

# EXPIRING MONTHLY

THE OPTION TRADERS JOURNAL

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## HIGHLIGHTS FROM Vol. 1

A SUMMATION OF ARTICLES FROM OUR INAUGURAL YEAR

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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 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

To celebrate our first year of publication, the editors of *Expiring Monthly* have hand-picked some of our favorite articles and assembled them into this special issue, with the intention of making these selections available to a broader audience.

This issue highlights several subjects that have been examined from a number of different perspectives in our first year of publication. While the primary focus of *Expiring Monthly* is on equity options, the articles in this special edition consider the subject of options broadly, with several articles which emphasize commodities and interest rate products, as well as one which outlines an approach for evaluating volatility across multiple asset classes.

Interviews have been an essential component right from the start; for this issue we've selected one interview with noted author Sheldon Natenberg and another with Tim Andriesen, Managing Director of Agricultural Commodities for the CME Group.

Elsewhere in this issue, we analyze the volatility risk premium in both equities and commodities; discuss risk management

considerations and exits for traders who are relatively new to options; and delve into the details of getting good fills "trading the hard side" of an order by analyzing how market makers think in various market situations.

In order for this special issue to closely resemble a typical monthly issue, we have also included two of our recurring monthly features: some selections from our monthly Ask the Xperts feature, in which the editors respond to reader questions; as well as a Back Page opinion piece which debunks the idea of "eating what we kill."

Thanks to those who have contributed many excellent guest articles over the course of the year, the staff who magically produced an issue every month on the Monday following options expiration and most of all to all our loyal readers.

With any luck, we hope to be expiring monthly for many years to come!

Bill Luby, *Contributing Editor*

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# Ask the Xperts

## The Expiring Monthly Editors



**Q:** *When should one use an iron butterfly or iron condor instead of just a regular butterfly or condor?*

—Eric

**A:** In practice there is no difference between a condor or butterfly and an iron butterfly or iron condor. One should select the vehicle based on price. In order to calculate the better trade, take the difference between the meat of the fly or condor and the long strike, and subtract the credit from the iron version. If the value is lower than that of the traditional call or put condor/fly, do the iron equivalent. If not, do the traditional.

Example, if I was going to trade a 45-50-55 butterfly for 2.00, but can sell the 45-50-50-55 iron butterfly for 3.10. I should trade the Iron Fly, as 5 (the spread between the meat and the wings)–3.10 (the credit) = 1.90, a value less than 2.00.

—Mark S.

**Q:** *I anticipate a drop of \$2 in a \$45 stock—within the next 2 to 25 days. Do I go for ATM, ITM, or OTM puts? Which expiration month? Or should I be basing decisions on an analysis of the Greeks? So many questions! What factors would you use to guide such a choice?*

—DS

**A:** My reply is based on how you intend to profit.

Is the plan to sell your options for a quick profit? If yes, then you want something that will benefit from both the price change and a pop in IV. Time decay is not an issue. I suggest owning an ATM, or very slightly OTM, put. If the move does not happen quickly, you will pay a lot of time premium. Make this choice *only* if you truly expect a very quick move.

If you plan to make your money based on the decline, then you want to be essentially short stock. Choose a high delta put. You must choose between

not paying too much time premium and not spending too many dollars—just in case the stock surprises by shooting much higher. Probably the front or 2nd month put with a \$50 strike. Because time premium is small, you are still okay if the drop takes awhile to occur. This is the better play. You have no chance to gain on an IV rise, but are still in good shape when the move occurs at the end of your estimated time period.

Alternative: Buy a put spread or sell a call spread. Here, the quick move will be far less beneficial than if the move occurs in three weeks. Don't choose the spread if 2-days is your true expectation.

Greeks are not the answer for this play. Decide how many dollars you want to invest.

—Mark W.

**Q:** *What is the advantage of a condor over a short strangle, or of a vertical*

*spread over just selling the desired option? The strangle will always have a bigger credit. Admittedly, you need to define a stop, but this doesn't seem to change the conclusion.*

—Vic R.

**A:** The fact that the strangle offers a larger up-front credit in dollar terms is meaningless unless defined in relation to the risk in the position. Absent a quantified risk level, any comparison between a risk-defined spread (like a vertical spread or a condor) and an unlimited-risk trade (a short strangle or naked short option) is misleading. To achieve a genuine comparison, you would want to define a stop loss point for the strangle so that a closing trade at your stop level would incur a loss equal to the maximum possible loss on a similar condor. Once those risk parameters are set, you should find that the return profile over time of the short strangle doesn't look



much different (in fact, the short strangle should look a bit worse due to higher path dependency).

Part of the added risk in a naked option or a short strangle is the fact that large jumps occur overnight or even during market hours (cf. May 6, 2010). I'm not a fan of hard stop orders resting on exchanges, and even a pre-set stop order sitting at the exchange may fail you in the event of an overnight or sudden intraday gap where prices move beyond your stop. Risk-defined option spreads don't face this problem, and that gives them a relative advantage.

Another advantage of risk-defined spreads is that they allow you to "lock in" certain levels of implied volatility (IV). If the underlying declines to your predetermined stop loss point, the price of the put side of a short strangle may be higher in IV terms than the IV of the options purchased when constructing a condor, making the strangle exit consistently more expensive on a relative basis.

Finally, a risk-defined option spread like a condor or vertical spread will have more favorable margin requirements than a short strangle or naked option position. Therefore, even if you structured a strangle with stop points such that it was synthetically equivalent to a condor in profit/

loss terms, and you knew the future such that there would be no adverse jump risk, the risk-defined spread would still be the obvious choice from the standpoint of capital efficiency.

One exception to some of the points above would be in the case of a trade with a very short holding period, e.g. a straddle or strangle sold after a short-term pop in implied volatility that was intended to be held only for a few days.

—Jared

*Q: In an environment where VIX is low (I am concerned about condors) and there is contango (concerned about initiating calendars), is there any suggestion on how to structure income trades?*

—Gary

**A:** That is the million dollar question. Believe it or not, when the VIX is low, that is when income trading can be at its best. If the market isn't doing much then selling premium is not a hard job. One thing also to remember: when there is high contango that means that there may be more value in selling back month options that are 'relatively'

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overpriced. It is the 'breakouts' that can be a real problem for traders. I would generally suggest in an environment of low volatility that traders hedge an income position by either using insurance puts (units), using options on the VIX or some other volatility product, or going out and trading the VIX futures.

—Mark S.



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## THE VOLATILITY RISK PREMIUM IN **Commodity Options**

*Jared Woodard*

**I**n this article, I explain the concept of the volatility risk premium, review some literature identifying the presence of this premium in options on commodity futures, and present some empirical results confirming the same. Traders who are comfortable with the concept of being net sellers of equity options will find that similar opportunities exist in commodity markets.

### **The Volatility Risk Premium**

Any option contract can be replicated with cash and a series of trades in the underlying asset.<sup>1</sup> Given a perfectly priced option, a trader who buys the option and transacts the offsetting trades in the underlying will have no gain or loss at expiration (before transaction costs). For example, to replicate a long at-the-money (ATM) call, we would begin by buying fifty shares of the underlying stock, thereby matching the initial directional exposure of the option. As the stock price rises (falls), we would buy (sell) shares of the underlying to keep our delta exposure constantly in line with the option. Through this process of dynamically rebalancing our stock position to match the profile of the option, we will produce a cash flow that, by expiration, will equal the value of the option. If we were to buy the option and then take offsetting trades in the underlying—buying shares when the stock falls and selling when the stock rises—the profits or losses from our stock adjustments should perfectly offset the profits or losses on the option.



A **variance swap** is a derivative contract that pays out the difference between the variance realized over the life of the contract and the implied variance struck at inception. A variance swap does not have the path dependency associated with delta-hedged option positions.

To be clear on exactly what we mean by a “perfectly priced option,” recall that, in the Black-Scholes pricing model, the only unknown variable is the implied volatility: we know the strike price, time to expiration, interest rate, and price of the underlying asset for any option we need to price. So a perfectly priced option would be one whose implied volatility is equal to the volatility that will occur in the underlying during the life of the option (the realized volatility). We could say that a trader who buys an option contract is “paying” for the implied volatility and that when she transacts offsetting dynamic hedging trades in the underlying she is “receiving” realized volatility. If the implied volatility she buys equals the realized volatility she receives, no profit or loss will be achieved.

A volatility risk premium (VRP) exists when an option’s implied volatility today is not equal to the realized volatility that will occur during the life of an option. As any market participant can confirm, options are rarely, if ever, perfectly priced in the sense we have discussed. This means that an option trader who continuously hedges her delta exposure should expect to achieve some profit or loss at expiration due *solely to the difference between implied and realized volatility*. Volatility arbitrage strategies are strategies that attempt to identify and profit from the volatility risk premium when it exists.

### The VRP in Equities

The volatility risk premium (or variance risk premium, we will regard the two phrases as interchangeable) was first identified in equity and equity index options and it became a very active area of research in the late 1990s and early 2000s. The field is now relatively mature, and the best study is probably Carr and Wu (2009).<sup>2</sup> The authors

found that, in the years 1996–2003, the mean return on a long 30-day **variance swap** on the S&P 500 was -2.74%. Given this evidence, it is practically tautologous that, over the period studied, options were consistently overpriced. Other studies have reached similar conclusions from historical tests of selling dynamically delta-hedged options. In the jargon, we would say that the volatility risk premium has been consistently negative.

This may not come as shocking news to option market participants, many of whom have long expressed a preference for being net sellers of options. If the VRP in equities were strongly positive, over time option sellers would incur losses large enough to push them away from that preference. But, as I have previously shown, the gains from continuous straddle selling are economically meaningful even after allowing for larger-than-expected tail risks.<sup>3</sup>

There is some speculation about what causes this phenomenon. According to Jackwerth (2000), if there was a VRP in equity options prior to the 1987 crash, it was positive.<sup>4</sup> The post-crash VRP has been steadily negative over most time frames. This suggests that the primary cause of the VRP is the pricing of jump risk: investors are willing to pay a premium for options (especially puts) above current levels of historical volatility in order to guard against the possibility of some major, sudden price shock:

The estimates of the jump parameters in the model are suggestive of extremely rare, but large volatility jumps. . . . When they do occur, the average jump size is more than twice that of the long run average volatility. Under the risk neutral measure, jumps occur much more frequently [and]

**A volatility risk premium exists when an option’s implied volatility today is not equal to the realized volatility that will occur during the life of an option.**



are also about 50% greater than under the risk neutral distribution. These risk adjustments potentially lead to sizable premiums for jump risks in options markets.<sup>5</sup>

Another plausible explanation for the volatility premium in equity index options is that they provide insurance against adverse changes in correlation among individual equities. What Driessen, Maenhout, and Vilkov (2006) refer to as the correlation risk premium is the additional premium paid to protect the diversification benefits of individual equity options. Intuitively, an investor with a book of equity options will be displeased if correlations increase dramatically and those individual names begin to merely mimic market volatility, so she will hedge against that correlation risk via index options.<sup>6</sup>

### The VRP in Commodities

What about commodities? Traders approaching the question of whether volatility risk is reflected in options on commodities may be inclined towards skepticism, since the structural features of commodity markets are so different from those of equities. The overwhelming long bias in stocks, for example, cannot be assumed for any given commodity market; the original purpose of commodity futures was to enable farmers and other businesses who were natural longs in the real economy to take short hedging positions in futures. This difference accounts for the persistent volatility smile or “smirk” visible in some markets, in contrast to the put-oriented skew observable in equities. But this is no argument against a VRP. And the primary justification offered for the risk premium in equities—the risk of un-hedgeable jumps—could just as easily apply to commodities, which can exhibit much more volatile volatility than stocks.

While the research literature on the observed pricing of equity options is very mature, comparatively little has been written about the efficiency with which commodity options are priced, and many of the studies are now decades old. Fortunately, some new research has shed light on whether the volatility risk premium is present and exploitable in options on commodities like crude oil, natural gas, and gold.

### Energy

Trolle and Schwartz (2010) use futures and options data on NYMEX crude oil and natural gas from 1996 to 2006.<sup>7</sup> They construct a synthetic 30-day variance swap rate for each business day, against which future realized variance can be compared. For familiarity, note that the CBOE VIX is the square root of the synthetic 30-day variance swap rate for the S&P 500. The authors find that there are consistently negative VRP for both crude oil and natural gas. In assessing the fundamentals of energy markets, they find that standard asset-pricing models cannot account for the premium, and that commodity-specific factors like inventory levels also provide only partial explanations. (26)

One of the most interesting features of variance swaps (and, by extension, other long volatility positions) on crude oil and natural gas is that they exhibit option-like return profiles. The familiar relationship between long volatility positions and the S&P 500 is highly negative: when stock prices fall, long volatility positions see large gains. But for natural gas, the relationship is positive: variance swaps are highly positively correlated to asset price returns when the futures are rising. For crude oil, the relationship is much weaker.

**New research has shed light on whether the volatility risk premium is present and exploitable in options on commodities like crude oil, natural gas, and gold.**



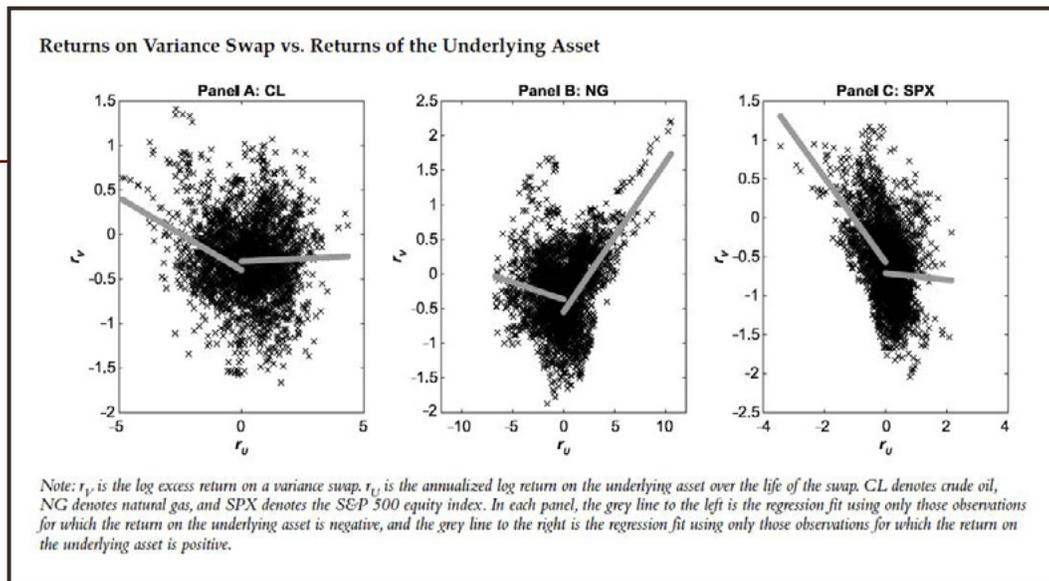


Figure 1

Trolle and Schwartz (2010)

(27–28) Figure 1, from the paper, shows the option-like behavior of long volatility positions in relation to changes in the underlying.

Following Bollerslev, Tauchen, and Zhou (2009),<sup>8</sup> I calculate the VRP as the historical volatility from time  $t$  to time  $T$  less the volatility implied at time  $t$ . For example, for a measurement over a 30-day period we would subtract the implied volatility today of an option with 30 days to expiration from the volatility realized by the underlying asset over the next 30 calendar days.<sup>9</sup> Figure 2 shows the volatility risk premium in crude oil since 2007.<sup>10</sup> The average 30-day measure during this period was -3.84%, indicating that option implied volatility was typically almost 400 basis points higher than the close-to-close volatility subsequently exhibited by the underlying. The 60-day average premium was about the same. Figure 3 shows similar information for natural gas.

Doran and Ronn (2008) support roughly the same conclusions.<sup>11</sup> Looking at data for natural gas, crude oil, and heating oil from 1995–2005, they find that each commodity exhibits a consistently negative VRP, with average estimates highest for gas, crude, and then heating oil. (2550) One finding of particular interest was that natural gas and heating oil appeared to exhibit higher VRP

in winter months or months that typically exhibit high withdrawal rates. (2549) The persistent demand for crude oil meant that no seasonal VRP behavior was found.

### Metals

The implied volatility in options on gold futures appears to be not only higher than the realized volatility it portends, but higher than can be accounted for even by the presence of a volatility risk premium. Neely (2004) finds that the implied volatility of at-the-money (ATM) options on COMEX gold futures is not an efficient predictor of realized volatility.<sup>12</sup>

Using data from 1987–1998, Neely considers and excludes several likely sources of bias that might explain the apparent inaccuracy of option implied volatility, including measurement error, sample selection bias, and anchoring effects. The final factor considered to explain the IV bias—the volatility risk premium—could not be rejected as a statistically significant source, meaning that it was highly likely that volatility risk was priced. Surprisingly, Neely concludes that even allowing for volatility risk to be priced “does not resolve the puzzle of IV’s bias for gold futures.” (24)

Figure 4 shows the VRP in gold options since July 2008 using the same methodology applied above, with an average



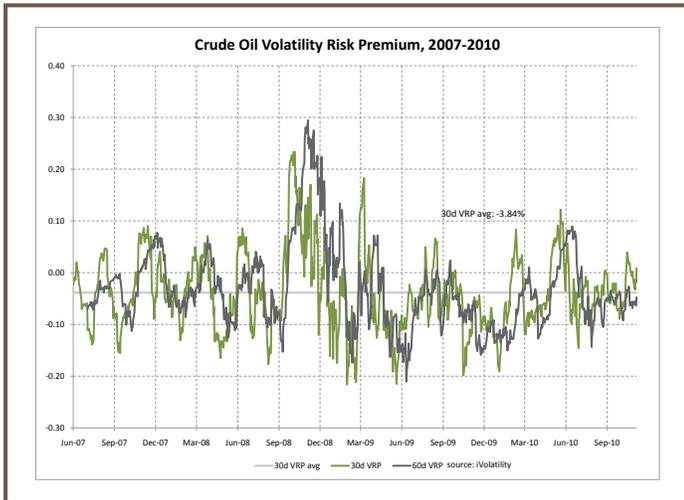


Figure 2

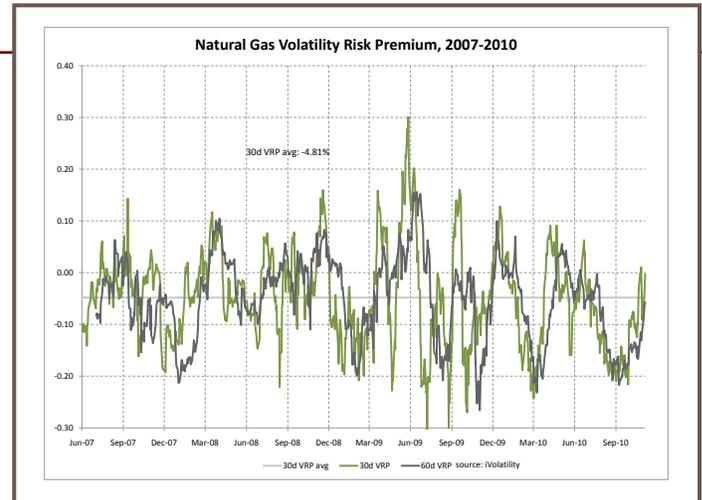


Figure 3

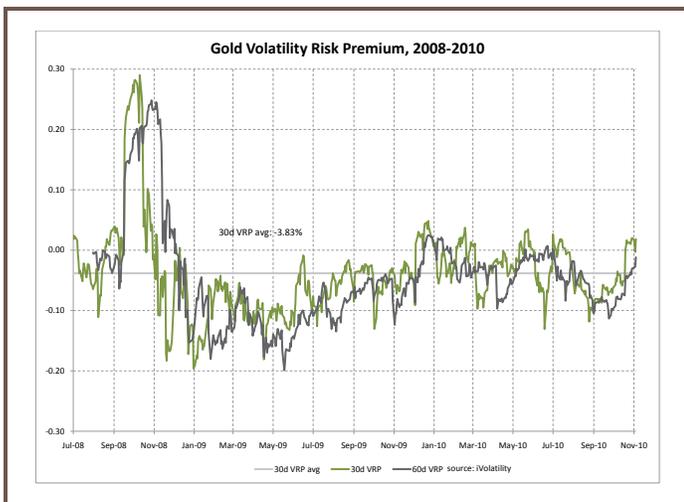


Figure 4

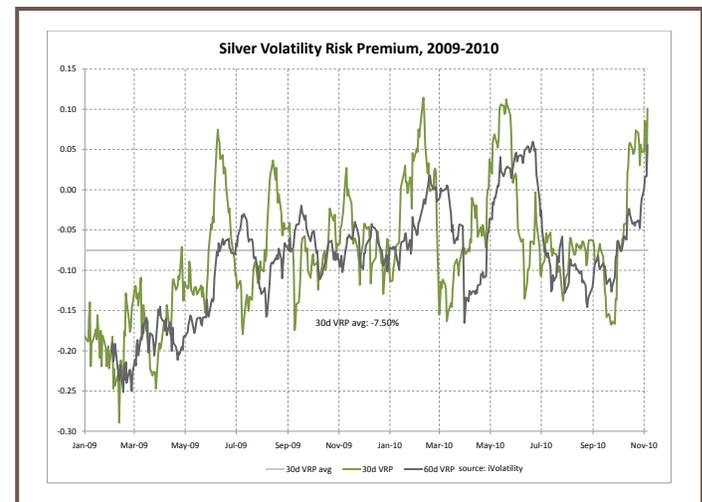


Figure 5

for 30-day measurements of -3.83%. The average for 60-day measurements was -4.55%—significantly higher. This is consistent with Neely’s finding that the volatility risk premium in gold appears to be smaller at short-dated horizons. (24)

There does not appear to be any published research specific to silver, but in figure 5 we see that silver has also exhibited a consistently negative VRP in recent years. I should mention that when interpreting these charts, it

is important to keep in mind that the difference between implied and realized levels is shown in absolute percentage points, such that a more volatile asset like silver may appear to have a larger VRP even if the premium is in line with similar assets when considered as a ratio.

**Exploiting the VRP**

Based on current research, it is readily apparent that volatility risk is priced in commodity options. This conclusion is of use in at least three ways: for traders implementing



price forecasts, for options traders pursuing other strategies, and for strategies aiming to trade the VRP directly.

Traders who have straightforward price forecasts for the commodities covered here could improve the expected return on positions by avoiding paying the VRP when using options to take price-directional positions. For example, a trader seeking long exposure to natural gas might simply buy the underlying or sell put vertical spreads instead of buying call options. Over time, a strategy that avoids paying the volatility risk premium would be expected to outperform an identical one that incurs those costs.

Second, traders who are pursuing volatility-directional or other options strategies could structure spreads to take advantage of the VRP by aiming to be net sellers of options where possible. The presence of the VRP can also color the selection of option spreads and volatility biases: an asset in which volatility risk is not priced—or is priced positively—would be a far superior candidate for long straddles and other long volatility spreads than one that isn't. In practice, this is the approach taken by dispersion strategies, which sell volatility at the index level and buy volatility in individual components.

Finally, traders can pursue strategies that attempt to profit from the volatility risk premium directly.<sup>13</sup> The most direct way to implement such a strategy is to sell richly-priced options and delta-hedge the portfolio exposure dynamically with the underlying asset. For example, a trader might sell 10 one-month out-of-the-money put options on crude oil and hedge the directional exposure by selling short crude futures contracts in the same month. One disadvantage of such an approach is that frequent rebalancing is

**Traders can pursue strategies that attempt to profit from the volatility risk premium directly.**

time-intensive and incurs greater transaction costs. Beginning a short volatility trade by selling a straddle, butterfly, or condor may be a more efficient use of capital, and often requires less initial maintenance. Experienced traders may consider using listed volatility futures to gain short volatility exposure (see my column in this issue on the new volatility futures on gold and

crude oil). One advantage that volatility futures have over short option positions is that the payoff from a volatility future is not dependent on where the underlying price is at expiration in relation to any strike or set of strike prices.

On the portfolio level, the value of strategies designed to extract the VRP in commodity options is higher than many traders might guess. Table I displays the annualized Sharpe ratios from shorting volatility in several assets.

As the table indicates, the expected return from a short volatility strategy in crude oil or natural gas may be higher than it would be as applied to individual equities. Another benefit from adding short volatility exposure in commodities may be increased diversification: as indicated in Figure I, the relationship between changes in volatility and price returns varies even among individual commodities. Market fundamentals provide a third reason to consider short volatility

Asset	Ann. Sharpe Ratio
S&P 500	1.02
Individual Equities	0 - 0.55
Interest Rates	0.47 - 0.82
Crude Oil	0.59
Natural Gas	0.35

Trolle and Schwartz (2010)<sup>14</sup>

**Table I**





exposure to commodities versus exposure to equities alone: if U.S. monetary policy continues to dampen the volatility of stocks for an extended period (while also boosting the volatility of currencies and commodities), the return from selling equity index options may decline from high historical averages, making commodity volatility more attractive.

Although in virtually all assets (except certain individual stocks) the volatility risk premium is consistently negative, there are periods in which it is preferable to be net long volatility. The financial crisis of 2008 is a ready example. Because the occasional losses associated with short volatility exposure can be significantly larger than the average per-trade gain, it is desirable to find reliable methods for reducing or eliminating short volatility exposure. I plan to pursue this topic in the near future. **EM**

<sup>1</sup> Rubinstein, Mark and Hayne E. Leland, "Replicating Options with Positions in Stock and Cash," *Financial Analysts Journal*, Vol. 37, No. 4 (July–August 1981), pp. 63–72. See also Sheldon Natenberg, *Option Volatility and Pricing* (McGraw-Hill: 1994), chapter 5.

<sup>2</sup> Carr, Peter and Wu, Liuren, "Variance Risk Premiums," *Review of Financial Studies*, Vol. 22, No. 3 (2009), pp. 1311–1341. The paper includes a comprehensive bibliography on this topic.

<sup>3</sup> Woodard, Jared and Koistinen, Martin, "Backtested Volatility Trading: Active Collars, Volatility Breakouts and the Truth about Black Swans," *Expiring Monthly*, Vol. 1, No. 4 (June 2010).

<sup>4</sup> Jackwerth, J.C., "Recovering risk aversion from option prices and realized returns," *Review of Financial Studies*, Vol. 13, No. 2 (2000), pp. 433–451.

<sup>5</sup> Eraker, Bjørn, "The Volatility Premium," Working paper (2008), accessed at: <http://www.marginalq.com/eraker/volPremiumPaperJune08.pdf>.

<sup>6</sup> Driessen, Joost, Maenhout, Pascal J. and Vilkov, Grigory, "The Price of Correlation Risk: Evidence from Equity Options," EFA 2005 Moscow Meetings (December 2006). Available at SSRN: <http://ssrn.com/abstract=673425>.

<sup>7</sup> Trolle, Anders and Schwartz, Eduardo S., "Variance Risk Premia in Energy Commodities," *The Journal of Derivatives*, Vol. 17, No. 3 (2010), pp. 15–32.

<sup>8</sup> Bollerslev, Tim, Tauchen, George, and Zhou, Hao, "Expected Stock Returns and Variance Risk Premia," *Review of Financial Studies*, Vol. 22, No. 11 (2009), pp. 4463–4492.

<sup>9</sup> Instead of using the IV of a single option, the convention is to use multiple strikes of near-the-money calls and puts, or even model-free VIX-style indexes where available.

<sup>10</sup> Figs. 1–4 use price and IV data for USO, UNG, GLD, and SLV respectively. Data was spot-checked against NYMEX crude and COMEX data and found to be comparable.

<sup>11</sup> Doran, James and Ronn, Ehud, "Computing the market price of volatility risk in the energy commodity markets," *Journal of Banking & Finance*, Vol. 32 (2008), pp. 2541–2552.

<sup>12</sup> Neely, Christopher J., "Implied Volatility from Options on Gold Futures: Do Econometric Forecasts Add Value or Simply Paint the Lilly?"

<sup>13</sup> Disclosure: I manage client accounts and publish a newsletter following volatility arbitrage strategies. At the time of writing, no positions are held in commodities mentioned in this article.

<sup>14</sup> Equity and interest rate data as reported by Carr & Wu (2009) and Duarte (2007). Similar data is not available for gold, since no extant research has constructed the synthetic variance swap data necessary to calculate comparable returns.



# The New Option Trader

## Risk Management

Mark D Wolfinger

When corresponding with new traders, the two points that I must convey are:

- Don't trade before understanding how options work
- Your trading career depends on your ability to manage risk

The first suggestion is frequently ignored by those who are anxious to get started. There's not much that can be done about that because each trader has his/her own emotions with which to deal. Some have the patience to learn the basic concepts regarding options before placing money at risk, while others cannot hold back. Lack of emotional discipline is a serious detriment that the newbie does not yet understand.

It's the second suggestion that is far more important. However, it's a notion that goes against the grain for beginners. It's common for option rookies to believe that strategy selection is the top priority. I agree that strategy is important, but it is not sufficient. Your friends may have made some money when writing covered calls, or buying out of the money strangles, but that's no reason to believe either of those methods are appropriate for you.

Some strategies may fail the 'common sense' test while others may be more difficult to grasp. Surely new traders must have a sense that it takes practice to understand when to initiate, adjust, and exit the trade. Yet, some begin trading with real money despite knowing that important aspects of the trade process remain a mystery. I believe the culprit is overconfidence. New traders arrive on the scene with an optimism that is difficult to explain.

### Risk

I know from experience that managing risk is essential. My philosophy of trading is based on the premise that there is one primary rule when trading: Don't go broke.

This is a difficult concept to discuss. The rookie is anxious to learn new 'stuff' and get to work using all the new ideas. In general, option educators take the optimistic approach, talking and writing about profits. Internet ads tell the gullible how easy it is to make 10% every month.

There is less talk of risk and possible losses. That's easy to understand. When someone charges thousands of dollars for seminars and lessons, the goal is to get people to pay for those services. The idea of possible losses drives away customers. Thus, the optimistic sales pitch.

I've been there. When I was a market maker, I often worked with risk managers because I owned positions with far too much risk. They intelligently and patiently explained that my risk was beyond acceptable, but I wouldn't listen to those 'non-traders.' They did what they could and I was lucky to survive the disasters.

Having learning the lesson, I fully understand the importance of being aware of, and managing, risk when trading. I repeatedly explain that betting against the unlikely event every time will eventually result in a big loss. It may feel safe betting that an event with a 2% chance will not occur. But a 2% chance is not zero. In fact, when the time scale is one month, there is a >50% probability that you will see the 2% event occur once every three years, and >70% chance every five years.

It's not rocket science. All that a trader has to do is to be certain that the unlikely event results in a profit or an acceptable loss. Many traders grasp this concept right away. Others must learn for themselves. Risk can be measured (or at least estimated) and managed. A mindset that convinces a trader to own a portfolio with limited risk places that trader in position to succeed.



Any options education book or coursework must include a thorough discussion of risk and how to handle it. Trading with limited loss is essential.

Risk can be defined as the probability of loss, but I prefer to define it as the amount that can be lost. If you run out of money the game is over. Large losses are psychologically damaging and can have a lasting negative impact – perhaps for your entire career as a trader.

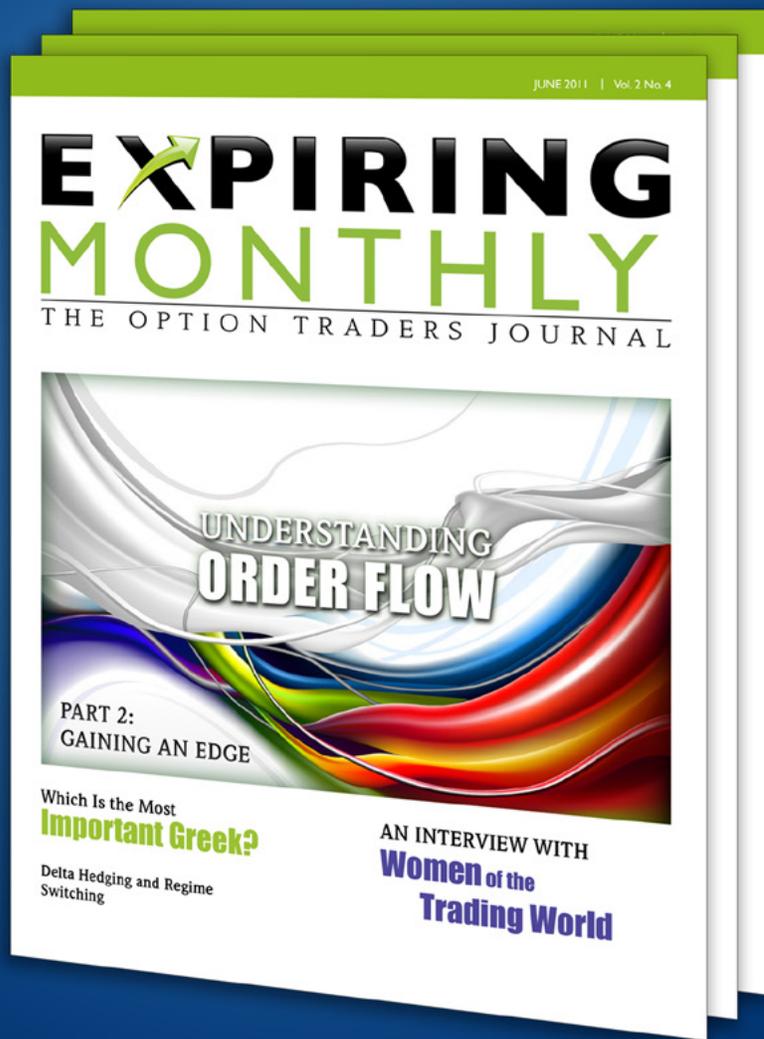
A simple method for limiting risk is to properly size trades. When positions are too large, you risk the unrecoverable loss. Would you bet your future financial health on a single trade that produces a nice profit 99 times out of 100 when that 100th occasion results in a complete wipeout? The answer to that question may define your chances of becoming a successful trader.

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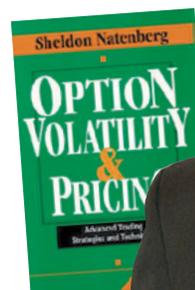
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## A Sit-Down with Author Sheldon Natenberg

Mark Sebastian



I still remember the day I found out I would be working for Group I Trading in New York City. Three things happened. First, they told me that I had the job. Next, they told me when I was starting. Finally, they said, “We are sending you a book called *Option Volatility & Pricing*. Have it read before you start.” I did just that, thus beginning my love affair with options. I later discovered that most traders consider the book to be the bible of professional option trading. I personally have read many of the chapters three or four times. I figured there would be no one better to interview for our inaugural issue than the man who first introduced me to options, the author of the aforementioned book, Sheldon Natenberg.

### What inspired you to write “Option Volatility & Pricing”?

When I started at the CBOE (Chicago Board Options Exchange), I took a class taught by Marty O’Connell. I was fascinated by how he taught and I got it in the back of my head that I might enjoy teaching, despite having no teaching background at all. So I decided to take a crack at it. I put out notices that I was interested in teaching some courses. I got one response; the firm was Chicago Research and Trading, so I taught there. Next, the CME (Chicago Mercantile Exchange) asked me to teach. I had prepared some class notes for my students. I guess the notes were helpful because an individual suggested to me that that the notes could be the basis for a book on option trading.

I began to look for an editing company and I called Dow Jones. They sent an editor. They said they weren’t interested, but they had had three editors just leave and start their own firm. It was a small company called Probus Publishing. They were brand new to publishing and decided to give the book a shot.

### Were you surprised by its success? Why do you think it has become the ‘trading manual’ of many firms?

I was surprised. Over time I’ve come to think that it was successful because it was written from the point of view of the professional trader. At the time option books were written for either retail traders or academics. The book was fortunate in that it was written for professional traders. It wasn’t academic, but it wasn’t overly simplified either. What made it successful was it turned out a lot of other traders – besides market makers – liked reading the book as well. At one point I asked the editors what they needed to make money. They said we needed to sell two printings of 2000-2500 copies to get their money back. It’s now gone through over 30 printings.

### Have you thought about a third edition? What might you be looking to add?

I am thinking about doing a third edition of *Option Volatility & Pricing*. I am actually working on the edition; it might end up being a little more academic, although still from the point of view of a trader. I will talk about volatility skews and intermarket spreading. I might do a chapter on volatility contracts.

### What are your thoughts on the CFE (Chicago Futures Exchange) volatility futures and options on volatility indexes, like the VIX and the RVX?

For retail traders, I think the value is mostly speculative. For fund managers, volatility futures and volatility options give the ability to take an outright volatility position and hedge it. Many managers actually have natural volatility positions and do not realize it. Let’s take a hedge fund manager. The fund has a portfolio that needs to rebalance every so often. When volatility goes up the cost of rebalancing is much higher.



## A Sit-Down with Author **Sheldon Natenberg**

Mark Sebastian

He really has an indirect volatility position. A lot of hedge fund managers got hurt badly because they did not realize their exposure to volatility. A manager could hedge away some of the fund's volatility risk with these products.

Take a common way of using options to help manage a portfolio, the buy-write. If I am a portfolio manager I want to do two things: I want to beat the market; and I want to make money. If the market goes way up I will make money, but I won't beat the market because my options will get called away. If the market goes down I will beat the market because I am selling call options, but I won't make money because the market dropped. What is my volatility position? I am short volatility because I want the market to stay relatively stable. A buy-write will always do the best in low volatility conditions. I can use futures from the CFE or volatility options to hedge my volatility risk.

Here is another example: a market making firm. There is a correlation between higher volatility and higher volume. The market making firm wants more volume to take advantage of the bid-ask spread. Thus the market making is indirectly long volatility. The market making firm could hedge its indirect volatility using CFE or CBOE volatility products. There is a whole group of funds and traders that aren't really trading volatility and would never say they have a volatility position, yet because of the mechanics of the market they have a relatively large indirect exposure to volatility.

### **How do you think the proliferation of ETFs (exchange-traded funds) has changed the landscape of options?**

I don't think it has changed the landscape of the options very much, but it has been a huge positive for the public. It's great because the public that wants to be long the market can go in and buy ETFs. Before the ETF, the only way to go long the market was the S&P 500 futures contract which took a lot of work to get into and to understand. Now the public can go in and buy the market

with an ETF in SPY or DIA. Another positive is that they have driven down fund management fees.

### **In 1987 you were on the CBOT (Chicago Board of Trade) trading bond options. How does the 1987 crash compare to what happened in 2008? If 1987 brought us skew, what will 2008 bring us?**

I am convinced there was skew before 1987, but it wasn't as dramatic as after the crash. I traded agricultural options; there was always a skew in those options, except in the other direction. For a few hours I thought the market might collapse and our business might disappear. I had just signed the mortgage on my house and I commented that I was hoping I could get a job as a ditch digger. Looking back, it turned out it was a one-time thing and ended up being a localized event. By contrast, 2008 had a much broader effect on the world. When you are standing in the middle of a crash you really don't know what to think. It is really hard to be objective when there is fire all around you.

### **2008 was interesting in that it seemed nobody did well into that market.**

In 2008 it is likely that a lot of market making firms did well. If a market making firm entered September of 2008 without a major position they did great because the bid-ask spread was so wide when the market got out of alignment. It was the firms that had major positions that had their bell rung.

### **How is trading changing? Why are firms leaving the floor?**

When I first started trading you borrowed money from your mom and dad, maybe an uncle, and leased a seat. The only thing a trader really cared about was what the guy next to him would trade an option for. Now, the markets have become so big and there is so much capital required that it has become big business. On top of that the technology and modeling required is so substantial. I don't think any firm can survive without integrating trading, financial engineering and technology. Many firms are leaving the floor because there is no money in it.



## A Sit-Down with Author **Sheldon Natenberg**

Mark Sebastian

Market making is also getting more and more difficult because of information. It used to be as a market maker you had access to information that the public or retail traders didn't have (in terms of orders that are being shopped and in the book.) Now the tables have turned and in many cases the retail traders and big banking customers may have more information than the market maker.

### **What do you think about penny pricing? Are we going to see the whole market in pennies?**

I think penny pricing has been a real problem for the industry. The concept sounds good but the markets have turned into a free for all. There is a big difference between a free for all and a free market. But it looks like that is the direction the industry is going. If you add the tightening of the bid-ask spread, with the availability of information, market making has become very difficult. This has contributed to the decline of big market making firms.

### **How should the next generation of trader get into the business?**

Most firms don't care about knowledge of derivatives. They figure they can teach you derivatives. Most firms want math and numerical skills. Firms will take anyone that they think can meld financial engineering, technology and trading. There are a lot of firms out there; door knocking will still at least get your foot in the door.

### **Over the next few years, how do you think the trading landscape will change?**

I don't have a crystal ball. One thing that seems to be happening is trading for pennies and milliseconds. Firms are really interested in speed. CPU's are being moved closer and closer to the exchanges. Firms are researching and developing high frequency trading. Firms want as much speed as possible. If they can trade in 20 milliseconds they want it down to 10 and so on and so on.

### **If you were to tell a new retail trader option trader one thing, what would it be?**

Even if you think you are trading directionally, you need to understand the volatility component of options.



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# VIX Minotaur

Bill Luby

## Rationale

In Greek mythology a Minotaur was a hybrid creature with the body of a man and the head of a bull. Such a creature provided the inspiration for a pairs trade involving short VXX at-the-money calls and long VIX at-the-money calls.

The holiday season has a shortage of trading days and a history of a bullish bias. As a result, December VIX futures have a tendency to remain relatively muted when compared to January VIX futures. Assuming I am able to establish this position for a net credit, a seasonal play on volatility involving short VXX calls paired with long VIX calls has an opportunity to profit if any one of three critical factors dominates:

1. volatility declines and both options expire worthless
2. the VIX futures remain in **contango**
3. volatility spikes and the VIX is more sensitive to the spike than VXX

**Contango** an upward term structure curve in a futures product (e.g., VIX futures) in which front month futures are priced lower than back month futures

It is possible to backtest this strategy, but sometimes I like to put the trade on, see how it develops and get a sense of some of the potential hurdles. I fully understand that the results will not be statistically significant and making any inferences about a strategy from one trade is dangerous, but I do find some value in what I call these “proof-of-concept” trades with real money.

With most trades, achieving maximum profitability at minimum risk is the only goal. With a proof-of-concept trade, profits are important, but so is information. For this reason, I have a tendency to leave proof-of-concept trades on longer than I would when trading with an established strategy.

In terms of ratios, my intent is to keep this simple. The VIX is trading at just under 49% of the VXX at the moment and my research indicates that VXX generally moves about 48% as much as the VIX on a daily basis, so with the VIX at about 22 and VXX at about 45, I elect to do this pairs trade on a 1:1 ratio basis, using 10 contracts of each to keep the math simple.

## Setup and Entry

In a world of maximum profitability, I would probably wait for some sort of relatively high VIX level before



entering this trade, but because I am also focusing on the informational value of the trade, I choose to open the position early in the trading day on November 22nd, with the VIX at about the middle of its 10-day range.

With the VIX at 22.03 and VXX at 44.98, there is a strong temptation to stay strictly at the money and short the VXX December 45 calls while going long the VIX December 22 calls. For ten contracts, the potential profit should both options expire worthless is less than \$1000. Given my expectations for seasonally low volatility and also given the high level of contango in the VIX futures, I elect to shave the odds a little and short the slightly in-the-money VXX December 44 calls and go long the VIX December 22 calls. This raises the potential profit if both options expire worthless by another \$200. After trying to work the order a little, I relent and take what the market gives me, recording slippage of \$175 on the VIX side of the trade and \$100 on the VXX side of the trade. I still manage to pocket \$800 on the trade, which leaves me long VIX December 22 calls for 2.30 and short VIX December 44 calls for 3.10.



## Position Management

The first important point to keep in mind while managing these two positions is that they run on different expiration cycles. The VIX options expire on December 17th and the VXX options expire five days later on December 22nd. For that reason, I anticipate that I will exit the position no later than December 16th, which is the last day the VXX options are traded.

*Monday, November 22* – As luck would have it, the VIX fell 8.3% between the time the trade was executed and the end of the day, pushing both calls out of the money and securing a \$500 profit for the position.

*Tuesday, November 23* – The VIX reversed to the upside today and is now 0.60 higher than when the VIX calls were purchased. VXX lagged during today's spike and is 0.06 below where it was when the VXX calls were sold. The relative weakness in the VXX sounds positive for my position, but VXX calls jumped 64% today while the VIX calls rose only 39%. The profitability of trade has turned from +\$500 to -\$175 in 24 hours.

*Monday, November 29* – After some seesaw action immediately before

and after Thanksgiving, the weekend saw the Irish bailout formalized and tensions heating up on the Korean Peninsula. Both the VIX and the VIX December (front month) futures closed near the 21.50 level, while VXX spiked up to 46.10. The VIX calls and VXX calls are both in the money and my position is now down \$475 in one week. I am now the beneficiary of \$36 of theta each day, but I am disappointed that the VIX spike has had more of an impact on the VXX calls than the VIX calls.

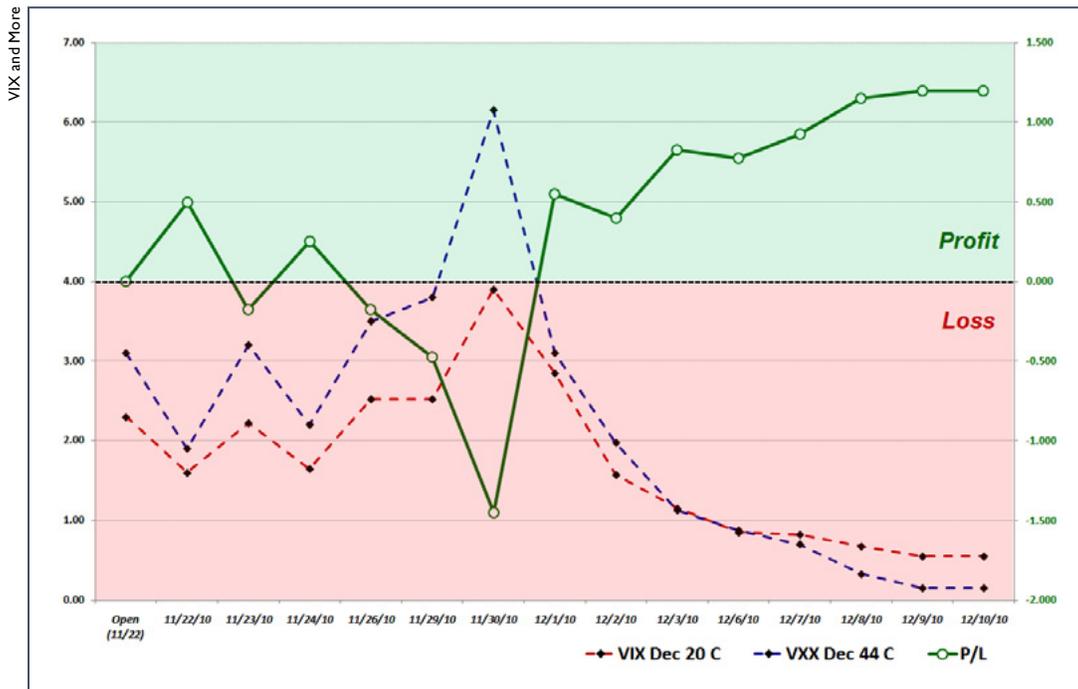
*Tuesday, November 30* – The VIX closed at 23.54, its highest closing level since September, as concerns lingered about the future of the euro zone and the Koreas. My VIX long calls are now 15% in the money and my VXX short calls are 10.7% in the money, yet the VXX calls continue to be more sensitive to increases in volatility. Today the VXX calls jumped 62% while the VIX calls rose 54%. The position lost \$975 today and is now down \$1450 in aggregate. If this were not a proof-of-concept trade I would either be exiting the trade or making adjustments to limit risk at this stage. As it is, I will let the trade ride, as my preferred indicators suggest the VIX is 'overbought' and is ripe for some mean reversion. My \$36 of theta is just a drop in the bucket now.

*Wednesday, December 1* – Today was a huge turnaround. The VIX fell 10.2% and VXX declined only 5%, yet the VXX calls lost 50% of their value while the VIX calls dropped only 27%. The result saw the position swing \$2000 to a gain of \$550.

*Friday, December 3* – After falling more than 10% on both Wednesday and Thursday, the VIX fell another 7.7% today, as geopolitical and macroeconomic concerns faded and were replaced by a rising sense of optimism. Over the course of three days, the VIX has fallen 23.5% from 23.54 to 18.0 while VXX has fallen 16.2% from 49.29 to 41.30. With both calls well out of the money and the aggregate gain in the position up to \$825 (above the \$800 profit target), here is where I would exit the position and lock in profits, but this is a proof-of-concept trade, so I will let it ride . . .

*Friday, December 10* – Figure 1 below details the full life cycle of this trade, which is coming to an end today. Of notable interest, during the last week the VIX was relatively steadfast, while VXX lost significant value due to negative roll yield and a general drop across the VIX futures term structure. The result is that VXX, which was 2.1% in the





**FIGURE I**  
Summary Profit and Loss Chart

money when the calls were shorted is now 15.4% out of the money, with the calls fetching only 0.15. The VIX has fared much better, starting out 0.1% in the money and now 13.6% in the money. Due to the greater volatility of VIX options and also the extra five days in the VIX expiration cycles, the calls still hold a value of 0.55. For the last three days, the position has been registering a profit in the \$1150–\$1200 range. As this is almost certainly going to be whittled back to \$800 in the 1 ½ weeks until expiration, I am electing to pull the plug on this trade.

**Epilogue and Takeaways**

The first key takeaway is that with a little patience, a VIX minotaur trade with a net short VXX position can indeed be profitable. On the flip side, this trade can be highly volatile

and requires that significant attention be given to risk management. In anything other than a proof-of-concept environment, I would have exited the this trade for a loss long before it had a chance to work its way back to profitability.

I was a little disappointed that the VIX spike did not provide the same lift to VIX options that it did to VXX options. This was due to the fact that VXX options turned out to be much more sensitive to changes in the underlying than VIX options, which is a key lesson. Future trades should attempt to establish whether this is a persistent theme.

Another important consideration is the timing of the two expiration cycles. In this instance the position benefited from the fact that VIX

options expiration was after VXX options expiration. In August and September, VIX options expired before VXX options, so I would have expected a more challenging environment for this trade during those two expiration cycles.

Future efforts may wish to tweak the degree to which both the VIX and VXX options are out of the money and also adjust the units in the ratio to give a higher weighting to VIX options.

Finally, score one point for the proof-of-concept trade. When real money is on the line, perceptions are more acute, emotional responses and their interaction with the trade are more realistic and ultimately any lessons learned are more deeply etched in the trading psyche. **EM**



# Trading Advice from a Different Perspective

Mark D Wolfinger



When venturing into a new business, the vast majority of people construct a business plan that guides them when it's time to make important decisions. Often they can learn from the experience of others by reading, asking questions, or hiring help.

When people begin investing, they often feel confident enough to proceed by themselves, despite lack of prior experience. They often read material produced by their brokers and option traders are given an important [pamphlet](#) (ok, it's electronic these days) to read. Perhaps they grab some books or search blogs. But for the most part, they are often content to begin trading first and try to learn as they go.

Lessons are learned the hard way—often by incurring unnecessary losses. In the spirit of minimizing those losses, let's discuss one common situation from a different perspective. I'll tell you upfront that most traders disagree with my approach to this situation, but I know that if you adopt it as part of your individual trading philosophy that you will do better over the longer term.

The principle is fairly simple: When you own a position, especially an

options position for which the calendar plays a vital role, there will come a time when you know it's best to exit the trade.

Why exit? When expiration arrives, the options expire and the trade is over. You may want to make a trade to 'renew' the position for another month or two, but that's a separate decision. When expiration arrives, the current position goes away. Another reason for

## Experienced traders, and especially successful traders, love losses.

exiting is that the market has moved and suddenly your position is too risky to hold. That's true both for traders who own options and for those who sold them. The time remaining prior to expiration plays a big role in deciding whether to hold 'em or fold 'em.

Alternatively, traders often exit a trade to lock in a profit before it disappears.

### Advice

Most traders are very willing to exit any position for which they have earned a profit. Those same traders are seldom willing to exit a trade when it has been a money-losing

proposition. This style of trading feels as if it makes sense. Everyone likes to earn money and if you take a profit, then it must mean that you succeeded. Similarly, once a trader takes the loss, the position is closed, and the loss is a loss forever. Inexperienced traders don't like losses.

That last statement requires clarification. Experienced traders, and especially successful traders,

love losses. They know when to take those losses as a method of preventing large losses. The willingness and ability to exit a trade when it is underwater is necessary for long-term success. Many traders lost their entire investment accounts because of a 'need' to break-even before exiting a trade. Think of it like this: The trader holds to earn 10 or 20 cents from a trade before being willing to exit. Part of the time, the position moves further against them, and the resulting loss is several dollars (per share). Sometimes they make that extra 20 cents, but sometimes they lose 20 times as much by refusing to exit. Traders who act according to this mantra:



'I cannot take a loss'—are not likely to succeed.

So here's the advice: when it comes to managing risk or when it's time to exit a trade, base that hold/fold decision on the position as it exists today. Look at that position. Do you love it? Are you tempted to buy more? If yes, then this is no time to exit the trade.

However, if you believe risk is too great or that the probability

of making any money (from today forward) is very low, then there is no reason to own the position. Ask yourself: if I have a small profit or loss on this trade, how does that change the fact that this is a poor position, is no longer working, and is too risky to hold? Logic should tell you that it has no bearing on whether to own the trade. You know it's a bad position, so exit. It does not matter whether it's a loss. Surely you can find a better trade

with an improved probability of earning a profit.

Your job as trader and risk manager is to make money in the future. You cannot change the past. If you do not believe your current holdings can do the job—or are too risky to take the chance—then your job is to exit now and make a better trade when you find it. There is no urgency in finding that new trade. **EM**



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# Trading the 'Hard Side'

Mark Sebastian



In 2003, as part of my move into indexes, I began working 'the step' in the SPX pit as an arbitrage clerk (the person responsible for filling futures and relaying messages to the trading team's risk manager). At first, I could not have been more confused. The pit spoke its own language. Instead of looking at a computer, these guys all had sheets. Instead of instant messaging each other, these guys used crazy hand signals. However, the longer I worked the pit, the more I realized that the pit was controlled chaos. The SPX pit is not a free-for-all, or nearly as bizarre and crazy as the outside observer may suspect. It is more comparable to a bee hive—loaded and busy, but controlled by a system of commendation unique to the pit. The most important skill is the ability to read which way order flow is moving. In reading this order flow, the traders develop their ability to read and analyze the marketplace as well as to gain control over their own positions.

Retail traders can take advantage of the market makers by exerting control over their own positions. At times, the SPX can be the most difficult product to get filled in; however, unlike most other products, it can also be the easiest. In trading the SPX, I have had to 'pay up' on many occasions to get an order filled. I have also had better fills than in any other product. What dictated the fills? Not the market makers themselves, but rather the market makers' positions. After a few months on the other side of the badge, I realized that as a retail trader I could vastly improve my fills if I thought like a market maker.

The first step to improving SPX fills is to do the 'hard side' first. The 'hard side' is the side that the trader thinks will be hardest to fill. Which side is the hard side will depend on the situation. However, there are a few generalizations that a trader can make:

1. In the money options are often very difficult to fill (both buying and selling), especially if the market is

fluctuating. This is because market makers are always wary of having to hedge deltas.

2. Almost as difficult to fill are out of the money puts, especially if the trader wants to buy these options. Market makers use these much like butterfly traders: they buy a lot of puts so that they can sell ATM options.
3. Out of the money calls are usually going to be easy to buy and tough to sell.
4. It doesn't matter if it's a call or a put, ATM options are ATM options. Market makers do not mind selling them for the right price.

There are also a few generalization traders can make about the 'hard side' for specific volatility conditions:

When implied volatility is up:

1. Downside puts will be very hard to buy. The good news, though, is that these puts are not tough to sell. Traders are likely buying ATM options, and the market makers need these to hedge.
2. ITM options can be very tricky, because if the market is moving rapidly this is prime territory for a pick-off (fill at a terrible price). Market makers love ITM options when markets are moving, since it can be ripe picking.
3. ATM options will not be that difficult to trade, as there is likely high volume. Although if volatility is at an extreme, ATM options will also be difficult. Unless trading is one-directional, this is a market maker's favorite option to trade.
4. It may even be tough to buy calls when IV is up. The last thing these traders want to do is to be buying futures on a high volatility day.

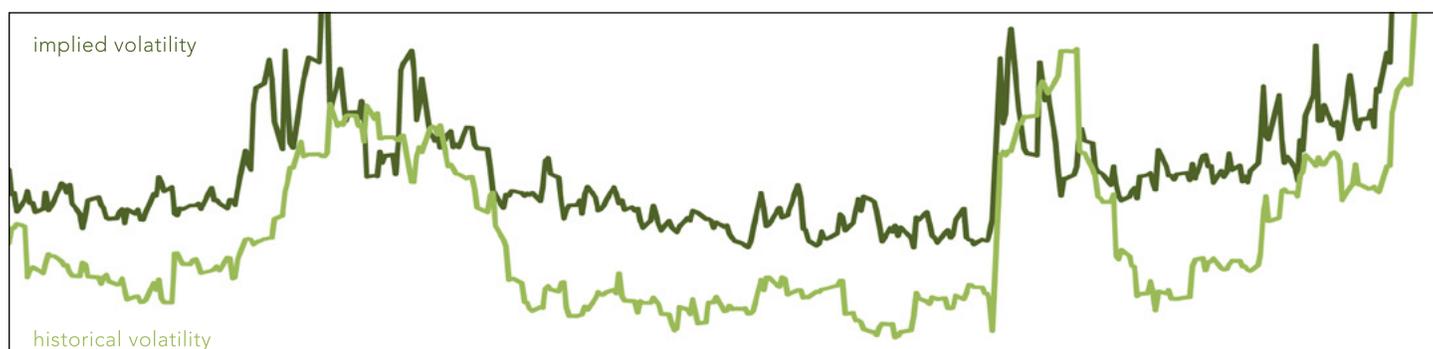
When implied volatility is down:



1. Downside puts will be much easier to buy. The market makers are likely buying ATM options, so they do not mind selling downside skew.
2. ATM options will be quite difficult to fill. When it rains it pours, and when IV is down ATM options can be poison.
3. ITM options will trade somewhat easily. If the futures aren't moving, market makers will take the easy dime or nickel.
4. Good luck selling calls, especially in a rallying market.

Being long option premium as the market moves toward the market maker's long strike is a trader's worst nightmare.

While these generalizations may give the retail trader a glimpse into how the market makers think about orders, it really comes down to what the position of the pit is. If the pit is mostly long options, it will be easy to buy, and if the pit is mostly short it will be easy to sell. If traders try to trade the hard side first, it will likely give them an edge up when trading spreads in the SPX.



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# An Introduction to Options on Interest Rate Products

Jared Woodard

As I've noted here before, there's not much sense in hunting for viable options trades on very highly correlated underlying assets since, over time, those additional options trades will function as little more than duplicate bets. Over the last five years, 30-year U.S. Treasury bond returns have shown a correlation with S&P 500 returns of negative seven per cent. In an environment marked by increasingly high correlations among individual stocks, interest rate ("IR") products therefore offer a genuine opportunity for diversification. Additionally, the steady decline in bond yields over the last several months has

prompted some observers to wonder how much lower yields can go, with attendant speculation on that question evident in options markets. In this article, I will review the interest rate products with the most actively traded options and will mention some of the idiosyncrasies of this asset class.

## Actively-Traded Interest Rate Options

The table below shows some of the most actively-traded vehicles, listed in order of maturity. I'm restricting this review to U.S.-based federal government debt products for simplicity.

The open interest totals in this table should be interpreted with the contract multipliers of the futures in mind. Options on Treasury note and bond futures are roughly ten times the size of similar ETF options. For example, purchasing a short term, at-the-money (ATM) 10-year note put option for 56/64 means risking \$875, while a similar put option on IEF bought at \$0.75 would entail risking \$75. Given the relative size of the options on futures, it is fair to say that while ETF products have made significant progress in attracting investor interest, the bulk of the order flow in interest rate options still occurs

Name	Ticker Symbol	Recent Options OI <sup>1</sup>
<b>Short term</b>		
Eurodollar Futures	GE (GLOBEX)	12,943,720
2-Year U.S. Treasury Note Futures	ZT (GLOBEX)	188,448
iShares Barclays 1-3 Year Treasury Bond Fund	SHY	32,217
<b>Medium Term</b>		
5-Year U.S. Treasury Note Futures	ZF (GLOBEX)	353,085
iShares Barclays 7-10 Year Treasury Bond Fund	IEF	27,472
10-Year U.S. Treasury Note Futures	ZN (GLOBEX)	2,106,822
<b>Long term</b>		
U.S. Treasury Bond Futures (15+ Year Maturity)	ZB (GLOBEX)	411,168
iShares Barclays 20-Year Treasury Bond Fund	TLT	353,576
ProShares UltraShort 20-Year Treasury	TBT	605,879

Table 1



on the futures side of the regulatory divide.

Although I elected to include them here, options on SHY and on IEF are very quiet, and may not be viable for spread strategies.

One surprising area of activity is the interest in TBT, the Proshares ETF that allows investors to take leveraged bets against the Barclays 20+ Year Treasury Index. TBT seeks returns that are 2x the inverse of the tracking index; the conventional wisdom that has emerged about these products is that they are suitable as short-term trading vehicles, but not as long-term holdings. Because of the inherent leverage in the underlying, options on TBT are priced at significantly higher levels of implied volatility. Recent at-the-money TLT options expiring in 30 days implied 17% volatility, whereas analogous TBT option prices implied volatility around 38%. Some traders use options on leveraged ETFs to attempt to capture the decay caused by daily rebalancing, via short gamma spreads and option sales.

### Idiosyncrasies of Interest Rate Options

In the financial media, IR products are typically discussed in terms of yield, rather than price, e.g. “The yield on the 10-year note fell three basis points today to 2.71%.” In the case of Eurodollar futures and options, this difference is taken a

step further: the historical volatility of Eurodollar futures and the volatility implied by Eurodollar options are calculated to reflect variance in rates, not prices.<sup>2</sup> This emphasis on rates is intuitive: many IR trades are conducted to hedge or alter existing rate exposure elsewhere in a portfolio, rather than simply to speculate on the future direction of a rate-linked product, so analyzing products in terms of rates or yield makes comparison easier.

Another distinctive feature of IR options is the importance of the term structure within products and the yield curve across products.

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**Over the last five years, 30-year U.S. Treasury bond returns have shown a correlation with S&P 500 returns of negative seven per cent.**

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While one-month and one-year options on some stock are clearly derivatives of the same underlying asset, the same principle does not hold for a given series of futures contracts. For example, 10-year Treasury Note futures expiring in September 2011 recently traded at 118'285, while September 2010 T-note futures are currently bid at 125'275. This is a typical term structure, in which higher

long-term rates reflect the desire of participants to be compensated for the added uncertainty about macro-economic changes, government policy, etc. Conceptually, it may help to think of the two contracts as entirely distinct—if highly correlated—assets. A time spread using options on a single underlying, e.g., short an ATM August call and long an ATM September call on the September 2010 T-note contract is, in this sense, less risky than a spread that is short an option on one contract and long an option on a different contract, since the latter position entails an additional bet about changes in the relationship between the two contracts. Term structure considerations are familiar to futures traders, but they also apply to IR ETFs, even if the opacity of ETFs obscures that fact.

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<sup>1</sup>Data: CME Group, thinkorswim. Open interest data retrieved August 11, 2010.

<sup>2</sup>See Galen Burghardt, *The Eurodollar Futures and Options Handbook* (McGraw-Hill, 2003), ch. 19.

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# Evaluating Volatility Across Asset Classes

Bill Luby



It goes without saying that all volatility events are not created equal. Each volatility event has a different magnitude and duration, is the result of a unique combination of causal factors and leaves its own signature imprint on the volatility landscape.

Anyone who is interested in creating a taxonomy of volatility events need only look back over the last three years of raw material to get a sense of the wide variety of causes and effects associated with various volatility storms. Consider the following recent volatility spikes:

1. In October and November 2008, a series of events threatened the health of the global financial system and pushed the CBOE Volatility Index (VIX) over 80 on two separate occasions. At the time, extreme volatility was evident across all asset classes, though extreme volatility hit gold first, then equities, followed later by other asset classes.
2. The European sovereign debt crisis was another story entirely from a volatility perspective. Here currency volatility spiked first, followed by a VIX spike. At the height of the sovereign debt crisis volatility spike in May 2010, volatility in commodities remained relatively muted.
3. Recent unrest in North Africa and the Middle East shows a different volatility pattern. In this instance, the spike in volatility has been largely confined to oil, with gold and VIX volatility near historic lows and currency volatility well below average. During the first week in March, volatility correlations across asset classes were at a historically low level.
4. The May 6, 2010 'flash crash' was another unusual event in terms of volatility. Intra-day volatility spiked wildly, but receded rapidly. While the spike was over quickly, the causes and likelihood of a potential recurrence are still being debated almost one year later.

Each of the four events described above experienced a different volatility impact across asset classes. It is my belief that a better understanding of the volatility picture across asset classes will yield a better grasp of volatility events and help to identify a number of favorable trading setups.

## The Volatility Compass

One of the tools I use to analyze volatility across asset classes is something I call a volatility compass. The volatility compass draws upon four indices of implied volatility developed by the CBOE:

... the crude oil spike is a clear high volatility outlier in the current Libyan crisis.

- CBOE Volatility Index (VIX)
- CBOE Crude Oil Volatility Index, sometimes known as the Oil VIX (OVX)
- CBOE Gold Volatility Index (GVZ)
- CBOE EuroCurrency Volatility Index (EVZ)

Because each of these volatility indices measures asset classes with very different normal and peak volatilities, I normalize the data using percentiles for the common historical data set, which dates back to June 2008. The resulting normalized data makes it possible to plot the implied volatility index for all four asset classes noted above relative to their own historical movements and also allows me to compare the relative volatility of the euro with crude oil, which is typically more than three times as volatile as the currency.

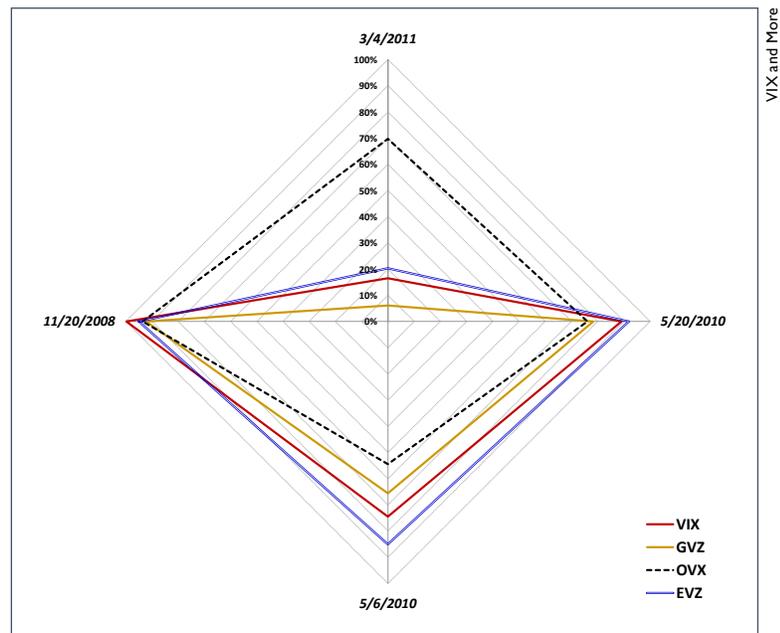


Finding a manner in which to display the comparative volatility data for easy visual consumption was no easy task. In addition to the usual line and bar charts, I also employ radar charts (their Excel name) to compare relative volatility across multiple events. The radar chart below (Figure 1) shows a snapshot of the VIX, GVZ, OVX and EVZ at the peak of volatility during the 2008 financial crisis, the May 6, 2010 'flash crash,' the European sovereign debt crisis (5/20/2010) and at elevated levels during the Libyan uprising (3/4/2011).

A comparison of cross asset class volatility spikes during the volatility events in the graphic above shows some of the many different characteristics of a volatility spike. Note the differences across asset classes during these events. While the VIX dominates the 2008 volatility spike, the euro leads the way in May 2010 and the crude oil spike is a clear high volatility outlier in the current Libyan crisis.

### Putting the Volatility Compass Into Action

One can also use the percentile data and volatility compass charts to analyze which asset class peaks first during a volatility spike, how volatility spreads across asset classes, where the relative volatility is highest, what happens to volatility



**FIGURE 1** Relative Asset Class Volatility at the Height of Four Recent Volatility Events

outliers, how highly correlated spikes are unwound, etc. Answers to these types of questions will help to determine to what extent volatility spikes are tradable across asset classes, what type of trading opportunities are available and what some of the winning setups are.

For those who have studied sector rotation strategies and methods for trading geography-based ETFs, some of the analytical techniques used in those two disciplines can be carried over to an analysis of cross asset class volatility.

Ultimately, the study of volatility has both a science and art component to

it, but a cross asset class approach provides a more broad-based holistic view of the volatility landscape and adds a little more science to the mix.

At some point, volatility becomes the study largely of contagion and falling dominoes. I can say without hesitation that a multi-disciplinary approach is essential to understanding contagion and dominoes and that a cross asset class analytical framework supplemented by tools such as the volatility compass is an effective way to approach that subject. **EM**



## Expiring Monthly Interview with Tim Andriesen

Mark Sebastian

*Tim Andriesen was appointed Managing Director, Agricultural Commodities of CME Group in August 2009. He is responsible for developing and executing the global business and sales strategy for the company's agricultural commodities product line.*

*Prior to joining CME Group, Andriesen most recently served as Managing Director, Agribusiness for National Australia Bank/nabCapital in New York. He also worked as Managing Director, Commodities/Commodities Sales in the firm's Sydney office and as Senior Vice President of Commodities based in New York. His background also includes senior risk management and agricultural trading roles with Zurich Capital Markets, Louis Dreyfus Corporation, Rabobank International and Koch Industries.*

*Andriesen earned a bachelor's degree in marketing with a specialization in international business from Southern Illinois University.*

I don't think any trader can argue that over the last few years, commodities have increasingly become a part of institutional traders' portfolios. Even more recently, the retail public has gotten involved in commodities as well. With events like Russia canceling all exports of wheat, droughts and floods in the Midwest, and gold reaching all time highs, I thought it would be interesting to sit down with an Tim Andriesen, Managing Director of Agricultural Commodities for the CME Group, to talk about commodities: how they are traded now, what makes them tick, and what products might be coming down the pipeline.

**Expiring Monthly:** *Can you tell us a bit about your current position and your background?*

**Tim Andriesen:** I am the Managing Director of Agricultural Commodities and Alternative Investments. I've been with the CME Group since August of last year. I spent about 16 years trading cash grains through the U.S. and in Mexico. In 1996, I went to work for an energy company that was in the agricultural space as well. I spent one of my years there running an agricultural over-the-counter (OTC) option desk. When the company got out of that business

I went to New York and worked for financial institutions running commodity OTC businesses and desks. Most recently, I ran the commodities business for National Australia Bank. I have experience on both the user and OTC side when it comes to options.

**EM:** *What are CME Group's strengths with commodity options?*

**TA:** There are two areas of strength, and it depends on what you are trying to accomplish. In the physical world where you have people who are trading physical commodities, one is typically using options to build a minimum or maximum price into a hedging program.

If you're a farmer, you have a couple options. You can either deal directly with the exchange or, very commonly, grain merchants—who are buying the commodity that you are using. They will have a maximum or minimum price contract with you. In recent years, we have seen a growth in trades that are not simple vanilla-type minimum or maximum price contract. Farmers are reaching into the OTC markets where they are developing more complex structures using OTC options, things like average price options that allow you a maximum price but to participate in the average



price over some window or a barrier structure, things that bring more pricing flexibility. On the commercial side, what you are seeing is these products used as part of a physical transaction or as part of a hedging strategy by a firm.

On the other side, on a speculative basis, what I think is interesting to people about commodity options is that they are liquid and have deep option markets and also term structure. You see good liquidity going out over the course of the year and there is distinct seasonality on the commodities market. You have this concept of “new crop” and “old crop” where one crop is almost all consumed and the next month a new harvest will change the dynamics of the marketplace. Some of the things you see are the definitive parameters and definitive behavior as one moves out on options curve.

For instance, one of the really interesting things that we’re doing is now offering exchange-traded options on spreads. Going back to the “old crop/new crop” concept, the November soybean futures are generally considered the “new crop” bean contract. Two years ago, we started offering options on the July/November spreads. We’ve continued to grow, offering options on spreads within the same commodity and recently we started to expand into

offering options on spreads across different commodities. We recently listed options on the corn/wheat spread. We are about to list options on the corn/soybean ratio. This is interesting because one of the key drivers of these markets is that year’s allocation of acreage between corn and soybean production.

**EM:** *What are some common misconceptions about commodity options? What would make the general public think commodity options are a useful and interesting product beyond what you just said?*

**TA:** Historically, investing in commodities is something the general public has not looked at as many thought commodities were too speculative. In reality, they are grounded markets, reflecting supply and demand of real things. The general public is just starting to look at commodities as a mainstream investment opportunity. Commodity options have only been around since about 1984. They are reasonably new products to many people.

**EM:** Let’s talk a little about the micro-product. That micro-gold contract (MGC) has come out and my understanding is that it is popular. Does the CME have any plans to roll out more of these micro-products to get a lot of the retail trading or some people that don’t want to trade a normal sized

contract? Is that something the CME is looking towards pushing?

**TA:** Within the agricultural space, one of the key things for us is to develop products for hedgers. We think that if you have that core hedging business underlying the marketplace, it provides that supply and demand and brings about good liquidity. We simply don’t get a lot of demand for smaller sized contracts from our core commercial customer base. We haven’t been looking too hard in trying to downsize our contracts.

**EM:** *What Products is CME Group looking to roll out in the future?*

**TA:** We are always evaluating new products and services to meet the financial risk management needs of our global customers. One thing we are hearing from our customers is options on oil shares. If you think of the “crush,” buying soybeans and crushing it into meal and oil, one of the drivers of that is how much of that revenue is coming from oil. We’re getting a decent amount of demand for an option on the oil share. It sounds a little esoteric but it plays a bit when demand for bio-fuels changes. Demand drives the crush. We think that people are looking at that space and have a view. This gives them a way to express that view.

**EM:** *What about the industry as a whole? How is the industry changing*



right now? Is it more of these personalized products or are there any kinds of radical changes that are really beyond going electronic? Is the industry changing in any way that strikes you?

**TA:** I think the one thing that we are all trying to look at is how the OTC markets come into play in the post Dodd-Frank environment. There is certainly a wide array of options that are available in these OTC markets. Historically, they haven't been something that have been targeted to the retail investor and I don't know if I would see that. But certainly the institutional investor, to the extent that those products become cleared OTC products, it may open the door up for them to trade things that are a little more than the fairly vanilla things that exist on the exchange today.

**EM:** With options on the different grain products, is there an area where they are competing with the futures or is this a purely supplemental product where they both increase the volume?

**TA:** I think definitively they both provide strong volume and open interest because, generally speaking, market makers are hedging some of their risk in the futures. From our customers, I don't see too many people that, from a large volume, are saying, 'I want to switch from futures to trade options because I think it's an alternative.' I think the mindset between these two markets

is fundamentally different. If you're trading options, you're probably doing it for one of two reasons. You either are looking for a limited risk, unlimited reward trade, or you have a view on volatility that you are trying to express. It's generally not an efficient thing to do to try to absolutely express a directional point-of-view using options. From the users that we deal with, I think they tend to be synergistic, and I don't really think the people who are trading options are going away from trading futures. They have very different objectives in mind.

**EM:** How correlated is volatility across the agriculture sector or the different commodity sectors?

**TA:** It depends on the commodities. For example, if you look at corn and soybeans, they tend to be grown in the same places at the same time. Generally something that would drive higher volatility in corn would also drive higher volatility in soybeans, soybean meal, and soybean oil. Wheat would be a little less connected but would have some of the same drivers. If you looked at the correlation in volatility between corn and cattle, it would be more disconnected. They all have some connections with each other but it really depends on what two you are looking at.

**EM:** What are your general thoughts on the commodity ETFs?

**TA:** I can't say that I have a particularly strong view about the ETF market. There are probably customers for whom an ETF probably makes more sense. There are also customers for whom investing directly in futures makes more sense.

**EM:** Are there any closing thoughts you would like to give our readers?

**TA:** The one thing I would say about commodity options in particular and probably options in general is that when people are looking at trading options, they need to recognize that you get what you pay for. People look at premium and say, 'Well that's expensive.' It is expensive because that is the expected payoff of the option. A lot of people get stuck into the 'I want to buy something cheap' mentality. A lot of times what they find is that buying things cheaply does not give them what they are looking for. We really have no skin in the game whether somebody buys a deep in-the-money option or an out-of-the-money option. What we want are customers to have good experiences. One of the key things I always try and point out whenever I'm talking about options to customers is that you really have to recognize that the option markets tend to be efficient. If they are expensive, there is a reason for that. If they are cheap, there is a reason for that, too.

**EM:** Thanks for your time, Tim. **EM**



**Back Page****On Eating What We Kill***Jared Woodard*

The slogan, popular among many traders, that “we eat what we kill” isn’t just absurd, it’s dangerous.

The cliché is absurd because every tick in profit and loss that accrues to a trader’s account is the result of a series of institutions, laws, practices, labor hours, and countless other concrete relations of production without which trading would be inconceivable. The chain of dependence that leads to a successful “predatory” financial transaction is, in fact, so much more protracted than the series typical of ordinary “agrarian” cubicle work that we might instead regard trading as among the most tenuous, gossamer pursuits anywhere in Western culture. Recent hysterical outbursts among banks, hedge funds, and high-frequency shops over the mere mention of the possibility of a Tobin tax on financial transactions illustrate the extreme fragility of the business of trading. But an environment of perpetual regulatory capture is just the most obvious in the long chain of conditions necessary for presumably independent, carnivorous traders to exercise their purported skills.

Every financial instrument is a derivative, after all, of the work that goes on elsewhere in the material economy. When that material world occasionally impinges on the austere realm of finance – in interruptions natural, political, workerist, and so on – it becomes clear just how entirely reliant the financial sector is on the people and relationships that it exploits for profit. The impetus for the slogan, I take it, is that whereas ordinary workers depend on bosses or consumers or other businesses for their livelihoods, traders have severed such ties and are free to take profits wherever they find them. But this is just irredeemable mythology, and it gets the relationship precisely backwards. Medicine will never be a useless profession as long as people get sick; farmers, chefs, and

vintners will be needed to keep us fed and happy; and we can think of similar explanations of the importance of teachers, barbers, police officers, and so many others. My claim is not that traders are useless to society; that’s a question for another time. But whereas the allocation and reallocation of capital to different assets is an activity so utterly reliant on the strength of the material economy, boasts of carnivorous independence on the part of traders seem immediately not just false, but also in poor taste. Traders proud of their supposed predation are the anemic leonine aristocracy of a protected nature preserve, oblivious to the guards, gates, and smaller animals without whom they would quickly die.

Beyond the absurdity of bluster about “eating what we kill,” I’ve claimed that the slogan also represents a dangerous attitude. If, instead of an attitude of humility and circumspection, I approach markets with all the maturity of a frat boy, I dramatically increase my chances of making serious errors. The conceptual mistake here, for one, is in attributing any success I have to my own efforts, rather than to luck; in the absence of statistically robust performance data, any claim about my own trading prowess is just a swaggering invitation of future losses. And even if we exclude discretionary traders, a healthy dose of overconfidence is a great way for a mechanical or systems trader to fail to notice important changes in the market. In addition to being an obviously false description of reality, the mythology of self-reliance is a distraction and a cognitive bias that we can all do without.

A more accurate summary might be something like, “we eat whatever we’re lucky enough to find.” I don’t expect that inelegant phrasing will ever catch on, but the best traders don’t tend to think in slogans, anyway.

