader not spread? When does it make sense for a trader to simply buy or sell calls and puts?

What are the characteristics of a simple call or put strategy? Although they may be less risky than owning stock outright, they are generally the most risky of option strategies. For that risk, they do provide the most reward—a reward attempted to be reached only under specific situations.

The key is extremes. When IV is at its absolute lowest levels, owning calls or puts aimed at a specific direction may be actually LESS risky than spreading. Likewise, when implied volatility is at its highest levels, it is quite possible that selling options can be less risky than spreading. If one thinks about it, this can make some sense.

#### **To the Cabbage Patch**

Let's relate volatility to Cabbage Patch Kids.

In 1983, Coleco (yes Coleco) released the Cabbage Patch doll to mass production. The toy received a massive amount of fanfare leading into the 1983 toy show. As the toy gained popularity, there was essentially a run on the dolls leading into Christmas that year. If you had a little girl between the ages of 5 and 10 in 1983, you may remember how difficult it was to find these dolls. There were reports of riots at Toys"R"Us stores and other department stores (Woolworth's and Service Merchandise for instance).

As the season went on, some of these dolls were sold via classified ads at huge premiums to the original prices. After Christmas, while the dolls were still popular, they were not nearly as hard to find.

By 1984, anyone who wanted a Cabbage Patch doll could get one. (Interestingly, every company I just mentioned is now bankrupt. I could add Weebolts and Wards to this list



and, in about 10 years, Macy's and Sears).

In subsequent years, we have seen similar outbreaks of demand for toys around Christmas, most recently Tickle-Me-Elmo and the Wii gaming system.

What do these toys have in common with options? Irrational behavior of those wanting a product that others have or are willing to sell.

When options reach incredibly high volatility levels, owning an option can make about as much sense as owning a Cabbage Patch doll in 1986. And just like Cabbage Patch dolls, the key is to get rid of one's inventory at the top. In panic toy runs, there is little or no value to spreading dolls (selling all the blonde dolls and keeping all of the brunette dolls). In options, the same holds true. In fact, by owning a bunch of options to hedge against a short position, the trader is killing the credit received and taking away from the ability to play the surge in panic volatility buying.



Now, there is one big difference between selling options and dolls: Traders can create inventory. In other words, one does not need to hold inventory in an option to sell that option. This changes the game a touch. However, even in this scenario, on a margin to margin basis, when IV is at its absolute highs, traders are likely to see much higher returns selling outright than entering call and put spreads.

The ability of the IV to collapse out of an event can often do a better job of owning premium against a short, especially because of the seemingly endless ability of options to gap from the relatively overpriced to the relatively underpriced. Yes, when the trade loses, the trader will not be a happy camper. However, when merged with a directional opinion, I have no doubt that selling outright on an IV peak makes more sense than spreading.

#### **Batter Up**

On the buy side, I like to think about options as baseball cards. At any given time there are stars, rising stars and those who are washed up. In baseball cards, if one wants to get a star's card (really if you think about it most young people's first semiprofessional trade) the key is to buy stars when they are hurt or on down years. As many have short memories, this can lead to that star's card becoming too cheap.

One example is Roy Holladay. With the Blue Jays, the pitcher had one bad year, which caused his baseball cards to become cheap. Since then, the star has been traded to a bigger market (the BBC equivalent of a corporate buyout) and he has won several CY Young Awards and thrown a couple of no hitters (the BBC equivalent of record earnings, or a major patent or new product).

Like Roy Holladay, when options become unloved or oversold, the key is to buy them in bulk. In a down Roy Holladay year, would it make sense for a collector to buy his rookie card while selling his second year card? No, both are probably too cheap! The trader wants to own as many Holladay cards as possible.

By buying these options on the absolute cheap, traders are able to take advantage of how options can win in two ways: price and IV. Spreading in these cases actually takes away from the ability of an option to win on the volatility level and the price level.

Like selling options, even when the trader is wrong on direction, when the IV is cheap enough, it can really

deflate the pain. Combine buying oversold IV with good directional trading, and the trader should be in an extremely advantageous position.

#### **Don't Panic**

Trading is fun, and much like playing with toys, the key is to manage the panic rushes and panic sales that happen. By understanding how extremes affect the risk of the positions, traders will find themselves in much better positions to win.

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# Crises, Event Theta and **Risk Assessment**

**Bill Luby** 

Mention the phrases "event risk" or "event volatility" to an options trader and even if he or she has never heard the expression before, you are likely to receive a knowing head nod of comprehension. While I think it is important to understand events in terms of risk and volatility, I have recently been pondering a tangential concept I have labeled "event theta."

Simply stated, event theta refers to whether or not the passage of time is expected to increase or decrease the risk (and potential volatility) associated with an event.

An example may help to illustrate the concept. On March II, Japan was hit with a magnitude 9.0 earthquake, followed by a huge tsunami wave that crippled Fukushima Daiichi nuclear power plant. In the days that followed the quake, stocks sold off sharply and volatility spiked dramatically as investors across the globe grappled with the possibility of a catastrophic nuclear disaster. As the events were unfolding in lapan, a limited amount of information was made available to the public. In attempting to assess the magnitude of the potential threats and the probabilities associated with those threats, matters were further complicated by a dramatic difference

in opinion between the relatively optimistic assessments of Japanese officials and the more dire characterization of the situation by several international nuclear agencies.

Traders lacked basic information on

event risk dynamics such as what the worst-case scenarios were and what the implications were if these scenarios were realized. They were also keen on knowing what the various remediation strategies were and what the probabilities of success were for each of these remediation strategies.

Also lacking were key event theta information, such as whether there was a key decision point or points at which time the crisis was likely to escalate dramatically or begin to move toward a resolution.

With so much difficulty in handicapping the odds of various scenarios playing out, many options traders struggled to come up with the appropriate trades to hedge portfolios or capitalize on market opportunities.

The intent of this article is to outline an approach for thinking about event



Simply stated, event theta refers to whether or not the passage of time is expected to increase or decrease the risk and potential volatility associated with an event.

theta and touch on the implications for options pricing.

#### **Event Theta Taxonomy**

In order to understand event theta, it is first important to differentiate between the various characteristics associated with volatility events and establish an event taxonomy of sorts.

A key element of volatility events is their timing. For starters, events with the potential to dramatically move the markets can be scheduled or unscheduled. Scheduled events include items such as government data releases, corporate earnings reports, elections and similar events that appear on a calendar. Unscheduled events include the likes of most geopolitical confrontations, the recent sovereign debt crises, natural disasters, the resignation of a key executive, etc. There are also events whose timing is known generally, but is difficult to



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point down. As I write this, the Congress is debating various alternative approaches to raising the U.S. debt ceiling. At some point in the latter half of July or the beginning of August there is likely to be an agreement in principle on extending the debt ceiling, with one or more key votes in Congress along the way.

In a similar vein, it is also important to differentiate between a point event or an event that unfolds incrementally according to some sort of timeline. Scheduled events typically consist of a single point in time in which a key decision is made or important information is released. Unscheduled events like the examples noted above are more likely to unfold on a fuzzier timeline, with multiple critical junctures, the timing of which is often not known in advance. As these examples might suggest, the number and timing of key decision points are an important part of the event theta taxonomy.

For some events, recurrence and reversibility are also important factors. Most government economic data is released on a month basis and is revised in subsequent months when new data is published. For this reason, it is easier to discount extreme readings and treat them as statistical outliers, pending the subsequent release of new data and revisions to old data. In a similar vein, corporate litigation is subject to an appeals process that often alters or completely overturns the initial legal outcome.

Figure I below graphically depicts the volatility impact of selected elements of volatility events. Not surprisingly, contagion and duration have the largest impact among the five. Advance notice, recurrence and reversibility also influence volatility, but to a lesser degree. [Note that lower advance notice, recurrence and reversibility increases the impact associated with these elements, which is why the top of the arrow has a "Low" label in it, whereas high levels of contagion and duration are associated with higher volatility.]

#### Contagion and Worst Case Scenarios

Any student of volatility would be well served by beginning the analysis of a volatility event by fleshing out the possible details of one or more worst-case scenarios. From the endpoint it is usually possible to work back through the contagion potential. Many questions are likely to arise. How many dominoes need to fall? To what extent are these interrelated? How many actors



FIGURE I Volatility Impact of Various Event Elements

are involved in the resolution and to what extent do their priorities differ? Will resolution occur at a single point (typically a key decision) or unfold as part of a longer process? What is the probably of escalation? Will the resolution be final or just set the state for the sequel? Finally, are the factors primarily economic or political and to what extent are they local or global?

If one can sketch out the answers to most or all of these questions, he or she is on their way to having a much better understanding of the potential volatility impact than an investor who has not undertaken a similar analysis.

By the same token, a valuable exercise is to undertake this type of exercise when an event is over. One can map it out on a timeline, highlight the key decision points, the parties involved and the potential volatility impact at each step of the process. Start with something relatively simple like an Apple earnings report, then look at government data such as nonfarm payrolls and eventually map out the complexities of the Deepwater Horizon oil spill, the U.S. debt ceiling, the Greek sovereign debt crisis. The brave may event want to take a run at the 2008 financial crisis. Even if you decide that a timeline map of each event is

too cumbersome, at least consider reviewing each event in the context of the variables outlined above.

A typical volatility event (economic data, corporate earnings, etc.) is scheduled, occurs at a predetermined point in time, is recurring or reversible and has only a small probability of escalation. It also has a positive event theta, as the expectation is that once the information is released, uncertainty will decrease dramatically and a volatility crush will result. The more interesting events, particularly for options traders, are the ones that depart from this pattern.

#### Conclusion

While I have only scratched the surface here, the purpose of event theta analysis is to distinguish between events for which we can expect a volatility crush and those where volatility can be expected to persist and spike dramatically higher. This begins with an event taxonomy that differentiates between scheduled point events and unscheduled incremental events. More detailed analytics are aimed at identifying the resolution process and potential timeline and to understand the complexity

involved due to the diversity of the actors and their motives, the number and nature of key decision points, etc. Ultimately, the analytics should work up to estimates worst-case scenarios, dominoes, connectedness and probabilities.

Obviously a macro-fundamental approach like this one is much more of an art than a science and is not going to pop out of an options pricing model like implied volatility does, but even a cursory analysis can unearth large differences between implied volatility as determined by market prices and potential event volatility described by the model.

The trading implications for various event theta scenarios are substantial. For scheduled point events, (continued on page 26)

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# TREND FOLLOWING

## **VIX Premium Indexes**

by Jared Woodard

n the past several years, the number of volatility-linked exchangetraded products has exploded. As recently as 2007, academics who wanted to study strategies for trading volatility independently of price still felt it necessary to defend the very idea of volatility as an asset class (see example Nelken 2007).

The widespread acceptance of products such as Volatility Index (VIX) futures and the VXX ETN indicate that traders have not only accepted but embraced the thesis that volatility is a property of financial markets that can be traded on its own.

Given the number and diversity of volatility-linked exchange-traded products now available, we might assume that this is a sort of golden age for trading implied volatility, especially where strategy development is concerned.



The truth is that it is still difficult to create rules-based, statistically respectable, back-tested volatility trading strategies. The reason is that almost every product on offer has some limitation that makes it less than ideal as a benchmark or frustrating as an execution product.

The popular Volatility Index performs its intended purpose well—measuring 30-day weighted implied volatility for S&P 500 Index options—but it is also frequently misused by traders.

The VXX ETN is suitable as a hedging vehicle for dynamically allocated portfolio hedging strategies, but it is difficult to borrow for traders who want to short it. XIV, functionally an inverse VXX product, satisfies this need, but for this and other new products, the limited trading history means it is hard to be confident in the results of any back-tested strategies.

However, the two CBOE VIX Premium Strategy indexes published under the ticker symbols VPN and VPD are, in my view, excellent benchmarks for strategy development, and they overcome many of the limitations just described.

#### What Are VPN and VPD?

The VIX Premium Strategy Index (VPD), Capped VIX Premium Strategy Index (VPN) and S&P 500 VARB-X Strategy Benchmark (VTY) are three indexes developed by the CBOE to track the returns of short volatility strategies. Short volatility strategies are designed to capture the volatility risk premium, or the difference between the current implied and future realized volatility of some asset. I have previously discussed the volatility risk premium in this magazine and <u>elsewhere</u>.

The difference between the two indexes I am discussing here and the VARB-X strategy is that the latter sells a series of three-month realized variance futures, while the former two strategies sell one-month VIX futures. Aside from the obvious difference in targeted durations (one versus three months), realized variance products behave differently as expiration gets closer. Although VTY is an interesting index, I will set it aside.

The greatest virtue of VPD is that it is actually simple. The index portfolio balance is invested at the threemonth Treasury bill rate, and at VIX futures expiration, a one-month VIX futures contract is sold at the bid. The contract is held until the next expiration and settled at the open. At that time, the next front-month contract is sold. Index values are quoted based on an initial investment of \$100, and the T-Bill and VIX futures cash flows are marked to market daily so that the daily index value is always a current reflection of the performance of the strategy.

The only element of the VPD strategy that requires any thought is the number of futures contracts to sell short. The strategy uses a maximum loss approach such that the portfolio will suffer a loss of no more than 25% if the futures contract expires 25 points higher than its initial value. The full formula is available from the <u>explanatory</u> document; a simplified allocation formula is:

Number of futures contracts =  $(account balance \times 0.75) / (1,000 \times 25)$ 

The multiplier for VIX futures is \$1,000, so the right-side denominator of 25,000 represents the maximum loss per contract, in dollars, tolerated by the strategy. For a \$100,000 cash account, the VPD allocation at a given roll date would be three contracts.

Traders with smaller accounts are not excluded, as the Mini-VIX futures are one-tenth the size of the big VIX



contracts (i.e., they have a \$100 multiplier) and are highly liquid.

For simplicity, omit the expected returns from T-bills between the present date and the next roll date. Returns on cash are negligible now and likely will be for some time, given the U.S. economic environment. Figure I shows the returns of VPD, VPN and SPX from 2004 to 2011.

The capped VPN strategy (light green) had identical performance to VPD until early 2006 when VIX options were introduced. In addition to selling a one-month futures contract, on the roll date, VPN buys one-month VIX call options with strike prices 25 points higher than the current price of the futures to be

sold. Ten calls are bought for every futures contract sold.

The futures sizing formula for VPN is similar to that for VPD—75% of capital is to be preserved even in the event of a 25-point VIX futures gain by expiration—except that VPN also accounts for the settlement value of the calls.

#### **Volatility Is Cyclical**

One conclusion that I draw from just a quick glance at the index price histories is that the capped premium strategy, VPN, is only superior under certain conditions. It realized a smaller drawdown in 2008 but has had basically identical performance since then. VPD achieved better returns from 2006 to 2008, as the cost of buying expensive out-of-the-money VIX options for VPN was not offset by any futures rallies of 25 points or more.



FIGURE I CBOE VIX and Capped VIX Premium Strategy Indexes, 2004–2011

Another conclusion is that both indexes are highly leveraged to the volatility cycle in the S&P 500. Intuitively, when S&P 500 one-month implied volatility rises, the premium indexes suffer because they are both short VIX futures.

Conversely, when SPX implied volatility is falling from high levels or is churning around below-average levels, the indexes perform well, gaining from the absolute decline in IV, from the negative roll yield in near-term VIX futures or both.

The black arrows at the top of Figure 1 show loose indications of the cyclical phases of volatility since 2004. During the 2004–'07 bull market, both implied and realized volatility churned around low absolute levels. As markets became more volatile in 2007 and 2008, VPN and VPD saw even worse losses than the major equity indexes and conversely saw bigger gains in the subsequent period of falling volatility.

Cyclical exposure of this sort is undesirable. First, it makes these volatility premium indexes unattractive candidates for investment. Without a way to dodge the losses expected during rising volatility environments, VPN and VPD returns are not necessarily more attractive than a buy-and-hold equity portfolio.

Second, exposure to volatility cycles obscures the real value of indexes such as these, namely the volatility risk premium expressed in the prices of short-term VIX futures.

#### **Trend Following**

To reduce or remove exposure to volatility cycles, I decided to test a simple trend-following strategy using moving average crossovers. This might strike some traders as counterintuitive. After all, one true piece of conventional wisdom about options is that implied volatility is mean reverting, especially after a large move higher. Every trader has witnessed a situation in which a 1% to 2% equity decline marked by a simultaneous spike in implied volatility is subsequently unwound as IV drifts back toward a local mean. (This phenomenon is less true on the other side: oversold implied volatility can remain so for long stretches before reverting.)

But if volatility is mean-reverting, is it not ill-advised to pursue a trend-following approach?

Pretend that the VPD and VPN indexes are ordinary stocks. Imagine that VPD is a company that makes orange plastic shoes and that VPN makes orange plastic shoes and toothbrushes. (VPN had a smaller drawdown in 2008 because people still need to buy toothbrushes even when they do not want to buy plastic shoes.) If you were considering trading these "stocks," given their price histories as displayed in Figure I, a long/short trend-following approach would make sense.

The reason we can apply a trend-based rule set even while it is also true that implied volatility is mean-reverting is that the price histories of VPD and VPN can be thought of as the returns achieved by constantly applying a quasimean-reversion strategy. So we are bullish on VPD/VPN when the trend is up—i.e., when a short volatility strategy is working—and bearish on VPD/VPN when the trend is down—when long volatility is working.

We could apply countless trend-based technical indicators. My purpose is not to demonstrate the value of any particular indicator but simply to show that the meat of multiyear volatility trends can easily be captured by using a set of mechanical rules. Most traders are familiar with the idea of using simple moving averages to generate buy and sell signals. One popular approach is to buy an asset when its 50-day moving average crosses above the 200-day average, and to sell short when the 50-day average crosses below.

I tested a range of moving average crossover signals on VPN, substituting the familiar short-term 50-day average with anything from five to 20 days, and for the long-term average testing anything from 20 to 300 days.

Figure 2 shows a 3-D map of the Sharpe ratios of various combinations (the higher the Sharpe ratio, the better). And Figure 3 shows a flattened heat map of the same results. The top 15 variations all provided compound

**The Sharpe ratio** measures returns per unit of risk, defined as the asset return less the risk-free rate, divided by the standard deviation of returns.





FIGURE 2 Moving Average Crossover Results—Sharpe Ratio Map



FIGURE 3 Moving Average Crossover Results—Heat Map

annual returns greater than 20% and with Sharpe ratios above 0.8.

The reason it is helpful to look at maps of various parameter combinations instead of looking solely at

equity curves or performance data for particular configurations is that it gives us a sense of whether the strategy is successful at many parameter values, or whether we have accidentally stumbled upon a lucky combination. By confirming that there are ranges of values at which performance is roughly similar, we can improve our confidence in the strategy.

In this case, the optimal length settings appear to be in the 40–70 range for the short-term moving average and in the 60–110 range for the long-term moving average. Note the dark red zone at the intersection of these ranges in Figure 3.

These results are intuitive: For larger values of the long-term moving average length, any fluctuations over time in the shorter measure are not able to reach the crossover threshold, pushing the performance (and thus the Sharpe ratio) closer to that of the baseline buyand-hold approach.

One surprise was that using very small values for both moving averages yield some of the best results in risk-adjusted terms—e.g., a 10/20 crossover strategy.

The equity curve at Figure 4 is representative of one of the median variations of the strategy. For some volatilitybased strategies and even some long/short directional strategies, the bulk of historical returns are associated with the 2008 financial crisis, with returns quieting down after that period.

As Figure 4 shows, these are not characteristics of the crossover VPN strategy we are reviewing. It also records substantial gains in 2009 and 2010.





FIGURE 4 Equity Curve for a Moving Average Crossover Strategy

#### **Reservations**

As I mentioned at the beginning, VPD and VPN are more suitable for strategy testing than many other volatility indexes and products because they have longer histories, are easily tradable and track intuitively appealing strategies. One worry I have, however, is that the five-year history of VIX futures is still insufficient to justify strong conclusions about a trading strategy.

This is partially due to the small number of trade signals generated by the strategies tested. Even the most active moving average crossover variations tested gave no more than 40 to 50 signals during the five-year period. Because some trades booked large percentage gains (such that removing those trades would significantly alter the performance), we might worry that the results were just lucky.

I calculated the t-statistic for the returns of several variations, and they came back greater than 2, suggesting that we are working with robust results.

Another worry that is not so amenable to statistical review is the question of whether macroeconomic

changes will affect the way equity prices—and by extension, volatility cycles—play out over time. To be more precise, my concern is that economic changes might cause us to see the 20th century post-war cycles of steady expansion and recession as an aberration.

For example, if the U.S. economy is just beginning a period of prolonged slow or nonexistent growth, the multiyear swings in equity market volatility we have observed in recent decades might give way to some other set of volatility regimes.

These long-term speculative worries are not something that should dissuade anyone from pursuing a strategy that looks promising now, because it is always possible to keep a rolling record of strategy performance and to make changes as prices dictate; but it is worth keeping in mind, in Humean fashion, that past performance is not, strictly speaking, an indicator of anything about the future.

Traders looking to capture the risk premium evident in options prices have many tools and indexes they can use for reference, but I have argued here that the VIX Premium and Capped Premium indexes are among the most useful. Further, I have showed that even a rudimentary trend-following rule set can help traders regard volatility cycles as opportunities for profit, rather than as threats to an otherwise profitable approach.

#### References

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#### FOLLOW THAT TRADE

## Trading Vol **Panic**



Mark Sebastian

One of the screwiest facets of trading the Volatility Index is how the upside calls tend to overexplode when the market is in a bit of a panic. It seems that when major investment houses think the market is going to really take a dive, they all go running for out-of-the-money calls.

The problem is they seem to forget that VIX calls are not based on the cash VIX; they are based on the forward value of VIX at expiration of the options. Essentially, VIX option prices are tied to the VIX futures, not VIX cash.

Because volatility is mean reverting, any time implied volatility explodes, the futures only pick up about 40% to 50% of any move in the VIX cash, possibly less if it is a real panic.

Although the ATM options tend to do a good job of following the price of the futures, any time an option experiences major demand, the skew curve will get out of whack. This produces some great trading for those who are opportunistic. Here is an example of an option trade a trader did on the vol panic the market experienced June 16, 2011.

#### The Setup

With VIX strongly on the move and threatening 25%, funds left and right were racing to buy protective upside calls in VIX options. This caused the skew curve to move from what is shown in Figure 1 to what is seen in Figure 2.







FIGURE 2



-ivevol Pro

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Figure 1 is from June 13 when the VIX was elevated at more than 19%; the 30 calls were trading at about 0.75 and a 130 IV.

Figure 2 illustrates what they looked like at day's end on the 16th. Notice that 19s, 20s and even the 22.5s hardly moved in IV, but the VIX 30 calls were up a whopping 5%.

Here is what a trader did to take advantage of the movement, IV panic and mean reversion. He bought the VIX July 22.5 calls once and sold two of the VIX July 30 calls twice. Knowing that in all likelihood the IV panic was overdone and that the VIX cash was likely to revert to the mean, the trader took advantage of the overpriced 30 calls.

#### What About Risk?

For those calling this trade risk, he would lose if VIX remained above 37.5 for an extended period through expiration or if this trade were entered the day of expiration and VIX exploded.

The former is highly unlikely; the latter is simply not the case in this instance.

#### **Results**

Figures 3 and 4 show what this trade looks like. The trader entered 15,000 by 30,000 for a debit of 0.04 (I am showing 10 by 20 for smaller scale).



	Time	Code	Qty	Symbol	Туре	Price	Commis	Net	R	Desc	Asset File v
1.	14:00	Buy	10	VIX 11G2:	0	2.00	10.00	-2,010.00		VIX Jul22.5 calls	VIX.INX
2.	14:00	Sel	20	VIX 11G3	0	0.98	20.00	1,940.00		VIX Jul30 calls	VIX.INX

FIGURES 3 AND 4



The next day when the panic died down (see Figure 5) see where the trader was able to unwind.

	Date	Time	Code	Qty	Symbol Type	Price	Commis	Net	R	Descv	Asset File
1.	06/17/11	14:00	Buy	20	VIX 11G3I 0	0.70	20.00	-1,420.00		VIX Jul30 calls	VIX.INX
2.	06/17/11	14:00	Sel	10	VIX 11G2; 0	1.90	10.00	1,890.00		VIX Jul22.5 calls	VIX.INX

#### FIGURE 5

Because the skew flattened up and the futures (the true underlying asset for VIX options) did not move much, the 22.5 calls retained almost all of their value, while the 30 got absolutely crushed.

This ended up being one of the best major trades I have seen all year in VIX options. The trader, while taking on little risk, made 0.46 on a trade in one day. Cheers to him.





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## Wolf Against the World: The Final Episode

Mark D Wolfinger

This series of columns was designed to present readers with different perspectives on specific aspects of options trading. By offering more than one opinion on a given topic, we present an opportunity for you to consider situations that may not have previously occurred to you.

I am a true believer that an options educator should not be telling students the truth according to the mentor. Instead, ideas should be offered, alternatives discussed. Arguments for and against each alternative allows the student to come to his or her own conclusions about which makes more sense.

Obviously, we educators explain why we prefer one side of the argument, but insisting that one idea is best while all others are bad is just foolish. Trading options is not an exact science, and plenty of room is available for imaginative traders to do very well.

That was the idea behind WATW. Present ideas and leave it to our sophisticated readers to make their own decisions. In most cases, few ever change an opinion. However, to the extent that this column opened any readers' minds to the possibility of thinking differently about any topic, we have succeeded in our mission.

#### **The Final Battle**

There is still one ongoing battle to be fought in the options world, and I continue to engage in that battle. However, as an individual, there is not much I can do. As with any business that involves money, there are people who are anxious to take money from trusting people. There are those who charge big fees and underdeliver. That is the world against which the Wolf will never cease to battle.

There are warning signs, but the innocent are not aware. Obviously overly optimistic profit guarantees are at the top of the list. However, there are less subtle clues. For example, can you imagine trusting a blogger who demands payment before replying to a simple question?

Be aware. Stay alert. If you decide to pay a substantial fee for anything options related, be certain to get references from satisfied customers and interview them carefully.

#### Goodbye

I leave this magazine in the hands of my three partners—the contributing editors—trusting they will continue to produce a high quality magazine dedicated to options and options education.

There is still one ongoing battle to be fought in the options world.



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## VIX Futures and ETPs: Declaring Independence from **Strike Prices**

Jared Woodard

The best reason to trade volatilitylinked products is that their value is independent of the nominal price of the benchmark asset. If you expect S&P 500 Index volatility to be lower in the future than options are currently implying, is it not better to be able to express that view without also committing yourself to views about the price of the index?

#### Vanilla Options and Volatility Products

Why should anyone bother with volatility-linked products or indexes in the first place? After all, equity and equity index options have been around for a long time, they function perfectly well and they have deep and liquid markets. Whether you are hedging an existing portfolio or are speculating about future prices, why not just buy or sell SPX options and leave the newer volatility products alone?

I have heard this sentiment many times from clients and readers, and I think the initial skepticism is warranted. Financial services companies and exchanges are constantly launching new products of increasing degrees of complexity, and for individual investors, the risk of misunderstanding the product or underestimating its costs is high.

Especially when a suitable and wellunderstood product exists, the safest response is to leave new offerings alone until they have proven to be cheaper and more effective than the status quo product. The advantages to being an early adopter in the world of financial products are few, and the risks are many.

My contention is that initial reasons for skepticism have been decisively overcome with respect to volatility-linked products, especially when compared to plain vanilla options. The most important argument in favor of volatility-linked products such as volatility futures and exchange-traded notes is that traders and hedgers can use them to express a strike-independent view about volatility.

#### **Running Out of Vega**

For example, if you think that the volatility of gold, oil or stocks is likely to increase, you could buy a straddle using options on that asset, or you could express a similar view by buying a volatility product (in this case, volatility futures). The advantage to the latter approach is that it provides pure exposure to volatility, whereas at certain prices levels, any straddle will run out of vega, leaving you with functionally a simple long or short position in the underlying.

Figure I shows the profit and loss for a long SPX 1,320 straddle with 38 days to expiration. Notice that between 1,250 and 1,375, there is a pronounced curved slope. At more distant price levels, however, the P&L slope is linear, indicating a payoff function identical to stock: once the delta of the straddle is 1.00 or -1.00, there is no difference between holding the straddle position and being long or short the underlying asset.



FIGURE I Profit and Loss Graph for a Long SPX Straddle



Figure 2 shows the vega sensitivity of the same straddle. Again, while the position is sensitive to changes in implied volatility at the current strike price, if the underlying makes a significant move, what was previously a relatively pure play on volatility will soon become a pure play on price movement.

Volatility products do not run out of vega in this way, and their payoff functions do not become stock equivalent after large price moves. Where a standard options position such as a put spread or a straddle will only ever have the Greek exposure of the individual strikes



FIGURE 2 Vega Sensitivity for a Long SPX Straddle

that make it up, volatility products are constructed so that the calculation weights applied to particular strikes are automatically adjusted as the market moves. For example, if the market falls by 100 SPX points, the 1,320 straddle profiled above will have a delta of about -0.85 and little vega, making it

(continued on page 26)

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## Sandbagging: It's a Good Thing

Mark Sebastian

When I had just got hired by a trading firm, one of the first questions a fellow graduate of Villanova, who worked for a different firm, asked me was, Why in the world would you want to do this? He was implying that there was no future in options trading and that I should do something else.

Lo and behold, I found out after the fact that he was not only a successful trader, he was a very successful trader. On the floor (and in sports), we used to call this game sandbagging.

Later in my career, I found myself doing something similar to another trader. VMware, a stock I was trading in 2007, was making me a decent chunk of change. A trader in my firm asked me whether it was worth trading the product. "No," I said. "Yes, it's busy, but there is no edge in trading the stock. I am barely making money in the stock."

I was telling the trader this because of my (along with every other market maker's) belief that there is only a limited amount of money to go around within one trade. The more traders playing a stock, or an approach, the less money for each individual trader. The more who traded VMware, the worse it would be for me. It might sound silly, but in a world where I was constantly scratching to make the most I possibly could, I believed in the kill or be killed approach that kept me trading.

#### Keep It to Yourself

So what does this have to do with the average trader reading Expiring Monthly? Everything!

Each month, the magazine is delivered to our paying readers. Within its pages is some of the best, most well thought out trading commentary available to the public.

The more traders playing a stock or an approach, the less money for each individual trader.

As I look back through each of the issues we have put out, I can always find something that is of value to me, let alone the average retail or institutional reader. Ideas that can give you, the trader, an edge—an edge for which you are paying good money.

This is why I would never pass this magazine along to a friend of mine.



The more people reading this publication, the less edge I have over every guy trading.

The same holds true for every piece of information I learn. Even within Option Pit, my students are aware that there may be specific trades that I choose not to disclose to them. Why? Because I cannot, as a trader, give up my edge. Now, would I lead them toward the other side of my trade? Never. Will I steer them in the right direction? Of course. Will I show someone what I am doing at any given time? No thanks.

Deciding what is the right thing to discuss and what is not at any given time is a constant struggle, one that I have learned to manage. I am certain that Bill and Jared have similar struggles at given times.

#### **The Power of Many**

The point is this: Many in the retail public have learned to do the opposite. They find a trade and shout it to the world. This is the quickest way to make sure that the method from which you are profiting is going to go away. The moment something you are trading profitably hits a site such as Seeking Alpha, Stock Twits or EliteTrader, the shelf life of that approach begins to shrink.





Although most individual traders cannot make a trade go away, an army of ants jumping at once can shake out the profits in a trade.

I do not want the public to get me wrong. Never lead anyone in the wrong direction. In fact, help those who ask. If you are in a position to teach a trader the right way to trade, how you think about a trade or the methods you use to develop a successful approach, please share. The next generation of traders needs the previous generation's knowledge and guidance to stay successful.

However, if you are employing a specific strategy, I would keep it extremely close to the vest. In war,

loose lips sink ships. In trading, loose lips shrink profits.

Sandbag, sandbag, sandbag . . . unless you really like and trust someone enough that you know they will not sandbag you.

#### Crises, Event Theta and Risk Assessment (continued from page 12)

investors should generally favor long volatility positions leading up to the event and a short volatility position as the event unfolds. For unscheduled incremental events with higher complexity and contagion potential, long volatility positions are generally more attractive, at least until the investing public begins to appreciate how the dominoes are aligned.

Finally, keep your eyes on the European sovereign debt crisis and the U.S. debt ceiling issue, as these appear to be two classic case studies that are still in the process of playing out. **EM** 

#### VIX Futures and ETPs: Declaring Independence from Strike Prices (continued from page 24)

nearly equivalent to a long stock position—because we are tied to the 1,320 strike. However, a long VIX futures or VXX ETN position will still be delta neutral after that market decline and will be just as sensitive to changes in implied volatility: the 1,320 options will now receive relatively little weight in the calculation of the index, and the newly at-the-money 1,220 options will receive the most weight. These differences are important for both hedgers and speculators. For speculators, being able to express a pure view about volatility without having constantly to delta-hedge or otherwise manage the position greatly simplifies things.

For hedgers, strike-independent long volatility positions eliminate the risk of a hedge position failing to function at a later date just because the market has moved around. For example, a hedger who buys six-month puts at current SPX levels will be protected if the index declines immediately, but what if the index rallies for several months and declines sharply from much higher levels? The puts will have lost much of their gamma and vega, and will provide less protection, while a volatility product will still respond to changes in implied volatility.