BULLSH*T FREE GUIDE TO OPTION VOLATILITY

Making sense of market mayhem

By Gavin McMaster

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This ebook is dedicated to my parents who sacrificed so much for us

www.optionstradingiq.com

YOUR FREE GIFT

As a way of saying *thanks* for your purchase, I'm offering a free report that's exclusive to my readers.

The strategy we're about to discuss relies heavily on understanding how volatility affects option prices and combination trades. That's why I wrote: ***Volatility Trading Made Easy – Effective Strategies For Surviving Severe Market Swings.***

This lengthy PDF (over 7,500 words), contains some of the most crucial information that I've learned in my 10 years trading options.

You can download the free report by going here:

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ABOUT THE AUTHOR

My name is Gavin McMaster and I'm originally from Melbourne, Australia. Currently I live with my wife Alex and 2 children (Zoe and Jake) in Grand Cayman, which is where we have lived for the past 10 years. I've worked in the finance industry for over a decade and have been trading options successfully for the last 10 years.

My interest in the stock market can be traced back to primary school, I can't remember the teacher or which grade, but she told a fictional story which has always stuck with me. It was a typical stock market tale of fear and greed, the two most powerful emotions in the financial markets. A stock trader who bought a stock at $1, watched in climb all the way up past $1000, but got greedy assuming he would make more money. Of course some bad news about the company came out and next thing you know the stock was back to $1. This was a fictional story, but from that point on I was hooked. I bought my first shares when I was 13 and have been trading ever since, although more heavily in the last 10 years.

I started taking an interest in options in 2003 and have bought just about every book you can think of on options trading. I also went back to school and completed my Masters in Applied Finance and Investment in August 2009. Still, there is only so much you can learn from a book and I have learnt so much more from actually trading options.

My first experience trading options was buying some put options on an Australian retail stock. I had no idea what I was doing and lost 100% on that trade. One of my next trades was even more disastrous. I owned a small portfolio of Australian shares and decided to generate some income by selling index call options. I had no idea at that stage about delta or how to calculate my overall exposure in order to create an effective hedge. My portfolio was mostly low beta stocks and I had sold WAY too many index calls for my exposure. The market rallied and my broker rang me that night to tell me I had margin issues. Instead of just selling the positions and admitting defeat, I held on for another day and the market continued to rally. All of a sudden my account had a negative value and I didn't have enough money in my account to fund closing the positions. In the end, I had to borrow money from my brother to cover the margin call. A very embarrassing experience let me tell you.

I've come a long way since that time and when I look back on some of the things I did when I was starting out, it makes me cringe. I've worked and studied incredibly hard and had many more ups and downs. I've been mentored by some of the biggest names in the business – Dan Sheridan, Tony Sizemore and John Locke.

With this ebook, I hope to share my experiences and help you avoid some of those mistakes I made when I started out.

PREFACE

If you have a desire to be a successful options trader, you need to have an excellent understanding of option volatility. Having purchased this book, you’ve taken the first step to increasing your knowledge on this difficult subject, so congratulations to you.

When I was researching for this book, I couldn’t find a decent book that broke down the key concepts into an easy to digest format. Most of the books out the on option volatility are either overpriced, a sales pitch or both. There are a couple of excellent books, but they are just far too complex and difficult to understand for retail traders.

With this book, you will find complex ideas broken down into simple to understand and easy to read chunks. You won’t get bogged down in heavy, overly academic chapters. What you will achieve is a new understanding and appreciation for some of the most important, yet frequently ignored concepts in options trading.

I hope you enjoy the book and please remember to leave a review.

Here’s to your success.
Gavin McMaster

1. INTRODUCTION

When first starting out, many beginner option traders are somewhat bamboozled by the concept of option volatility. If you find yourself in this position, then don't worry, you're certainly not alone and this book is here to help rectify the situation.

One thing you absolutely cannot do is ignore volatility and put it in the too hard basket. It is the most crucial aspect of trading options that you need to grasp.

Understanding volatility is not only crucial, but it is also a fascinating part of trading. With stocks, you can make money if the stock moves up or down, but options provide such an amazing array of flexibility, you can profit in a multitude of different environments. Of course with that flexibility comes more risk.

Take for example, the trader who buys a call option thinking the stock is going to rise. The next day his stock rises, but his call option falls in price.

I've coached hundreds of options traders, and almost all beginners struggle to understand how this can happen. The answer is that the volatility of that option has dropped, resulting in a drop in price of the option.

This is just one example of how volatility can negatively impact the unwary trader.

In this book, I'll take a look at some of the important concepts surrounding option volatility and how you can use them to create profitable trades. I'll also discuss some historically important market events and how volatility behaved during those times of crisis.

2. OPTION VOLATILITY EXPLAINED

Option volatility is a key concept for option traders and even if you are a beginner, you should try to have at least a basic understanding. Option volatility is reflected by the Greek symbol Vega which is defined as the amount that the price of an option changes compared to a 1% change in volatility.

In other words, an options Vega is a measure of the impact of changes in the underlying volatility on the option price. All else being equal (no movement in share price, interest rates and no passage of time), option prices will increase if there is an increase in volatility and decrease if there is a decrease in volatility.

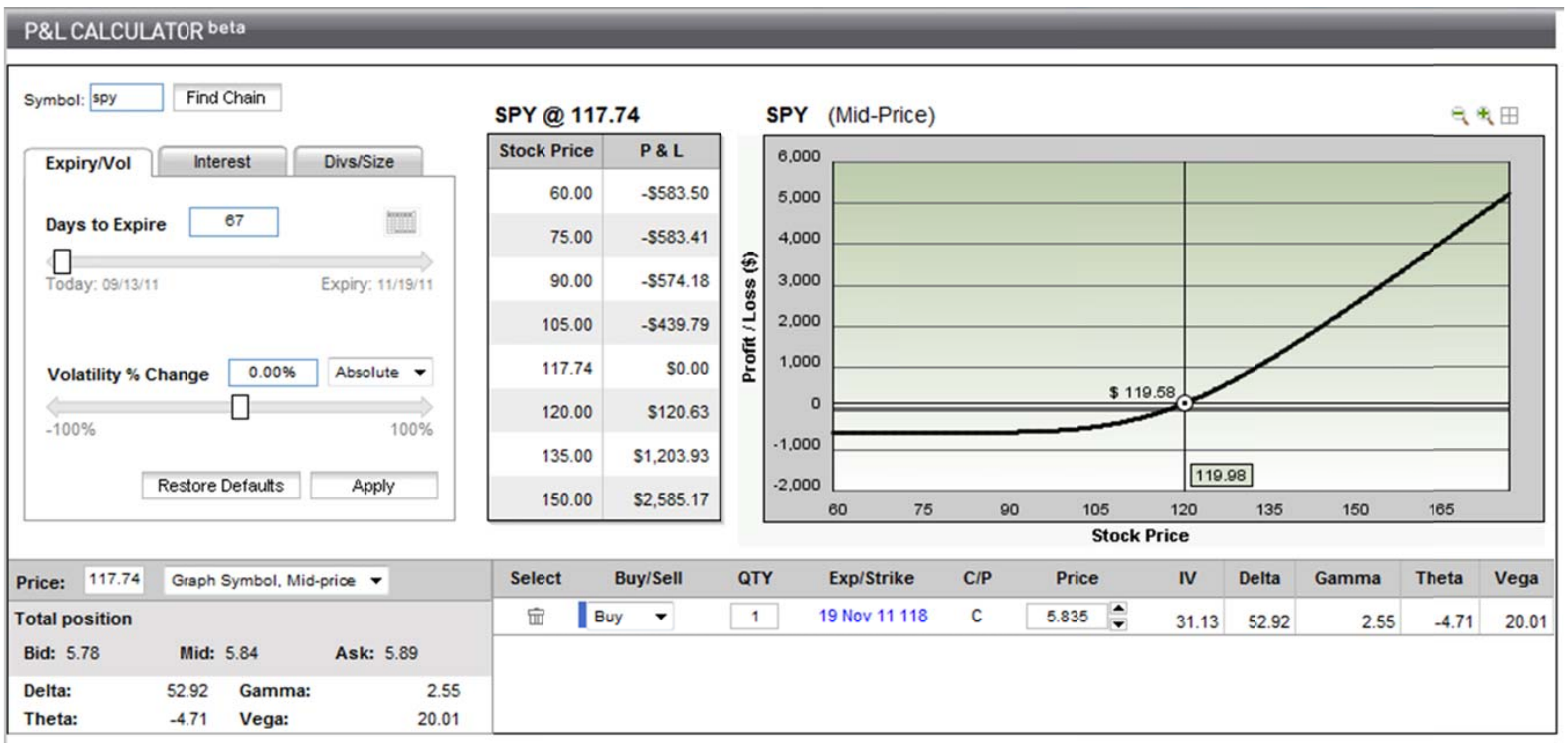
Therefore, it stands to reason that buyers of options (those that are long either calls or puts), will benefit from increased volatility and sellers will benefit from decreased volatility. The same can be said for spreads, debit spreads (trades where you pay to place the trade) will benefit from increased volatility while credit spreads (you receive money after placing the trade) will benefit from decreased volatility.

Here is a theoretical example to demonstrate the idea. Let's look at a stock priced at 50. Consider a 6-month call option with a strike price of 50:

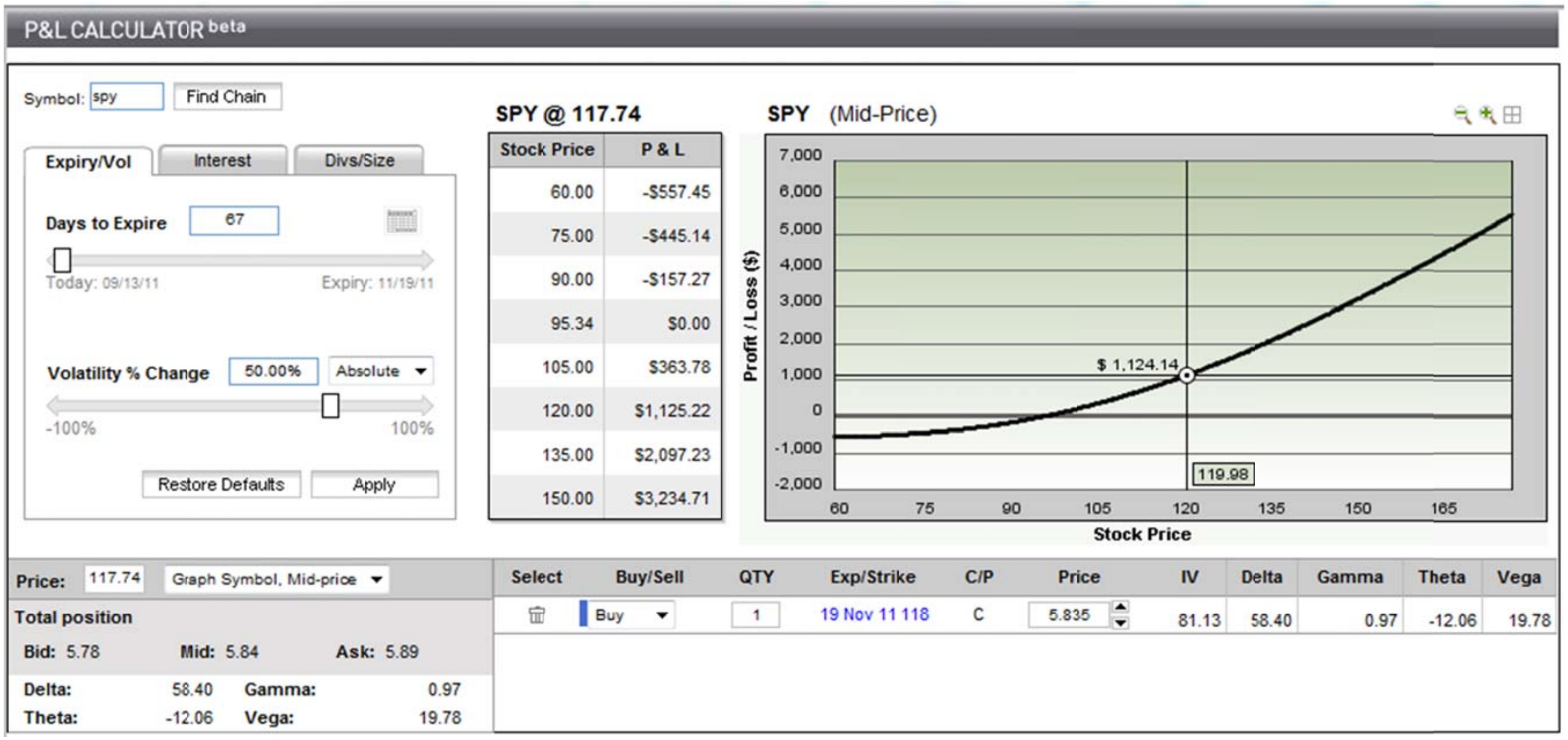
If the implied volatility is 90, the option price is $12.50
If the implied volatility is 50, the option price is $7.25
If the implied volatility is 30, the option price is $4.50

This shows you that, the higher the implied volatility, the higher the option price. Below you can see three screen shots reflecting a simple at-the-money long call with 3 different levels of volatility.

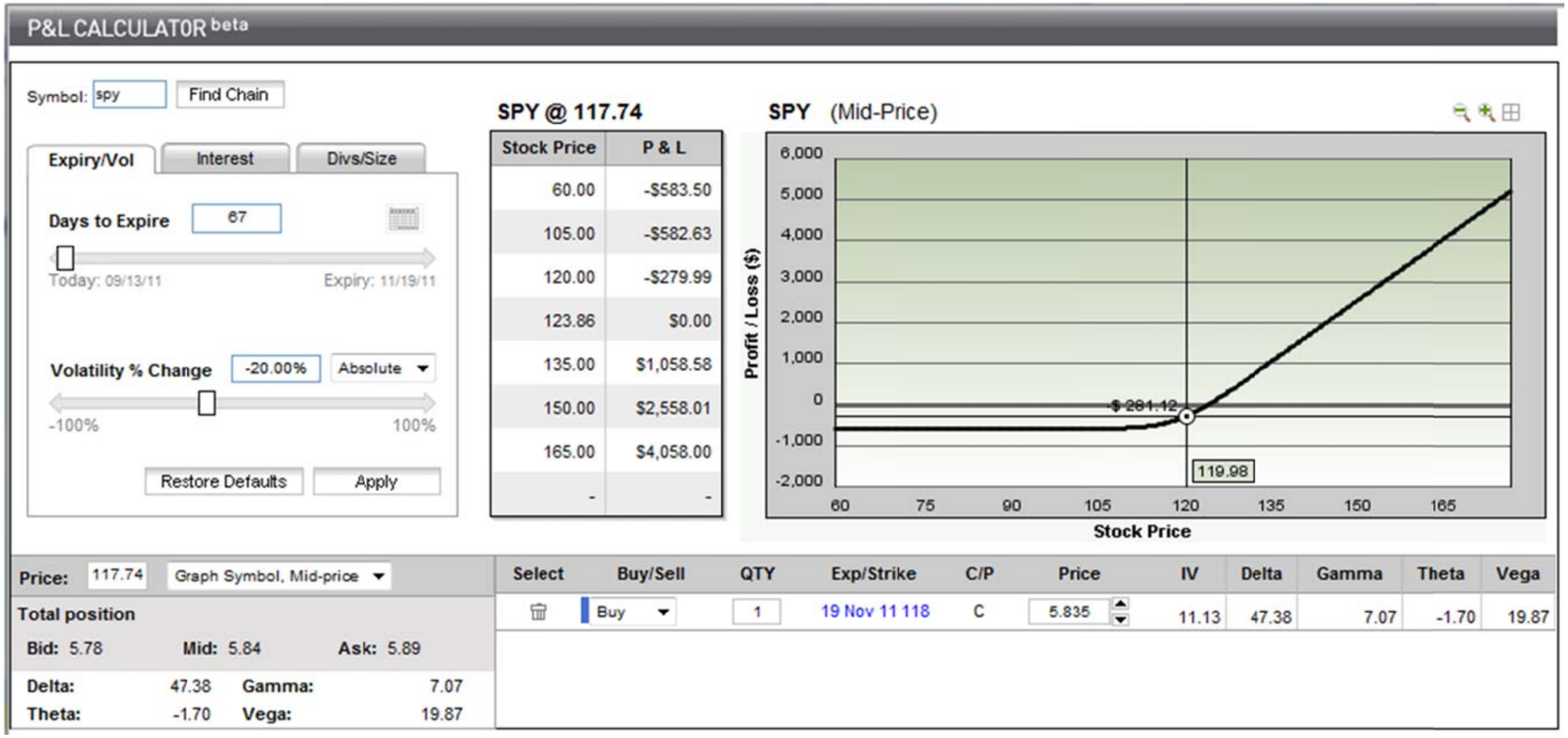
The first picture shows the call as it is now, with no change in volatility. You can see that the current breakeven with 67 days to expiry is 117.74 (current SPY price) and if the stock rose today to 120, you would have $120.63 in profit.



The second picture shows the call same call but with a 50% increase in volatility (this is an extreme example to demonstrate my point). You can see that the current breakeven with 67 days to expiry is now 95.34 and if the stock rose today to 120, you would have $1,125.22 in profit.



The third picture shows the call same call but with a 20% decrease in volatility. You can see that the current breakeven with 67 days to expiry is now 123.86 and if the stock rose today to 120, you would have a loss of $279.99.



Homework Assignment: Find an option strike on a stock you are interested in. Most brokers have a tool where you can estimate the price given certain changes in volatility. Find the tool that your broker uses and record how the price of you option changes for a 20% increase and decrease in implied volatility.

3. WHY SHOULD YOU CARE?

One of the main reasons for needing to understand option volatility is that it will allow you to evaluate whether options are cheap or expensive by comparing Implied Volatility (IV) to Historical Volatility (HV).

Below is an example of the historical volatility and implied volatility for AAPL. You can get this data for free very easily from www.ivolatility.com. You can see that at the time, AAPL's Historical Volatility was between 25-30% for the last 10-30 days and the current level of implied volatility is around 35%.

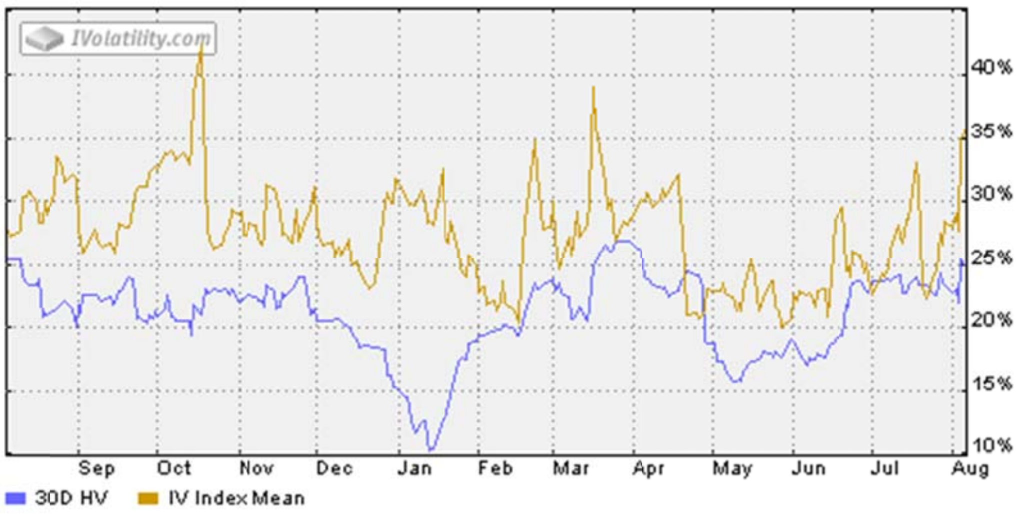
This shows you that traders were expecting big moves in AAPL going into August 2011. You can also see that the current levels of IV, are much closer to the 52 week high than the 52 week low. This indicates that this was potentially a good time to look at strategies that benefit from a fall in implied volatility.

	Current	1 WK AGO	1 MO AGO	52 wk Hi/Date	52 wk Low/Date
HISTORICAL VOLATILITY					
10 days	29.99%	24.78%	24.52%	34.92% - 25-Mar	5.28% - 29-Dec
20 days	27.67%	21.38%	25.43%	29.96% - 21-Mar	7.23% - 31-Dec
30 days	24.94%	23.45%	23.72%	26.93% - 25-Mar	10.27% - 13-Jan
IMPLIED VOLATILITY					
IV Index call	35.88%	28.96%	24.27%	42.40% - 18-Oct	20.33% - 16-Feb
IV Index put	35.26%	27.97%	23.88%	42.35% - 18-Oct	19.87% - 27-May
IV Index mean	35.57%	28.47%	24.07%	42.38% - 18-Oct	20.12% - 27-May

Here we are looking at this same information shown graphically. You can see there was a huge spike in mid-October 2010. This coincided with a 6% drop in AAPL stock price.

Drops like this cause investors to become fearful and this heightened level of fear is a great chance for options traders to pick up extra premium via net selling strategies such as credit spreads. Or, if you were a holder of AAPL stock, you could use the volatility spike as a good time to sell some covered calls and pick up more income than you usually would for this strategy.

Generally when you see IV spikes like this, they are short lived, but be aware that things can and do get worse, such as in 2008, so don't just assume that volatility will return to normal levels within a few days or weeks.



Every option strategy has an associated Greek value known as Vega, or position Vega. Therefore, as implied volatility levels change, there will be an impact on the strategy performance.

Positive Vega strategies (like long puts and calls, backspreads and long strangles/straddles) do best when implied volatility levels rise.

Negative Vega strategies (like short puts and calls, ratio spreads and short strangles/ straddles) do best when implied volatility levels fall.

Clearly, knowing where implied volatility levels are and where they are likely to go after you've placed a trade can make all the difference in the outcome of strategy.

Homework Assignment: Go to www.ivolatility.com and sign up for a free account. Enter in a stock symbol and record your thoughts on that stocks historical and implied volatility over the last 12 months.

4. IMPLIED VOLATILITY AND HISTORIC VOLATILITY

Historical volatility is calculated by measuring the past price movement of a stock. It is a known figure as it is based on past data. I won't go into the details of how to calculate historical volatility, as it is very easy to do in excel.

The data is readily available for you in any case, so you generally will not need to calculate it yourself. The main point is that in general, stocks that have had large price swings in the past will have high levels of historical volatility.

As options traders, we are more interested in how volatile a stock is likely to be during the duration of our trade. Historical volatility will give some guide to how volatile a stock is, but that is no way to predict future volatility. The best we can do is estimate it and this is where implied volatility comes in.

Implied volatility is an estimate, made by professional traders and market makers of the future volatility of a stock. It is a key input in options pricing models.

The Black Scholes model is the most popular pricing model, that is based on certain inputs, of which volatility is the most subjective (as future volatility cannot be known) and therefore, gives us the greatest chance to exploit our view of volatility compared to other traders.

Implied volatility takes into account any events that are known to be occurring during the lifetime of the option that may have a significant impact on the price of the underlying stock. This could include and earnings announcement or the release of drug trial results for a pharmaceutical company.

The current state of the general market is also incorporated in implied volatility. If markets are calm, volatility estimates are low, but during times of market stress, volatility estimates will be raised. One very simple way to keep an eye on the general market levels of volatility is to monitor the VIX Index which I will discuss in detail shortly.

Homework Assignment: Find out the current level of historic volatility and implied volatility for 5 stocks that you follow. Record your thoughts. Do you notice anything interesting around past earnings dates for these stocks?

5. IMPLIED VOLATILITY CALCULATION AND THE BLACK SCHOLES FORMULA

In 1973 Fischer Black and Myron Scholes composed a paper that gave their interpretation on how to price the premium of a stock option. The original piece priced the premium of a European call or put ignoring dividends. Black and Scholes were awarded the Nobel Prize for economics in 1997, along with Robert Merton who made a number of additional contributions to options pricing.

The calculation is based on the idea that a call and a put determine the likelihood that the underlying stock will be “in the money” prior to the expiration date of the option. The expiration date is the day the option no longer exists, and the right to purchase or sell the underlying security expires.

A European style option is one that can only be exercised on the expiration date. This means that a trader cannot exercise prior but can still sell the option for a gain or loss before the expiration date.

To price an option the Black Scholes model needs a number of inputs which includes:

- The current underlying price of the security
- The current prevailing short term interest rates
- The strike price of the options
- The time until expiration
- The implied volatility for the option.

The math behind the pricing model is relatively complicated, but today the model is freely available and does not require a trader to understand the math. The key input that traders need to focus on is the implied volatility. All other inputs are known inputs. Implied volatility is the market's estimate of how far and fast the stock will move and is completely subjective.

This is where traders have the opportunity to gain and edge. If you think the market in underestimating volatility, you buy options. If you think the market is overestimating volatility, you sell options.

Below is the Black Scholes formula in case you are interested, but in all likelihood you will never need this.

Black-Scholes Formula

$$c_0 = S_o e^{-qT} N(d_1) - K e^{-rT} N(d_2)$$

$$d_1 = [\ln(S_0/K) + (r - q + \sigma^2/2)T] / (\sigma T^{1/2}); \quad d_2 = d_1 - (\sigma T^{1/2})$$

6. IMPLIED VOLATILITY CALCULATION

These days you never have to calculate out the Black Scholes formula manually. There are also some fantastic tools around that help you calculate and run various scenarios for implied volatility. One of those was created by Samir at Investexcel.net. I really love this tool, and you can download a copy here. You know you're a nerd when you get excited about an excel file....

With the spreadsheet you can alter the volatility rate, and then calculate the new call and put values. As I said, very cool....

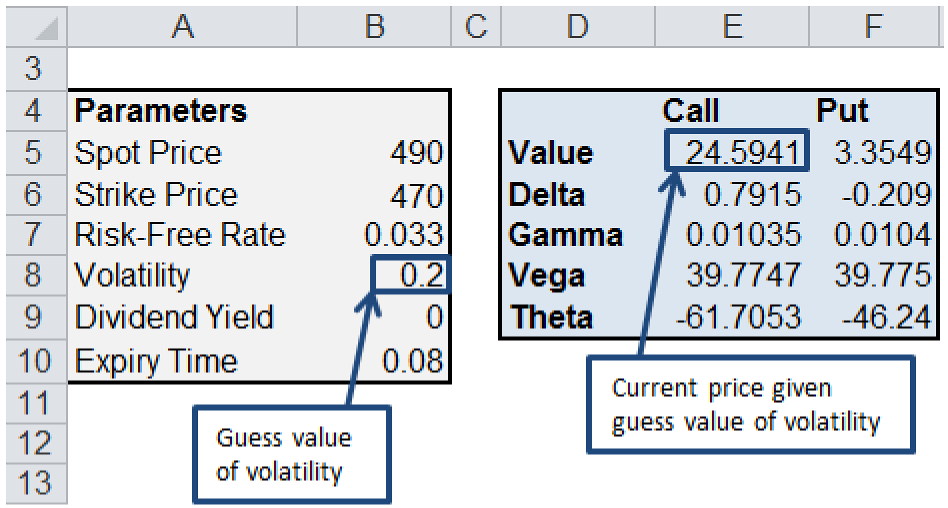
Note that the Excel file must be used as a 97-2003 workbook.

You can adjust any variable in the parameters section. For example, your scenario might be that you expect volatility to rise from 0.20 to 0.23 over the next 5 days. You would change the volatility value and also the expiry time to take into account the passage of 5 days, then using the Goal Seek function in excel, calculate the option values.

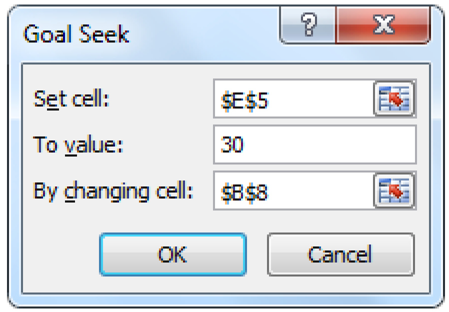
Note that this designed for European options, not American options.

Here are the instructions for using the spreadsheet as provided by Samir. It might seem complicated at first glance, but really it is very simple, so even if you are not an excel whiz; you should still be able to figure it out.

Step 1. In the spreadsheet, enter the Spot (stock) price, Strike price, risk free rate and Expiry time. Also, enter an initial guess value for the volatility (this will give you an initial Call price that is refined in the next step)



Step 2. Go to Data>What If Analysis>Goal Seek. Set the Call value to 30 (cell E5 in the spreadsheet) by changing the volatility (cell B8 in the spreadsheet).



Step 3. Click OK.

	A	B	C	D	E	F
3						
4	**Parameters**				**Call**	**Put**
5	Spot Price	490		**Value**	30	8.7608
6	Strike Price	470		**Delta**	0.70317	-0.297
7	Risk-Free Rate	0.033		**Gamma**	0.00778	0.0078
8	Volatility	0.32094		**Vega**	47.9553	47.955
9	Dividend Yield	0		**Theta**	-106.574	-91.1
10	Expiry Time	0.08				

You should find that volatility has been updated to 0.32 to reflect the desired Call price of 30.

The spreadsheet also gives you other cool data such as the change in greeks for a given change in volatility, time to expiry, stock price etc. Simply, awesome stuff, tip of the cap to you Samir!

Homework Assignment: Download the spreadsheet from Investexcel.net, follow the instructions above. Try this again with data from a stock you follow.

7. STANDARD DEVIATION AND IMPLIED VOLATILITY

In layman terms, implied volatility is the market opinion of the potential movement or range of a stock over the next 12 month period. As you can probably deduce, a stock with a high implied volatility is expected to have large swings in price while a stock with low volatility is expected to have small swings.

Implied volatility is considered to be more important than historic volatility because it takes into account all factors such as earnings, anticipated news and product releases. Of course there are always unanticipated events which come out of nowhere. These can never be priced in, but hey trading would be boring otherwise, right?

To illustrate, let's look at some examples.

The below image shows the historical volatility (blue line) and the implied volatility (gold line) of GOOG stock over the past 12 months. There are a few things to note here.

Firstly, the red circles denote times when implied volatility gradually rose up and then fell off a cliff. This is a very common occurrence with stocks and occurs in the lead up to earnings announcements. Earnings are a great unknown for a stock, and they can experience a huge move either way after the announcement. After the announcement, the uncertainty surrounding the announcement is gone and as such implied volatility collapses.

Looking at the first red circle, you can see that implied volatility was around 27% leading into earnings, indicating that traders were expecting the stock to move within a 27% range over the next 12 months.

The second part of the graph to note is the green circle. On October 17th, GOOG announced blowout earnings and rose 14% the following day. This is the reason for the huge spike in historical volatility as the 14% move came into the calculation. Thirty days later when the 14% rise drops out of the calculation, the historical volatility comes back down to more normal levels.

You can see around the same time, the implied volatility drops from 27% down to 16% as the uncertainty of the earnings announcement has been removed.

Now, let's compare the implied volatility for FB and KO. One is a high flying tech stock and recent IPO and the other is a stable, well established business in the consumer staples sector.

As you would expect, traders are expecting much bigger moves in FB, with implied volatility ranging from 29-78%. Compare that with KO, which has an implied volatility range of 11-22%.


FB: DAILY 1 YEAR VOLATILITY CHART (3 months 6 months 1 year)
IV Index Call IV Index Put IV Index Call & Put IV Index Mean
IVolatility.com
80%
70%
60%
50%
40%
30%
20%
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
30D HV
IV Index Mean

To understand how we can use standard deviation in out trading, we need to take a very brief trip back to our senior year math class and talk about the normal distribution.

A normal distribution is sometimes called a bell curve because of its shape and the underlying assumption is that prices have an equal chance of occurring above or below the center point (also known as the average or mean).

The Black Scholes Model relies on a normal distribution which is one if its limitations. As we know, financial markets are anything but "normal" and have a propensity for what are known as "fat tails", or outliers or Black Swan events if you prefer.

The other flaw with using a normal distribution assumption is the belief that prices have an equal chance of occurring above or below the mean.

A stock can only go to zero on the downside but can theoretically go to infinity on the upside. Therefore there are many more possible outcomes to the upside.

In any case, we will use the normal distribution for simplicities sake, but keep in mind these limitations.

Taking a look at a standard bell curve, we can see that price will fall within a one standard deviation range 68% of the time, two standard deviation range 95% of the time and a three standard deviation move 99.7% of the time.

Let’s take an example of a stock trading at $100 with implied volatility of 20%.

With this, we can calculate a one standard deviation move in the stock by taking the price multiplied by the implied volatility. This tells us a one standard deviation move in this stock is $20, and that over the next 12 months, this stock has a roughly 68% chance of staying in that range? Do you see where I’m going with this? How could you apply this to a strategy like iron condors?

A one standard deviation move to the upside would put the stock at $120 and to the downside it would be at $80.

A two standard deviation move to the upside would put the stock at $140 and to the downside it would be at $60.

A three standard deviation move to the upside would put the stock at $160 and to the downside it would be at $40.

In other words, over the next twelve months, we can expect this stock to stay between $60 and $140 roughly 95% of the time. However, as I mentioned earlier, the stock market has a propensity to experience fat tails and trade outside of the 2 and 3 standard deviation moves more often than the normal distribution would suggest. Think Lehman Brothers, Bear Sterns etc.

Does this mean we should throw the idea of standard deviation out the winder? No, not necessarily. Standard deviation gives us a very good estimate of where market participants think a stock will trade over the next 12 months based on their input for the level of implied volatility.

It's your role to decide whether that assumption is too high or too low. Increasing the implied volatility input into the pricing model will widen the standard deviations, while lower your estimate of implied volatility will see the standard deviation ranges narrow.

Homework Assignment: Calculate the 12 month standard deviation for a stock that you follow. Where is the stock likely to trade over the next year 68% of the time and 95% of the time?

8. STANDARD DEVIATION FOR SHORTER TIME PERIODS

It's all well and good estimated a stocks range over 12 months, but not many people trade 12 month options? Most people are interested in where a stock might trade over a one week or one month time frame.

Luckily, there is a very simply formula to convert the standard deviation calculation into any time period.

$$\text{One Standard Deviation Move} = \text{Underlying Price} \times \text{Implied Volatility} \times \sqrt{\frac{\textit{Calendar days}}{\textit{365}}}$$

I created a helpful spreadsheet that will do everything for you with only a couple of manual inputs; you can download it from http://www.optionstradingiq.com/standard-deviation-calculator/

When you open the spreadsheet simply update the formulas in the yellow cells, namely stock price, implied volatility and the expiry date.

It's usually considered slightly more accurate to use the number of trading days in a year (252) rather than 365 which will yield slightly different results. It's up to you which you prefer to use. Note that my spreadsheet uses 365, if you need help changing it just email me at info@optionstradingiq.com.

It's always easier to follow these things using an example, so let's take our $100 stock with implied volatility of 20% again and look at how a one standard deviation move would look over a 30, 60 and 90 day time period.

30 Day, One Standard Deviation

The formula to calculate the one standard deviation move would be

$100 x 0.20 x (SQRT (30/365)) = 5.73

Therefore, I one standard deviation move for this stock over the course of 30 days would put it at $94.27 or $105.73. This is the range that we can expect the stock to stay within 68% of the time.

Out of interest if we change calendar days to the number of trading days in a year this is the result.

$100 x 0.20 x (SQRT (30/252)) = 6.90

The expected range is $93.10 to $106.90. You can see that using trading days is the more conservative assumption, so you may prefer to use this model.

60 Day, One Standard Deviation

The calculation for the 60 day, one standard deviation move using both models is shown below:

$100 x 0.20 x (SQRT (60/365)) = 8.11

$100 x 0.20 x (SQRT (60/252)) = 9.76

90 Day, One Standard Deviation

The calculation for the 90 day, one standard deviation move using both models is shown below:

$100 x 0.20 x (SQRT (90/365)) = 9.93

$100 x 0.20 x (SQRT (90/252)) = 11.95

If you have downloaded the standard deviation calculator spreadsheet, you will notice that there are two tabs, one for the 365 day calculation and another for the 252 day calculation. If you have any issues, shoot me an email at info@optionstradingiq.com.

You may have noticed that the further out in time you go, the larger the expected range. This makes sense as the stock has a greater amount of time to make a move.

AAPL Example

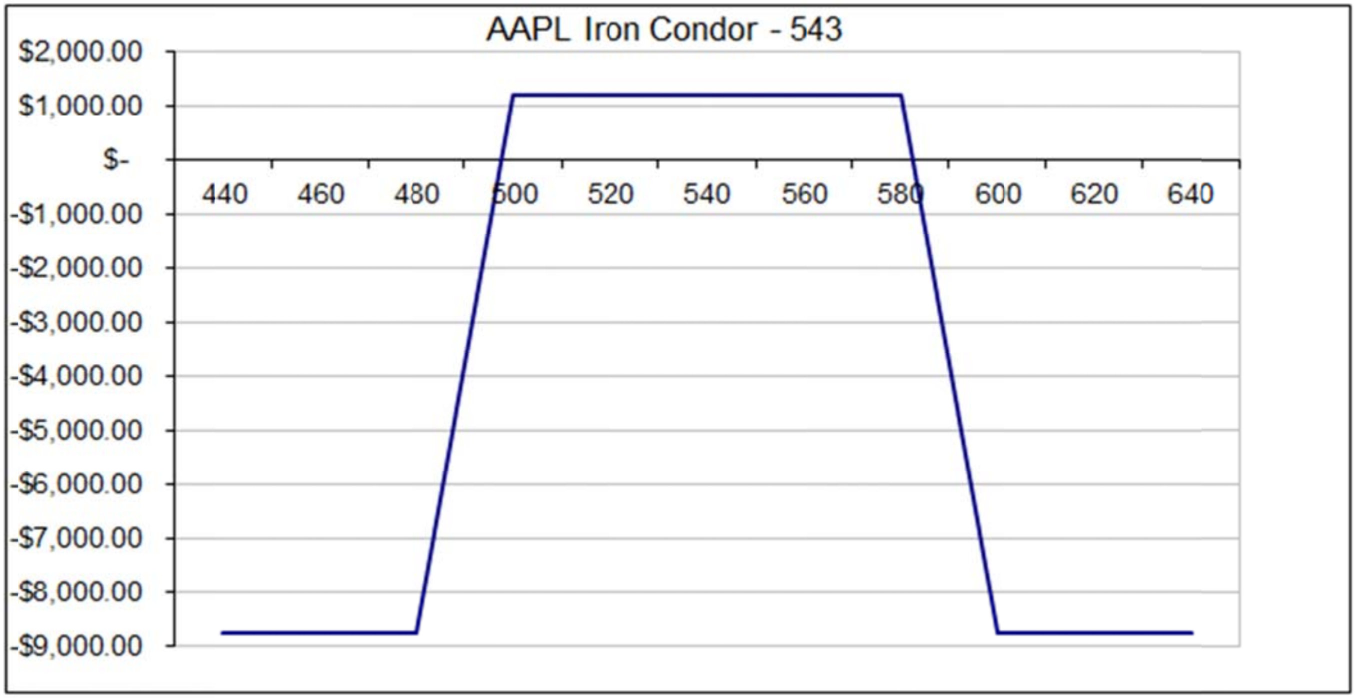
Theoretical examples are fine, but let's apply it to real world trading and see what information we can garner. On February 13th, 2014, AAPL was trading at $543 with implied volatility at 22.08%. The March 2st options are 36 days from expiry, so we will use them for this example. The one standard deviation range for AAPL between February 13th and March 20th is as follows:

$543 x 0.2208 x (SQRT (36/365)) = $37.65

Or

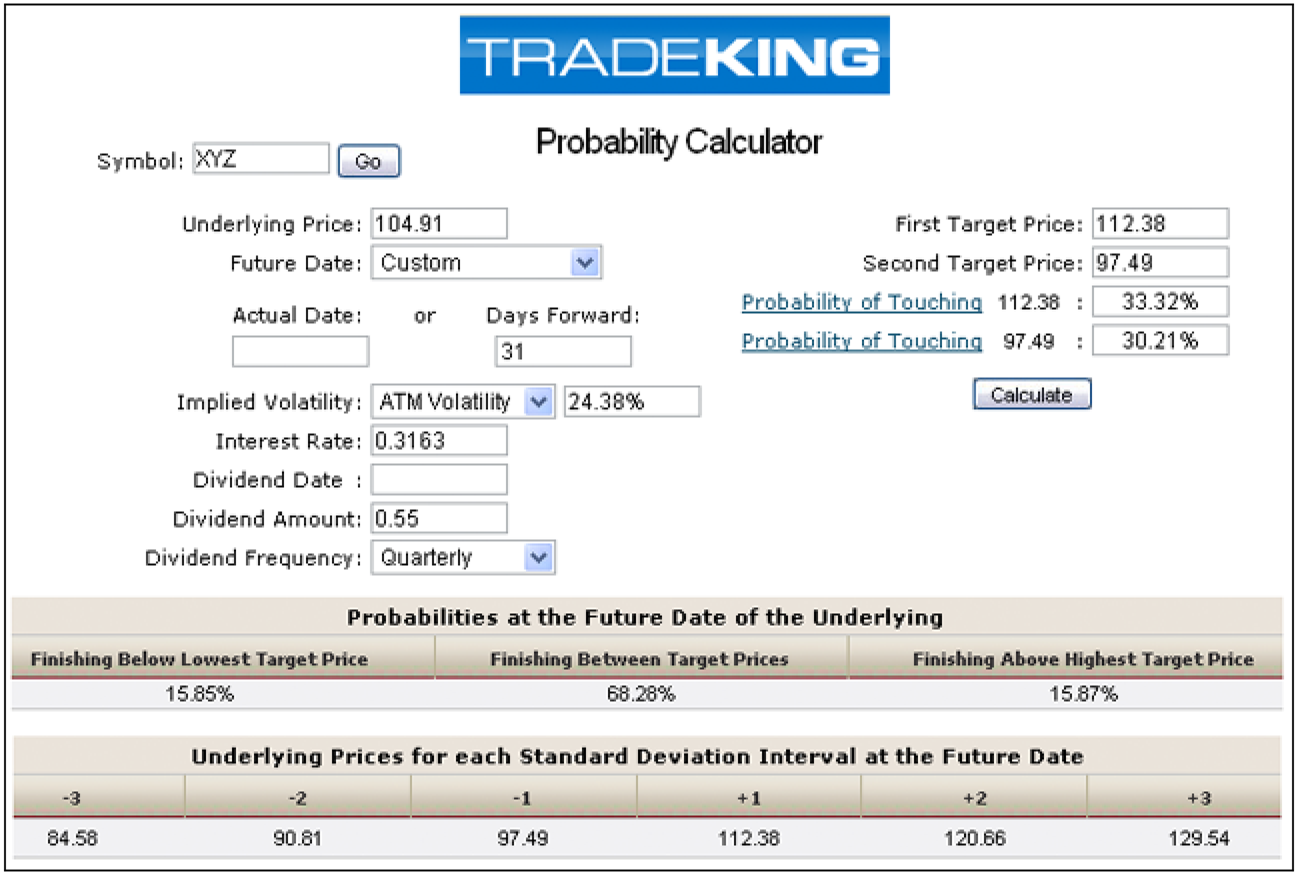
$543 x 0.2208 x (SQRT (36/252)) = $45.32

Taking the conservative estimate, let's assume we want to trade an iron condor and place our short strikes slightly outside the one standard deviation range. This gives us a choice of strikes around $495 and $590.

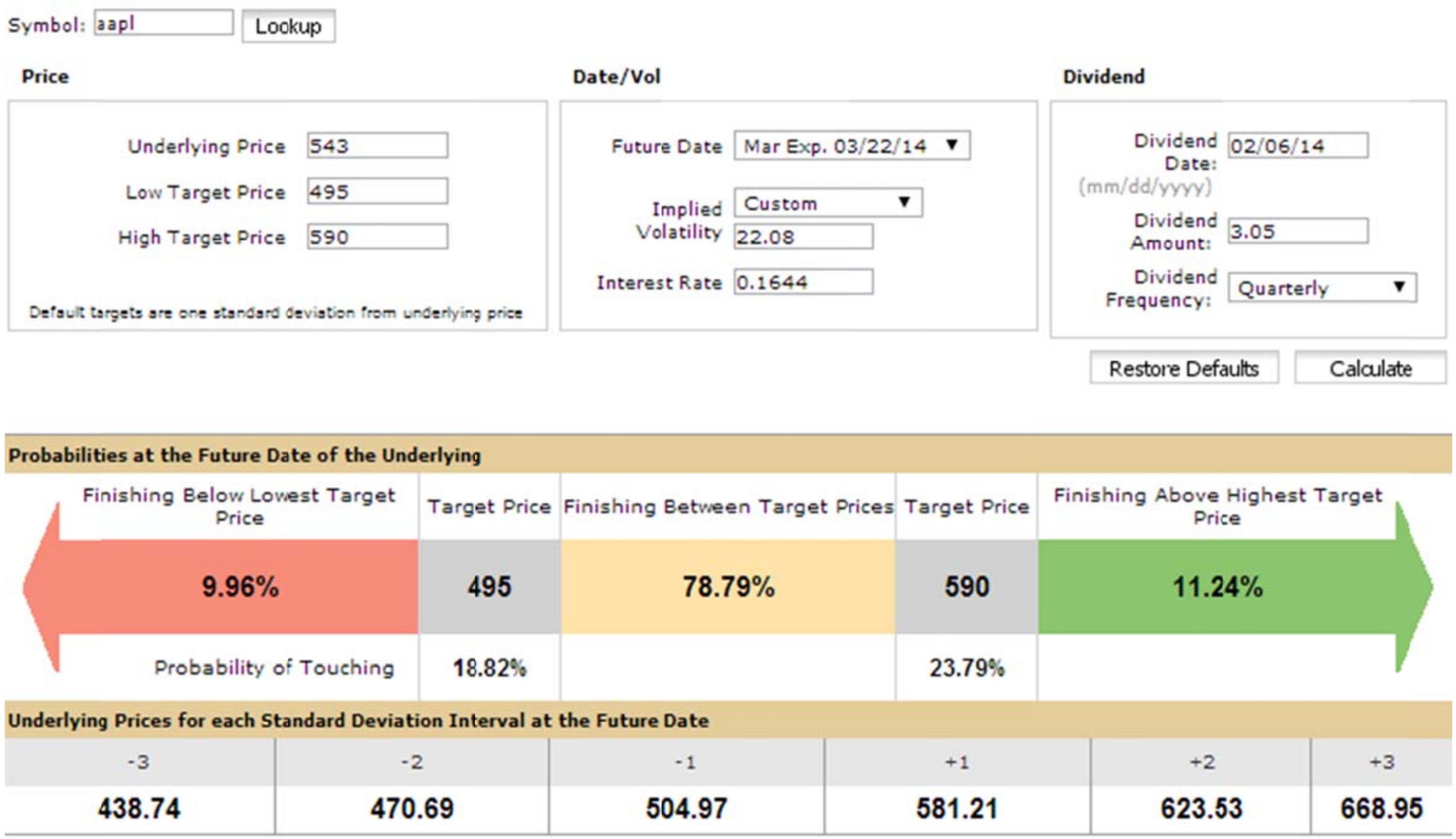


These days a lot of brokers have probability calculators that will do all the heavy lifting for you. Here are a couple of examples:

TRADE KING



OPTIONSHOUSE



Homework Assignment: Download the standard deviation calculator from http://www.optionstradingiq.com/standard-deviation-calculator/ Calculate the 30, 60 and 90 day standard deviation for a stock that you follow. To this for both the 365 day calculation and 252 day calculation and note the differences.

9. USING IMPLIED VOLATILITY TO GAIN AN EDGE

Gaining an edge in the markets is harder than ever these days with the advent of better technology, faster trading and easier access for the general public. However, with your new found knowledge of option volatility, you now have an advantage over 95% of the other participants in the market.

So how can you take advantage of that and create and edge?

The way I like to use implied volatility to gain an edge is to base some of my trade entry rules on certain levels of implied volatility. The basic premise is that when volatility is high, you want to be leaning towards short volatility trades and when volatility is low, you want to learn towards long volatility trades. Pretty simple, right?

For example, in this low volatility environment of the last few years, you might set up a portfolio allocation similar to this:

	VIX 10-15	VIX 15-25	VIX 25+
Iron Condors & Credit Spreads	30.00%	40.00%	50.00%
Calendars and Diagonals	30.00%	25.00%	10.00%
Butterflies	20.00%	25.00%	30.00%
Cash	20.00%	10.00%	10.00%
	100.00%	100.00%	100.00%

In this example, you can see that we're allocating 50% to short Vega trades when the VIX is low and 80% when VIX is high. We always like to keep some cash on hand in order to make adjustments.

Of course, you would need to adjust this for the market environment of the day. This allocation probably wouldn't have been appropriate back in the higher volatility days of 2008-2009. During those years, an allocation such as this would have made more sense:

	VIX 15-25	VIX 25-35	VIX 35+
Iron Condors & Credit Spreads	30.00%	40.00%	50.00%
Calendars and Diagonals	30.00%	25.00%	10.00%
Butterflies	20.00%	25.00%	30.00%
Cash	20.00%	10.00%	10.00%
	100.00%	100.00%	100.00%

Here you can see that the allocations are exactly the same, but the VIX levels where the changes in allocation take place are different. It is important to know whether you are in a low volatility environment such as 2012-2013 or a high volatility environment like 2008-2009 and adjust your strategy allocation accordingly.

Let's look at an example iron condor trade and see how it would perform assuming our opinion on where volatility was heading proved to be correct.

Date: February 14, 2014

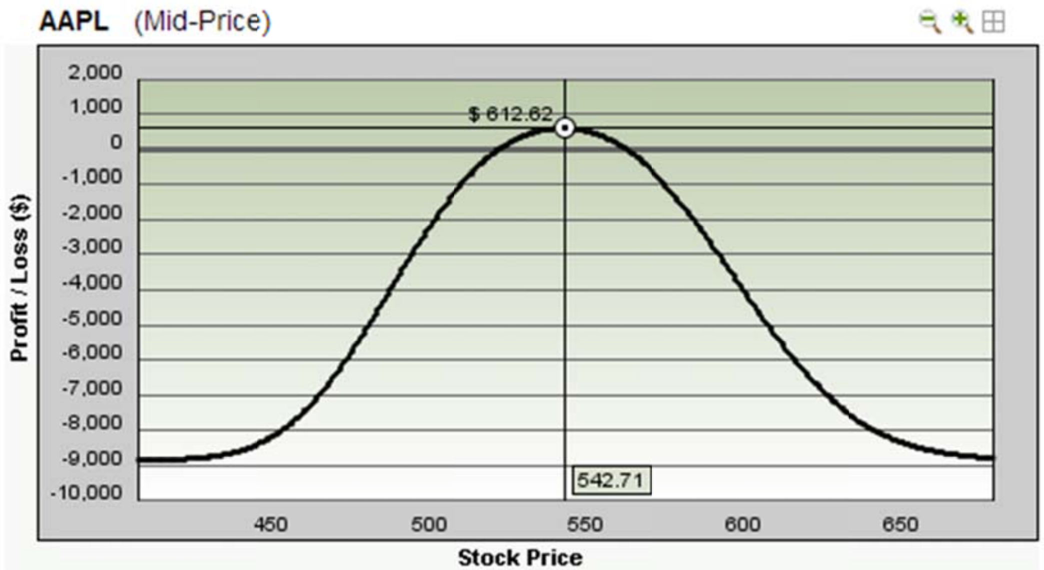
Trade Details: AAPL Iron Condor

Current Price: $543

Buy 10 AAPL March 21st 485 puts @ 0.92
Sell 10 AAPL March 21st 495 puts @ 1.52
Sell 10 AAPL March 21st 590 calls @ 1.80
Buy 10 AAPL March 21st 600 calls @ 1.17

Premium: $1,230 Net Credit

Here's how the trade look 10 days in assuming a 10% relative drop in volatility. So you can see that it really pays to learn to understand volatility. In this trade example, you've made half the potential profit in only 10 days, mostly thanks to the drop in volatility.



The other way to exploit an edge using volatility is by structuring your portfolio so that it is skewed to either long Vega or short Vega depending on the level of overall market volatility. We'll look at this in the next chapter.

Homework Assignment: Organize a portfolio allocation based on the strategies you trade and various VIX levels. Set a reminder to review and revisit this allocation in 6 months' time.

10. VOLATILITY ANALYSIS FOR A PORTFOLIO OF OPTIONS

So far we've looked at implied volatility solely on a single position. However, most people don't trade a single position; they have an entire portfolio of option trades.

Suppose a trader has an iron condor on AAPL, a butterfly on GOOG, a bull put spread on IBM and a short strangle on NFLX. The trader thinks he is diversified because he is trading 4 different stocks and 4 different strategies. However, all of these strategies are short Vega, meaning they will all lose money if there is a rise in volatility (assuming all other factors remain the same).

Just to recap, Vega represents the amount that an option contract's price changes in reaction to a 1% change in the volatility of the underlying asset.

So if you have a position Vega of -200, you will lose $200 for every 1% gain in implied volatility and your position will profit by $200 for every 1% drop in volatility.

Let’s take a look at the greeks for these positions and then evaluate the portfolio as a whole.

	Delta	Delta $	Gamma	Vega	Theta
AAPL Iron Condor	-4	$ (1,950.00)	-3	-150	42
GOOG Butterfly	1	$ 1,322.00	-1	-193	52
IBM Bull Put Spread	128	$23,464.00	-20	-93	20
NFLX Short Strangle	0	$ (126.00)	-1	-214	105
TOTAL	**125**	**$22,710.00**	**-25**	**-650**	**219**

You can see that every position in this portfolio is short Vega resulting in an overall Vega exposure of -650. This means that a roughly 1% increase in implied volatility will result in a $650 loss for this portfolio. That might be above your risk tolerance, so you could look at swapping out one of the strategies.

Keep in mind that the volatility of each stock will perform differently. For example, AAPL volatility may rise, while NFLX falls. Your portfolio may not perform exactly as you would expect if you look at the total Vega number, you would need to also consider the individual stocks and their movements in implied volatility.

With that said, let’s look at the portfolio again, but this time instead of the short strangle on NFLX, the trader is using a calendar spread.

	Delta	Delta $	Gamma	Vega	Theta
AAPL Iron Condor	-4	$ (1,950.00)	-3	-150	42
GOOG Butterfly	1	$ 1,322.00	-1	-193	52
IBM Bull Put Spread	128	$23,464.00	-20	-93	20
NFLX Calendar Spread	3	$ 1,223.00	-1	36	11
TOTAL	**128**	**$24,059.00**	**-25**	**-400**	**125**

Here you can see the overall Vega exposure of the portfolio has dropped to -400 which is a significant reduction. The overall Delta and Gamma have not changed. The main trade off in this case is the reduced Theta. As you might have gathered, everything in options trading is a tradeoff. Generally if you reduce your exposure to one variable, you will increase your exposure to another.

When trading options, it's important to know the overall exposure of you positions, not just each individual position. If you notice you portfolio is getting too long Vega, add some short Vega trades and vice versa.

It can also be helpful to have pre-defined risk limits for Vega exposure such as not letting you're total Vega exposure get above ± 1000.

Homework Assignment: Use your current portfolio (or create a sample portfolio if you haven't started trading) and analyze your overall Vega exposure. Is this within your risk tolerance levels? If you haven't set a risk tolerance for portfolio Vega, do so now, then review and revisit in 6 months' time.

11. IMPLIED VOLATILITY SMILE

Implied volatility is the markets estimate of how much a security will move over a specific period on an annualized basis. Implied volatility changes with market sentiment and is considered a tradable input that is used to generate prices of options.

Implied volatility will be different for each option, including options that have the same security and identical expiration dates. The difference between the implied volatility of an option with the same security and expiration date but different strike price makes up the implied volatility surface.

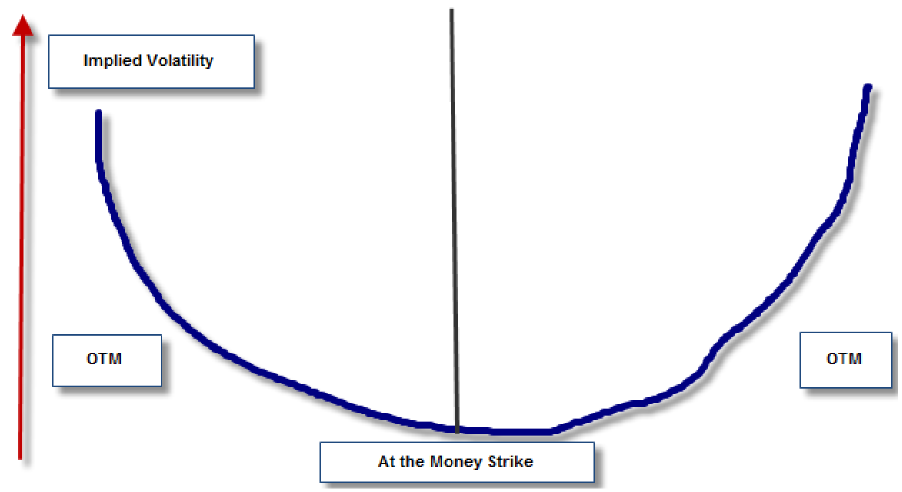
When two options with different strike prices on the same security with the same expiration date have different levels of implied volatility the difference is referred to as the skew.

The implied volatility smile refers to the skew that is associated with both "out of the money" calls and "out of the money" puts. When the structure of implied volatility is graphed, the "out of the money" implied volatility levels are higher than the "at the money" implied volatility levels, so the graph of the strikes appear to have a smile.

The higher levels of implied volatility can occur because of supply and demand as well as the lack of liquidity for out of the money strike prices.

The implied volatility smile is due to a skew on out of the money options. A skew to a specific strike price can be generated for a number of reasons, but generally it occurs because of higher demand. Theoretically, the strike prices for an option with the same expiration date should have the same implied volatility regardless of which strike price is chosen.

The reality is that each strike price can have a different implied volatility which is known as the volatility skew.

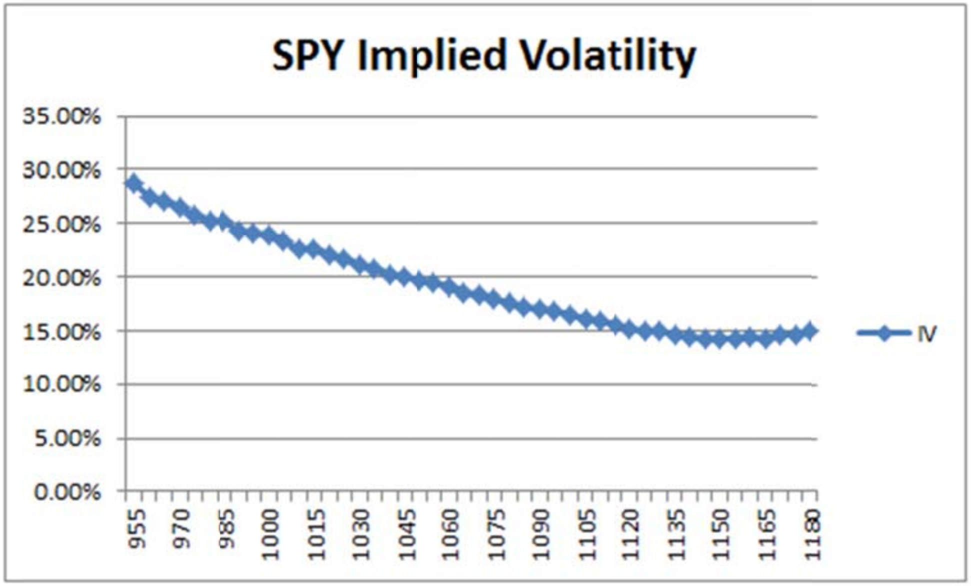


In the example above the picture of the smile reflects higher implied volatility for “out of the money” strikes.

A volatility smile does not mean that the prices of the options that are “out of the money” are greater than the price of the “at the money” options, it only means that the implied volatility that is used to price options of “out of the money” strikes is greater than the implied volatility of “at the money” strikes.

If the “at the money” implied volatility is higher than lower out of the money strikes but is lower for higher strikes the surface structure for implied volatility is said to have a smirk. If the implied volatility is lower for “out of the money” strikes than “at the money” strikes the surface is said to have a frown.

Below you will see a live example of the current 1 month SPY options and their implied volatility smile.



Homework Assignment: Analyze the volatility skew on 3 stocks. Look at both calls and puts. Graph the results and note down your observations. Do the same thing the next time there is a spike in volatility, note down any changes in the skew.

12. VOLATILITY SKEW

In the previous chapter, we looked at the volatility smile and what would be termed vertical skew. There is also another type of skew you need to be aware of, particular if you trade calendar spreads, and that is known as horizontal skew.

One of the major causes of horizontal skews is earnings announcements. The huge uncertainty surrounding the result means that options that encompass the event will be bid up. In other words, the uncertainty is high and the expectation is for a big move, therefore option implied volatility estimates are increase, resulting in higher options prices.

This is especially true for shorter dated options that cover the announcement.

Take for example SJM which was set to announce earnings on Feb 14th. The implied volatility on the Feb 21st calls was between 35% and 55% and between 45% and 105% for the puts. The March 21st options on the other hard are trading at a much more reasonable level of around 25% to 30%.

FEBRUARY 21 OPTIONS		
Strike	Call IV	Put IV
90	45.69%	42.90%
95	36.59%	40.35%
100	35.45%	67.29%
105	39.83%	86.08%
110	55.20%	105.89%

MARCH 21 OPTIONS		
Strike	Call IV	Put IV
90	15.55%	27.96%
95	24.12%	24.29%
100	23.49%	28.90%
105	23.42%	44.07%
110	22.55%	49.81%

As with all things related to the stock market, you want to buy low and sell high. The same goes for implied volatility.

When trading spreads, you need to pay attention to the volatility of each option chain that you are trading and make sure you are not overpaying for volatility on the option that you are buying.

For example, longer dated options generally have a slightly higher implied volatility due to the increase time and therefore potential for uncertainty. This effect is known as contango.

When trading calendar spreads, it's important to compare the implied volatility for the longer dated option you are buying to the shorter dated option you are selling. If the skew is greater than about 1%, the trade may not make sense, because you are potentially overpaying for the longer dated option.

Homework Assignment: Analyze the horizontal skew of 5 different stocks. Note down any observations. Are any of the stocks good candidates for calendar spreads?

13. CHICAGO BOARD OPTIONS EXCHANGE (CBOE) VOLATILITY INDEXES

The Chicago Board Options Exchange (CBOE) is the largest U.S. options exchange with annual trading volume that exceeded one billion contracts in 2012. CBOE offers options on over 2,200 companies, 22 stock indices, and 140 exchange-traded funds (ETFs)[1].

The CBOE has numerous volatility indexes, the most notable being VIX, which is a broad based market volatility index that tracks the implied volatility of the S&P 500. It is calculated by looking at the implied volatilities of numerous SPX puts and calls. In order to calculate the 30 day volatility, the CBOE has to use options from 2 expiry months and blend them.

You have probably heard the VIX referred to as the Fear Index due its characteristic of gauging future price volatility (high volatility often signals financial crisis). If you're a bit of a nerd like me, you can check out the CBOE's white paper for full details of how the VIX is calculated.

Below is a list of some of the more well-known volatility indexes produced by the CBOE:

- VIX – S&P 500 Volatility Index
- VXST – Short-term Volatility Index
- VXV – 3-Month Volatility Index
- VXAZN – Equity VIX on Amazon
- VXAPL – Equity VIX on Apple
- VXGS – Equity VIX on Goldman Sachs
- VXGOG – Equity VIX on Google
- VXIBM – Equity VIX on IBM
- EVZ – Euro Currency Volatility Index
- GVZ – Gold ETF Volatility Index
- OVX – Crude Oil ETF Volatility Index
- VXEEM – Emerging Markets ETF Volatility Index
- VXSLV – Silver ETF Volatility Index
- VXFXI – China ETF Volatility Index
- VXGDX – Gold Miners ETF Volatility Index
- VXEWZ – Brazil ETF Volatility Index

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[1] Wikipedia

- VXXLE – Energy Sector Volatility Index
- VXD – Dow Jones Volatility Index
- RVX – Russell 200 Volatility Index
- VXN – Nasdaq 100 Volatility Index

The VIX is the most famous of the volatility indexes as is the most commonly followed as the general market volatility indicator. You have probably heard it mentioned frequently in the news.

HISTORY OF THE VIX

The CBOE introduced the VIX in 1993 based on a formula suggested by Professor Robert Whaley in The Journal of Derivatives. This VIX index was slightly different to the one we know and love today. The calculation of the index was different in that it focused only on at-the-money options rather than the wide range of options used in today's calculation.

The original VIX was based on the S&P 100 rather than the S&P 500. The current VIX index was introduced on September 22, 2003, at which time the "old" VIX was assigned the ticker symbol VXO, which is still tracked today. You cannot trade the VIX index, but there are a number of products such as futures, options and exchange traded notes that are based on the VIX which can be traded.

VIX futures were the first derivatives introduced on March 26, 2004. VIX options followed a few years later on February 24, 2006. Two exchange traded notes (VXX – VIX Short Term Futures ETN and VXZ – VIX Mid-Term Futures ETN) were added into the mix on January 30, 2009. So while we cannot actually trade the VIX index, there are plenty of choices available to traders.

While the VIX was only introduced in 1993, the CBOE have used the calculation to reverse engineer the VXO index back to 1986 in order to see what level the volatility index was during the 1987 Black Monday crash. The figure they came up with was 172! Can you imagine the VIX at 172? The scariest thing is that this theoretical index was trading at 28 only 2 days before the crash.

You can download the full VXO data here.

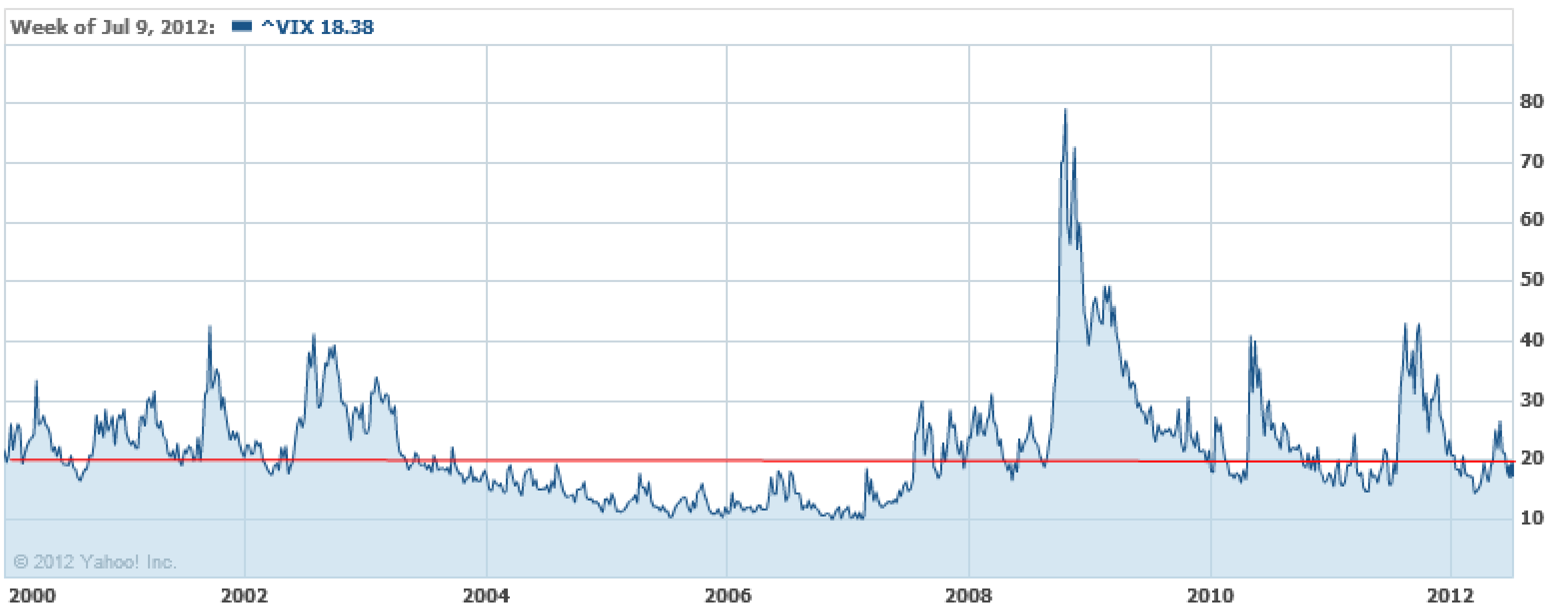
THE VIX IS A STATISTIC THAT REVERTS TO THE MEAN

The first thing investors need to understand about the VIX is that it does not behave like a stock. This is because it is a statistic, whereas stocks are based on a business with revenues and expenses. I think Jared Woodard explained it best in his article on Condor Options:

> "VIX is just a statistic. It's an estimate of the annualized implied volatility of SPX derived from options at a weighted 30-day horizon. It's not a share entitling you to the cash flows generated by a business in the physical economy. Support and resistance and trend lines and momentum effects all depend on the existence of buyers and sellers in the asset being analyzed. But you can't trade VIX directly, so the VIX can never find "support" because no one previously bought VIX "shares" at that price level. And for those of you who are thinking ahead, the same goes for ETPs: no one has ever bought VXX shares at 16 as a "deep value" play."

The VIX is a mean reverting, range bound index. This means that it cannot go to zero (the lowest level recorded was 9.39% on December 15th, 2006), and following sharp spikes during market corrections, it will slowly drift back down towards its mean.

The mean for the VIX index dating back to 1990 is 20.12 according to Bill Luby of VIX and More. When we get a spike up to the 30 or 40 level, market participants know that eventually the VIX will return down to around 20.



Homework Assignment: Familiarize yourself with the various volatility indexes listed at the start of this chapter. Add them into a watchlist and review them at least once a week. Choose 5 different volatility indexes and note the current level of volatility compared to the previous 12 months. Is it a good time to be short or long Vega on those 5 underlying instruments?

14. VIX AND HISTORICAL EVENTS

Throughout history, there have been various financial crises and stock market shocks that have sent volatility soaring. Some of those occurrences proved to be short lived, with volatility returning to more normal levels shortly after. However, some of those occurrences prove to be precursors to bear markets and much larger corrections.

History tends to repeat itself, so it's important to gain some historical perspective on prior volatility spikes. Here is a look at some of the major stock market events and the impact on volatility. All data shown below was compiled from the CBOE VIX Historical Data Pricing page.

OCTOBER 1997 – ASIAN FINANCIAL CRISIS

By October 1997, the Asian financial crisis that began in July threatened to envelop global markets and cause a worldwide financial meltdown. It all started with the collapse of the Thai Baht and continued as many East Asian economies were struggling under the burden of enormous foreign debt and collapsing currencies.

The crisis hit stock markets worldwide with the US feeling the effects on October 27, 1997 as the S&P500 fell 6.87%. Volatility had started to rise during the prior week moving from 19 to 23. The decline on Monday the 27th saw VIX shoot up from 23.17 to 31.12 for a gain of 34.31%.

The following day panic really set in with VIX opening at 45.69 and hitting an intra-day high of 48.64, a gain of 42% from the prior close. This occurred as the Dow dropped a further 2.60% before recovering to end the day in positive territory with an overall gain of 4.71%. As the market recovered during the day, VIX fell from its lofty heights to finish the day at 31.22, very similar to where it closed the day before.

Investors remained on edge for another few weeks with VIX hovering in the 30's before finally dropping back below 30 on November 19, 1997.

VIX - ASIAN FINANCIAL CRISIS				
Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
48.64	38.20	17	17	34.31%

OCTOBER 1998 – RUSSIAN FINANCIAL CRISIS AND LONG TERM CAPITAL MANAGEMENT CRISIS

The Russian financial crisis (also called "Ruble crisis" or the "Russian Flu") hit Russia on 17 August 1998. It resulted in the Russian government and the Russian Central Bank devaluing the ruble and defaulting on its debt[2].

Throughout 1998, VIX was relatively benign trading between 17 and 26 up until mid-July. Thereafter, the Russian flu began to grip the markets with dire consequences for some including one of the world's most famous hedge fund managers – Long Term Capital Management. On August 4th, VIX broke the 30 barrier and closed at 31.06.

VIX remained elevated for much of the remainder of 1998 as the crisis spread. This is somewhat unique compared to other financial crises that dissipated more rapidly.

On August 27th, the Russian government devalued the ruble, defaulted on their domestic debt and declared a moratorium on paying foreign investors. As a result, VIX jumped from 31.14 to 38.55 or 23.80% and then hit 45.02 4 days later.

VIX traded above 30 for the next month and a half before eventually peaking at 49.53 on October 8th as Long Term Capital Management collapsed. The famous hedge fund manager had at one point over $129 billion in assets and employed illustrious industry names such as Myron Scholes (of Black-Scholes fame), John Merriweather and Robert Merton.

On October 29, VIX finally retreated below 30, closing at 29.50.

VIX - RUSSIAN FINANCIAL CRISIS

Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
49.53	45.74	49	53	23.80%

ARPIL 2000 – APRIL 2001 – TECH WRECK

The Tech Wreck of 2000 was mainly concentrated on Nasdaq stocks; therefore the impact on VIX is somewhat understated. CBOE only provides data on Nasdaq Volatility (VXN) dating back to 2001 so it's difficult to judge the volatility impact of this market crash.

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[2] Wikipedia

However, we do know that the impact on VIX was muted. Throughout 2000, there were only 5 days where VIX closed above 30. Prior to the September 11th attacks on the World Trade Centre, there were only 12 days where the VIX closed above 30 in 2001.

Through this period, VIX hit a high of 35.20 on April 3rd, 2001. On April 4th, the NASDAQ fell from 4,283 points to 3,649 and rebounded back to 4,223. The VIX high was lower than the prior day at 34.74.

VIX - TECH WRECK				
Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
35.45	34.72	4	15	18.35%

SEPTEMBER 2001 – SEPTEMBER 11TH ATTACKS

September 11th was a dark day and its effects were felt worldwide, including in the financial markets. Stocks markets were closed for 4 days before reopening on Monday September 17th.

Upon reopening, the Dow lost 684 points of 7.1% which was, at the time, the biggest points decline in history. For the week, the Dow lost 1370 points or 14%.

Prior to the attacks, VIX was trading at 31, then hit a high of 44.33 on September 17th and closed the day at 41.76. By the Friday, VIX had hit 49.35, a gain of 55% from the prior week.

VIX remained elevated for another month before briefly dropping below 30 on October 25th. By mid-November VIX was back to the mid 20's level.

VIX - SEPTEMBER 11TH				
Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
49.35	43.74	30	36	31.16%

JULY 2002 – TECH WRECK BEGINS TO BOTTOM OUT

By July 2002 the market had been for a really tough ride following the Tech Wreck and September 11th attacks. This began to come to a head as markets tanked over summer.

Between June 18th and July 23rd, stocks experience almost unrelenting selling pressure with only 6 positive closes during that time. VIX has its first close above 30 on July 9th and stayed above that level until August 15th hitting an intra-day high of 48.46 on July 24th.

VIX continued to hover around 30-40 for a few months before finally settling below 30 on November 14th.

There is one very interesting takeaway from this historically significant period. The peak in VIX occurred on July 24th when SPX closed at 843. The market bounced, but then continued to fall through October hitting a closing low of 776.76 on October 9th. On that day, VIX hit a high of 42.95, much lower than the 48.46 seen three months earlier.

What is interesting here is the divergence between price and volatility. SPX was a full 67 point lower than in July, but VIX did not break out to new highs. This is an example of positive divergence and is a powerful buy signal.
October 9th turned out to be the low point of the downturn.

VIX - TECH WRECK BOTTOM				
Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
48.46	42.64	47	81	22.46%

OCTOBER 2008 – FINANCIAL CRISIS / GREAT RECESSION

In March 2008, there was a mini spike in volatility as the VIX traded above 30 for two days following the Bear Sterns bailout. On March 14th, Bear Sterns received a $25billion loan from the Federal Reserve resulting in VIX trading as high as 32.89. Over the weekend the situation worsened and Bear Sterns agreed to merge with JP Morgan for $2 per share, well below its all-time high of $172.

On Monday March 17th, VIX hit a high of 35.60 before closing at 32.24. The index dropped back below 30 the next day and didn't breach that level again until September 15th when the Financial Crisis began to really heat up.

Lehman Brothers was the next big victim of the crisis, filing for bankruptcy on September 15th which saw the VIX close at 31.70. Volatility remained above 30 on a closing basis for the next 170 trading days! Yes from September 15th to May 18th, 2009 VIX closed every single day above 30.

On September 29th, 2008 markets fell roughly 8-9% which resulting in VIX hitting an intra-day high of 48.40 and a closing value of 46.72.

In the eight trading days from September 30th to October 10th, the S&P 500 fell 22.90% with VIX steadily rising to a peak of 76.94 on an intra-day basis and 69.95 on a closing basis.

VIX closed above 50 for 50 of the next 51 days. The high of 89.53 was reached on October 24th with a closing high of 80.06 on October 27th.

Stocks continued their free fall, finally bottoming on March 6 with the S&P 500 reaching a low of 666.79. Interestingly again, there was some positive divergence between price and volatility. VIX peaked at 51.95 on March 6th, significantly lower than the 89.53 reached 5 months earlier, despite stock prices being a full 24% lower.

VIX finally closed below 30 on May 18th, 2009 and despite a few brief spikes above that level, generally remained below 30 until the Flash Crash of 2010.

VIX - GREAT RECESSION

Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
89.53	80.06	170	188	34.48%

MAY 2010 – FLASH CRASH AND EUROPEAN DEBT CRISIS

In mid-2010 it was all about the European debt crisis. Remember the daily headlines about Greece, Spain and Italy? Seems like a long time ago now.

Volatility jumped from 17.47 to 22.81 on April 27th, 2010 as Standard and Poor's downgraded Greece's credit rating to junk. That may not sound like much of a spike compared to prior crises, but it's all relative. That jump in the VIX was a 30% move. However, things got downright scary on May 6th, 2010, a day that will forever be remembered in market infamy.

During the Flash Crash of May 6th, the Dow Jones plunged about 1,000 points or 9%, most of that in the space of about 10 minutes, before recovering most of those losses.

Given the severity of the crash, it's surprising that VIX only spike to 40.71; however that represented a 63% gain from the prior close. VIX eventually closed at 32.80, a gain of *only* 31.67%.

Markets fell again the following day which was good for another 25% rise in VIX. Sanity returned to the markets for a few days, before VIX once again spiked to the high 40's on May 21st as the S&P 500 dropped to 1087.

Positive divergence again gave a clue of a market bottom when SPX fell to 1027 on July 1st, but VIX only rose to 37.58.

VIX - FLASH CRASH				
Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
48.20	45.79	9	23	31.67%

AUGUST 2011 – U.S. DEBT RATING DOWNGRADE / CREDIT CRISIS

Stocks dropped around 16% of the course of 12 trading days in late July / early August of 2011 on the back of fears the European debt crisis would spread.

On Saturday August 6th, Standard and Poor's did the unthinkable and downgraded America's credit rating from AAA to AA+. This was unprecedented and set the scene for a blood bath when markets opened on the Monday.

Stocks opened lower and continued to sink throughout the day with the S&P 500 dropping 6.66%. VIX opened up 4.90 points at 36.90 and finished the day at the high point of 48.00 for a 50% daily gain.

Volatility remained elevated through November before finally settling below 30 on November 30th. During the crisis, there were daily VIX spikes of 16%, 18%, 22%, 22%, 31%, 35% and 50%.

VIX - U.S. CREDIT DOWNGRADE				
Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
48.00	48.00	49	74	50.00%

It's always a good idea to know your history when it comes to the stock market. As the saying goes, the market can fall further and faster than you can imagine. The above examples provide some details of how that has happened in the past and the resulting impact on volatility.

Below is a chart summarizing the major events just discussed. You can see that, during these market meltdowns, VIX has had a tendency to peak just below 50, so you know that if VIX reaches that level again it is in the balance of probability a good idea to sell volatility at that point.

VIX - SUMMARY

Intra-Day High	Closing High	Consecutive Days Above 30	Total Days Above 30	Biggest Daily Spike
48.64	38.20	17	17	34.31%
49.53	45.74	49	53	23.80%
35.45	34.72	4	15	18.35%
49.35	43.74	30	36	31.16%
48.46	42.64	47	81	22.46%
89.53	80.06	170	188	34.48%
48.20	45.79	9	23	31.67%
48.00	48.00	49	74	50.00%

Homework Assignment: Review the information presented in this chapter. Try to visualize what it would have been like trading during each of these periods. Next, download the VIX data for the past 12 months from https://www.cboe.com/micro/VIX/vixintro.aspx under the Spreadsheet With Historical Data Heading. Note down the 5 biggest percentage moves in VIX over the past 12 months.

15. VIX DERIVATIVES

We cannot trade the VIX directly, but there are a number of derivatives available to investors, some better than others. One of the issues with VIX derivatives is that none of them can track the VIX index exactly. They can't track the exact performance of the VIX because they only allow investors to bet on the future value of the VIX rather than its current value. Here is a list of some of the major VIX related products that are now available for trading:

[VXX – iPath S&P 500 VIX Short Term Futures TM ETN]
[VXZ – iPath S&P 500 VIX Mid-Term Futures ETN]
[TVIX – VelocityShares Daily 2x VIX Short Term ETN]
[XIV – VelocityShares Daily Inverse VIX Short Term ETN]

Some of these VIX related products have been incredibly popular, with trading volumes going through the roof. However, despite the increase in volume, the general public's understanding of these VIX derivatives seems to be minor at best at non-existent at worst. To paraphrase a popular Warren Buffet quote, "only invest in things you understand".

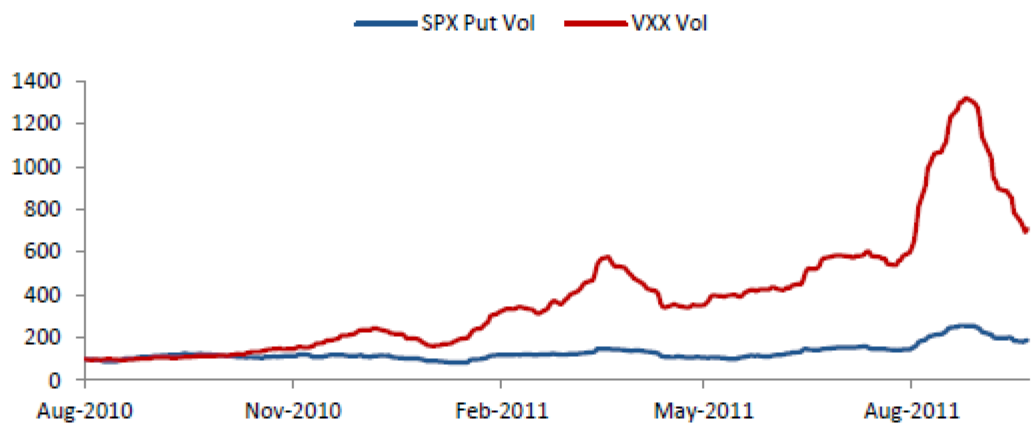


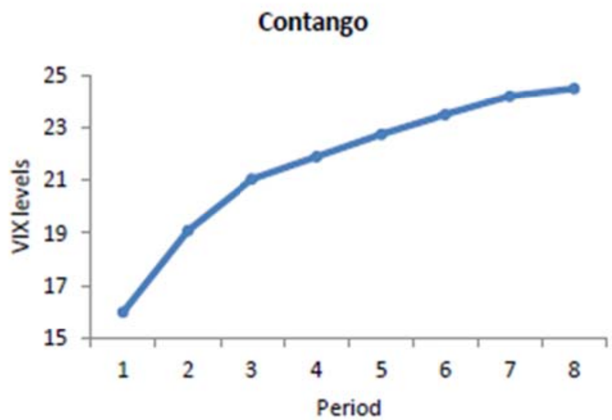
Image Source: RDA Capital

So while ETN's such as VXX, VXZ and TVIX are increasing in popularity, they are not designed to be buy and hold investments. Anyone considering doing so should have their head examined. The reason for this is the cost of rolling the futures to maintain a constant maturity date. To understand this, we first need to understand a little about contango and backwardation.

Contango

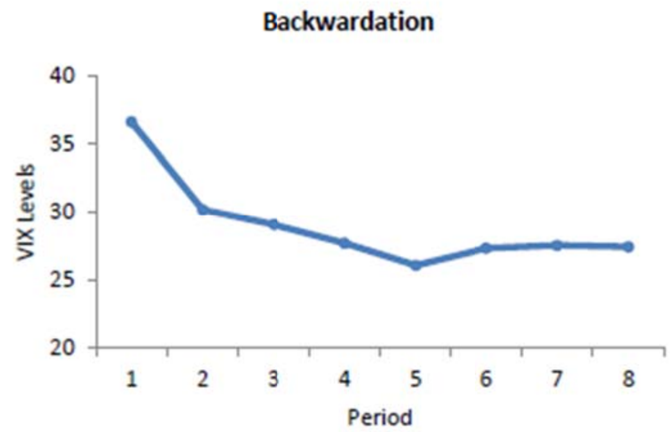
Contango is a term stemming from the futures market, which reflects the most common condition of the market. Contango is when long dated futures are higher than short dated futures. In the futures market this reflects the cost of carry, which would represent the costs of holding and paying for storage of a commodity. The further out in time you go, the higher the storage costs will be, hence the higher the price for the commodity future. Cost of carry on financial instruments would be the cost of financing the position, e.g. interest rate expense rather than storage expense.

Contango occurs with VIX futures as well. When the VIX is very low, the expectation is that it will rise again at some point in the future, back up towards the mean. In this case, long dated VIX futures will be more expensive than short dated futures. This is what contango looks like on VIX futures:



Backwardation

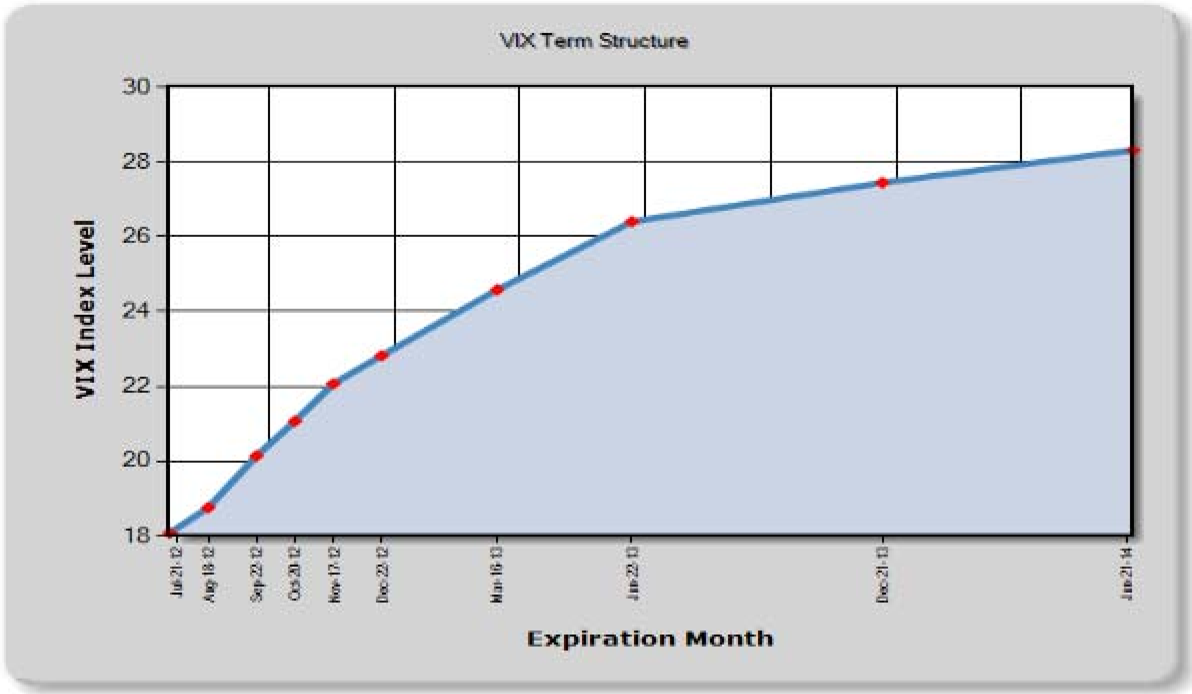
So if we have contango when the VIX is low, what do we have when the VIX is high? Basically the opposite scenario whereby the short dated futures are more expensive than the long dated futures. This is known as backwardation. Here is what backwardation looks like on VIX futures:



RDA Capital put together an excellent paper in September 2011 entitled "Is Volatility as an Asset Class the Missing Link?" You can download the report here, it's a fantastic read, but you may need to read it a few times before it sinks in. Here is an extract from the paper that explains the concepts of contango and backwardation very well:

> "When the term structure curve is in contango, the VIX is low and the markets are calm. Anyone buying VIX futures is actually buying insurance against a big jump in the VIX, and is poised to profit if the VIX suddenly increases. Conversely, anyone shorting the futures will essentially be selling "crash insurance", and as such, will collect the insurance premium when the markets are calm and will lose when the VIX jumps. A similar situation arises once the VIX has reached elevated levels. Since the VIX is expected to revert downwards to its mean, investors who short the futures when the term structure curve is in backwardation should pay a premium to investors who are willing to take the other side of the trade and go long the futures."

You can check out the current state of the VIX term structure at the CBOE website. This is what it looked like as of July 10th, 2012. Notice the nice contango effect and also that the curve is much steeper on the left of the chart. This means the contango effect is at its greatest with short term futures.



You can see from the chart above that in order to roll the futures contract, the ETN's would have to sell August (lower) and buy September (higher).

Current VIX Futures

August: 18.76
September: 20.14
October: 21.07
November: 22.07

USING VIX DERIVATIVES TO HEDGE A PORTFOLIO

Buying volatility in order to hedge a portfolio from fat tails, or black swan events is a popular strategy due to the high negative correlation between the VIX and market indexes such as the S&P 500.

Most investors probably have not given too much thought on exactly how to do this, and too many are blindly holding on to VXX, VXZ and TVIX assuming they are protected from volatility spikes. While that strategy may perform well whenever there is a significant correction and subsequent rise in volatility, holding these ETN's over the long term may be hazardous to your portfolio's health.

You can see below the performance of SPVXSTR (the index on which VXX is based) and SPVXMTR (the index on which VXZ is based). SPVXSTR made an almost 300% gain during the crash of 2008; however since 2005 it has lost over 90% of its value.

Figure 5: INDEX EVOLUTION FROM 2005 TO PRESENT

LEVERAGING UP WITH TVIX

Some traders looking for even greater protection (or to profit) from volatility are trading TVIX – the 2x Leveraged VIX Short Term ETN. This ETN will produce higher returns when the VIX moves up. However, the same roll forward cost applies resulting in significant losses if held for the long term. Even the term sheet for the product says, "If you hold your ETN as a long-term investment, it is likely that you will lose all or a substantial portion of your investment." Wow, sounds great, where do I sign up!!

Just take a look at the chart of TVIX below, is this something you want in your long term portfolio?? VXX has performed about the same. VXZ is the one that has performed the best losing only 50%. This proves the fact that longer term futures suffer less from roll cost.


VXX (iPath S&P 500 VIX Short-Term Futures ETN) NYSE
© StockCharts.com
10-Jul-2012
Open 13.91 High 14.78 Low 13.70 Close 14.53 Volume 45.1M Chg +0.39 (+2.76%)
VXX (Daily) 14.53
300
250
225
200
175
150
125
100
75
50
25
14.53
A S O N D 10 F M A M J J A S O N D 11 F M A M J J A S O N D 12 F M A M J J

We know that volatility and black swan events are something that most investors and traders fear. Volatility, as measured by the VIX can provide a great hedge due to the high inverse correlation with stocks, however we cannot trade the VIX directly and must rely on VIX derivatives which are becoming increasingly more popular.

In the endless search for the perfect portfolio protection, have we found the answer with VXX, VXZ and TVIX? The jury is still out. They do serve a purpose, but cannot be used as a buy and hold strategy due to the roll cost.

Above all remember that VXX, VXZ and TVIX are not designed for buy and hold.

Homework Assignment: Visit http://www.cboe.com/data/volatilityindexes/volatilityindexes.aspx and analyze the current VIX futures term structure. Next, bring up a 12 month chart of VXX, VXZ and TVIX. Note down the performance of these three ETN's over that time.

16. IMPLIED VOLATILITY AND OPTION STRATEGIES

Now that you have a good base understanding of option volatility, you would realize that an individual option strategy has a particular exposure to volatility. Certain strategies will benefit from a rise in implied volatility (positive position Vega) and others will benefit from a fall in volatility (negative Vega).

Most traders will typically have a preference on whether they like to trade long Vega strategies, or short Vega. As you can see in the graph below, volatility tends to gradually drift sideways / lower and then really quickly shoot up over a short period of time.

This situation occurs when there is a shock to the market. Things like a bad economic report, like GDP coming in well below expected or a currency crisis can result in a short, sharp spike in volatility as traders panic and begin to close out positions.

On March 11, 2011, the tsunami in Japan caused the meltdown at the nuclear plant in Fukushima. Take a look at the chart below and look what happened to volatility over that period. VIX traded steadily between 16 and 22 for the period shown other than the brief spike up to 30 after the earthquake. Mini market shocks like this occur pretty consistently each year. Some of the major market meltdowns and the effect on volatility are discussed in Chapter 14.

This is the type of situation impacts long and short Vega traders very differently. Every trader has their preference; some prefer to wait for these types of shock to occur in order to initiate short Vega trades. Other traders like to have long Vega trades and wait for these events to occur.

Long Vega trades have a tendency to decay over time as volatility drifts sideways, so there is a cost of carry while these traders wait around for a market shock. The advantage of long Vega trades is the huge potential to profit in a short period of time once volatility does spike.

Short Vega traders on the other hand, can suffer rapid and painful losses on open trades when this situation occurs. However, patient traders who wait for these events before initiating short Vega trades can do very well. By March 21st, volatility had returned to somewhat normal levels and short Vega trades would have performed very well.

Your job is to figure out what side of the market you prefer to trade. Some traders can trade both very well, but I think most traders find one side of the market easier to manage based on their risk tolerance and personality.

My preference is short Vega trades; I find them much easier to manage than positions that slowly lose money each day due to time decay. I'd much rather deal with the market shock when it occurs by closing or adjusting my short Vega trades. While I do trade long Vega, I find it distinctly easier to trade short Vega. How about you?

With that in mind, let's look at some of the major option strategies and their Vega exposure:

Strategy	Vega	Max Loss	Max Gain	Experience Level
Long Call	Positive	Limited	Unlimited	Beginner
Long Put	Positive	Limited	Unlimited	Beginner
Covered Call	Positive	Limited	Limited	Beginner
Bull Call Spread	Positive	Limited	Limited	Beginner
Bear Put Spread	Positive	Limited	Limited	Beginner
Bear Call Spread	Negative	Limited	Limited	Intermediate
Bull Put Spread	Negative	Limited	Limited	Intermediate
Calendar Spread	Positive	Limited	Limited	Advanced
Butterfly Spread	Negative	Limited	Limited	Intermediate
Long Straddle	Positive	Limited	Unlimited	Expert
Long Strangle	Positive	Limited	Unlimited	Expert
Long Iron Condor	Negative	Limited	Limited	Advanced
Short Straddle	Negative	Unlimited	Limited	Expert
Short Strangle	Negative	Unlimited	Limited	Expert
Short Iron Condor	Positive	Limited	Limited	Expert
Short Put	Negative	Limited	Limited	Intermediate
Short Call	Negative	Unlimited	Limited	Advanced
Ratio Put Spread	Negative	Unlimited	Limited	Expert
Ratio Call Spread	Negative	Unlimited	Limited	Expert
Ratio Put Backspread	Positive	Limited	Unlimited	Expert
Ratio Call Backspread	Positive	Limited	Unlimited	Expert

Homework Assignment: If you are primarily a short Vega trader, spend 3 months paper trading some long Vega strategies. Do the opposite if you are primarily a long Vega trader.

17. READER Q&A ON IMPLIED VOLATILITY

Q. How do you take advantage of the volatility skew?

A. As discussed in Chapter 12, out-of-the-money puts generally trade with a much higher implied volatility, due to the risk of a Black Swan event. The Jade Lizard is a good way to take advantage of skew.

The Jade Lizard, also known as a put ladder is basically an iron condor where you are buying less of the (relatively) expensive out-of-the-money puts. This leaves you with some naked short puts which may not be for everyone and is not permitted in IRA accounts.

You can learn more about the Jade Lizard here:

http://www.optionstradingiq.com/trading-the-jade-lizard-options-strategy/

Q. Sorry if this seems pretty basic but when I first heard about volatility I thought that the VIX was its only measure. I did not realize that each underlying (pretty much) had its own volatility measure. This confused me for some time as people were saying wait for high volatility to place iron condors and the VIX was hardly moving above 20!

Maybe I'm not too bright but maybe beginners might just think the same way.

I'm still not totally comfortable with Volatility as a concept but I guess it needs to be absorbed as I get more experienced with trading. I feel just the same way about the greeks.

A. Yes, each instrument has its own volatility. As discussed in Chapter 13, there are numerous volatility indexes that track the implied volatility of popular stocks, ETF's and indexes.

Each option strike associated with a stock has its own implied volatility, you can use www.ivolatility.com to get overall implied volatility and historical volatility data for a stock.

Hopefully this book has helped you understand volatility in more detail!

Q. In the past months the VIX has been range bound. How should I use this to manage my existing options or spread trades? Do I use this to determine allocation between credit and debit spreads and simple call and put trades? How significant will be the impact to my results?

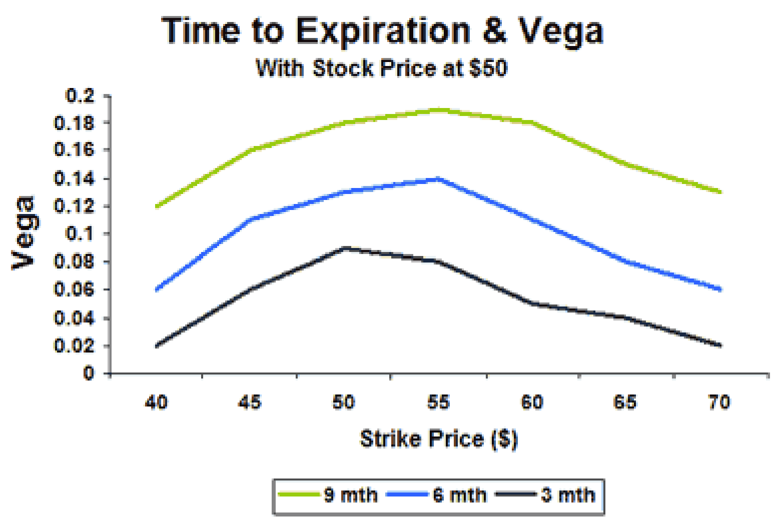
A. Adjusting your strategy allocations based on VIX levels is a good idea. When VIX is high, you want to lean more towards short Vega strategies, and when VIX is low you want to focus on long Vega strategies.

I've included a sample allocation in Chapter 9, but you can adjust this to your need based on the strategies you employ.

Hopefully your trading results will improve as a result, let me know how you go!

Q. Does time left until expiration have any effect on volatility, like it does on delta, theta, option price, etc.?

You bet it does. Vega tends to be higher when there is more time to expiry. It makes sense because the more time to expiry, the greater the chance of the stock making a big move. Also there is more time premium built into the option price for longer dated options which makes them more sensitive to changes in volatility.



Below is an example of a 30 day and 14 day iron condor. You can see that the Vega exposure of the trade is significantly reduced for the 14 day trade.

	Delta	Gamma	Vega	Theta
30 Day Iron Condor	-10	-2	-272	69
14 Day Iron Condor	-1	-1	-119	72

You can see the same thing happening with long Vega trades. Here we have a 30 day and 211 day long straddle. Notice the Vega exposure on the longer dated trade is significantly higher.

Q. The question that always puzzles me is who set the IV other than supply/demand for particular option strike?

A. The implied volatility levels are based on the prices that the market makers are willing to buy and sell each option for.

Market makers are primarily interested in obtaining theta. When they are long options, they are experiencing Theta decay. They need prices to move a lot in order for them to see a profit. If the stock isn't moving enough to cover the Theta decay, they have to start lowering their prices (and therefore the implied volatility input) in order to attract buyers for the long options they are holding and reduce their exposure.

It's quite a complicated process so don't feel bad if that doesn't make sense. I suggest you read this article gamma scalping which may help you understand the process a little more.

Q. How to look at Implied Volatility vs Vega for an at the money option strike for RUT for March expiry as example.

Taking the RUT Mar 20th 1160 calls for example which are at-the-money as of today, the implied volatility on that strike is 16.60%. The Vega on that strike is 1.2547. You would need to multiple that Vega number by 100 to get the total Vega exposure. So if you were to buy 1 RUT Mar 20th 1160 call, the implied volatility would be 16.60% and the Vega would be 125.

Q. How to use Implied Volatility Percent Tile (252 days) for an option call and put vertical credit spread for a stock with enough option strikes for short strike to be out the money by 2 standard deviations or far enough for no adjusting needed.
When volatility is in the lower percentiles, your trades are more likely to require adjusting. Your best bet is to enter your credit spreads when the stock is in the higher volatility percentiles.

Q. What is the proper name for a stock forward looking volatility, some say Volatility Index others say Implied Volatility ??

Some stocks such as AAPL have their own volatility index (VXAPL) and they have the implied volatility of each option chain. So it depends on what you are referring to, both can be correct term depending on what you are referring to.

Q. When selling spread in Iron Condor, should we wait to trade only on high Implied Volatility day? Or put it the other way, do you trade when Implied Volatility is low?

Yes, it is more advantages to enter iron condors when implied volatility is high. You can still trade iron condors when implied volatility is low, the issue is that you have to bring your short strikes much closer to the money in order to receive the same credit. You are also much more likely to have to adjust. There are other things you can do when implied volatility is low such as adding some calendar spreads to reduce the short Vega.

Q. Let's take call's IV for options (shares or indices) at 30-60-90-120 days; I see that IV is decreasing. Instead let's take put's IV for options at 30-60-90-120 days; I see that IV is increasing. Why? What does this indicate?

There could be lots of different factors at play. However, it could be as simple as traders bidding up the price of the puts in anticipation of a market selloff. If there is more demand for puts, prices and as such the implied would get bid up on the puts and the opposite would happen in the calls.

Q. For an option strategy, for example, calendar spread is a positive Vega trade, how to add an insurance adjustment in the beginning of the trade to account for a later un-expected volatility move?

You can look at the overall Vega on your portfolio and make sure it is a level you are comfortable with. If you notice you are getting too long Vega, add some short Vega trades like butterflies or iron condors.

You can use weekly options if you only want to adjust for Vega for a few days if there is a news announcement or key data point.

Q. In simple terms, which/ what options strategy do you think most exploits volatility and/ or changes to it? why?

If you want pure volatility plays the long / short straddles and calendars are the best. If you want a larger exposure to Vega use these trades a go further out in time. Iron condors and butterflies are pretty good too.

Q. During times of really low volatility, such as we have experienced in 2013 and 2014. What consistent trades do you like to make and what types of protection do you include in those set-ups? For example I know that you like to use Condors, but with a 90/10 risk reward scenario they are hardly the most profitable.

Condors were tough in late 2013 when volatility was so low. Bearish butterflies work well as do Diagonal Condors.

Q. If I have set-up a trade during a period of low volatility and the markets have shifted into higher volatility, what is your preferred method to hedge if I am confident that my original trade will still be profitable?

So many different factors could be at play. What strategy are you trading, what delta are your short options, what's your P&L, where is your stop loss. I would need more details to be able to provide any sort of helpful answer.

Q. What is your favorite high volatility trade?

If you mean what trade do I like when volatility is high, then definitely iron condors! If you mean what trade do I like if I want to get long volatility, then I like calendars and double calendars.

Q. In the Indian market, there is presently large variation in volatility of NSE index and certain sectors like technology and pharmaceuticals. VIX (of NSE INDEX) is very low at 14%, whereas some stocks have very high AV of the order 58-60%. Definitely the market is polarized. How should one trade in such a market?'

I don't know the Indian market at all, but potentially going short Vega on the high volatility stocks and long Vega on the index could be a good way to trade it.

Q. How the IV changes during the day near a weekend? I will try to explain myself better: as far as I know, the market makers reduce the IVs in a moment during one or two days before the weekend. What is that moment and is there any way we can take advantage of it? In addition, is there any advantage before a long weekend (i.e. Easter) to sell and have a quick profit?

Yes, you are correct. Some traders think they can sell options on a Friday and pick up the time decay over the weekend, but generally that is a fallacy. I have heard that market makers begin to reduce implied volatility around lunchtime on Thursday in anticipation of the weekend time decay.

I have heard of people doing strategies where they will sell weekly options on a Wednesday afternoon or Thursday morning and then buying them back on the Tuesday. As with anything, you need to back test and or try the strategy will a small amount of capital for at least 3-4 months before allocating a significant amount of capital to it.

In terms of the long weekend, yes the extra time decay certainly helps, but that's more for trades that were opened some time before the long weekend. I don't think you can just enter a trade on the Thursday or Friday before a long weekend and expect to make a huge profit when the market reopens.

Q. One thing I wonder about volatility is this: As long as I've been watching the VIX (a bit over a year), it seems to me that it goes up when the market is down and down when the market goes up. Is that always the case? It seems strange that the relationship would be so simple. Can you talk a bit about that?

Generally, yes that is the usual relationship. However, sometimes you will see the market up and VIX up. This can be when investors are getting fearful after a long rally, when a major announcement is expected or any number of other factors. Some people would take this as a bearish sign.

The same can be said when markets fall. Very occasionally, the market will fall but VIX will also fall. This *can* indicate that a bottom is near.

However, these cases do not occur that often, maybe a couple of times per month. Generally, stocks down means VIX up.

19. How To Make Vega Your Friend – A Conversation With A Portfolio Manager

Below is a conversation I had with a friend of mine who is a portfolio manager. There are some very interesting takeaways on how to protect a portfolio of stocks and "Make Vega Your Friend".

GM: How do you protect a portfolio of equities?

HA: The key is I like to alter my duration depending on the general volatility environment and VIX. For example with VIX under 14 I would go to a 3 to 6 month duration at the 5-10% out of the money level. So as of yesterday I would be long October Spy puts, beta weighted to cover my notional stock exposure, at about the 166 strike (if my portfolio is a .75 beta to the SPY then I would have enough puts to cover at least 75% of notional – remember things become more correlated in a selloff so err on the side of more puts).

With VIX at 12 I would go 12 months out. Why? It's all about Vega- when volatility is low I want to own Vega. With VIX at 18 I would bring the duration in to 2-3 months and anything above 20 it would be very near term puts because when things at crazy I want to own gamma and not Vega. The ability to alter duration gives me lots of control. Let's examine:

Let's say I have Sep on right now with SPY where it is. If we get another selloff and come down 6% VIX will likely be 18 or 20 and I will not only outperform the SPY with my puts but also get an extra kick from my Vega exposure. Those September options will explode in value and I will make much more than I might have expected with the volatility jump. Then what can I do? I need to reduce my Vega exposure – I don't want to hold VIX at 20.

I want to own gamma at this point. Realized movement is likely to continue with VIX up there, VIX futures are likely backwardated, so I want my protection to be all gamma and really kick in if I need it so I roll Sept to March. I will do this for a large net credit so I essentially have scalped Vega and put money in my pocket and kept the same protection, same number of contracts.

Or what I can do is add a few put contracts at the new duration and turbo charge my protection should things continue down. Volatility levels are very high so I can also try to add some alpha by selling some upside calls for yield, or add a frontspread to take advantage of upside skew and create a kicker to the upside (add a 1×2 calls spread for hopefully a credit). Or simply use the cash to buy some more of the underlying portfolio.

But now that I've replaced my long term puts with short term I have less to lose if we rally back, still have a little Vega but mostly lots of gamma to the downside. This is how a market reset can really put you in the outperformance drivers seat versus everyone else. I was asked to help out with a fund that has put protect strategies like this and they weren't using Vega to their advantage and could have done much better near the lows in 2008.

They kept a portion of their long term puts at a long duration and gave back so much as volatility came off and the market started to rally. It's all about moving from Vega to gamma and back. Make Vega your Friend - that is using volatility to your advantage.

This might be a duration table for this protection:

VIX at 11-13 = 6 to 12 months out
VIX at 14-16 = 3-6 months out
VIX at 17-20 <3 months
VIX at 21+ < 2 months

On other think to keep an eye on - is downside SPY skew flatter than usual? That can happen after giant persistent rallies - backspread it as a swan catcher type trade.

A more sophisticated VXX/SPY swan catcher – own SPY puts and hedge the Vega with long VXX put spreads. When volatility is really low this is a nice swan catcher that you can put on for almost no cost.

GM: A couple of follow up questions:

1. In the example you have, you are outperforming the SPY in the event of a selloff, but what if the market rallies? Your puts will get crushed.

2. Can you explain this in more detail? "or add a frontspread to take advantage of upside skew and create a kicker to the upside (add a 1×2 calls spread for hopefully a credit)."

3. Can you give an example of how you would Make Vega You Friend? Let's say you have $100,000 in SPY. Where would you buy puts and how many contracts?

HA:

1) We don't mind if the market rallied because we've moved our exposure to a shorter duration and thereby scalped Vega. – then we have less at risk. I actually did this in a portfolio recently. Let me illustrate. At 184.15 I rolled my March 160 puts into June 165. VIX was very, very low and that was the green light for me to move to a farther out month. Remember, when the VIX is low I want Vega exposure-that means going farther out.

VIX rarely goes below 11 but it frequently goes into the high teens. You want Vega because not only will your puts kick in but you will be better exposed to a rise in implied volatility the farther out you go. At VIX 11 I would be going out 12 months at least. So yes on the rally I took a hit on my March 160 puts, which I owned against SPY since October, but the SPY moved up so I was fine with it. I pocketed money for moving my duration in.

I didn't make 100% of the SPY move back to 184 (only about 85%) but that is the price of insurance. So I moved into the June 165 puts (a closer strike because SPY had moved up from my initial hedge and I want my puts about 10-13% lower). Then we had the little market selloff and at 175 my puts were worth about $22,500, about $9,900 more than where I bought them.

Recall that VIX went to 21 so a good chunk of that came from volatility going up and not just the gamma exposure from my puts. That's why I want Vega exposure. Now, at VIX 20 I don't want to own Vega any more so I roll in to March 165 at 1.25 from the June at 4.38. So I have the same number of puts and coverage for my portfolio but I don't own them for as much.

Yes it's true that the March were bought at a high volatility – it doesn't matter, I want to own gamma because the market is moving a lot – we were either going down another 10 or up 10. The VIX futures curve was denoting a bit of panic when it backwardated (higher front month than second/third etc.).

Now, the fun thing I can do here is buy some extra puts with the 'free' money I made. I can buy 20% extra puts for only 25% of the money I made. Now if the market tanks I actually have better protection in a crash (120 puts instead of only 100 to cover my 10,000 shares). I have leverage! But you don't have to do that.

The great thing about this strategy is you're always covered for a swan-like downturn. You never actually get rid of your puts; you merely move them in and out depending on where volatility is. If someone is tempted to sell out their protection and time the market they are just taking shots, which often don't work out.

In 2008-2009 I'm sure we all would have been tempted to get rid of our puts at some point but it would have been wrong all the way down 50%! Now, of course once the market starts to go through your put strikes you also have to move the strike down. Once the puts are deep in the money you're leaving too much risk on the protection in case the market bounces.

2) One of the ways I try to finance my puts is by selling calls on the SPY when it looks toppy or even when volatility is popping. What you can do when skew gets steep to the upside (outer calls are expensive relative to the ATM, which I try to monitor most days) I do a 1×2 frontspread. So buy one 185 and sell two 187′s for example.

If the 187′s are a little expensive then I can perhaps do the package for a credit or even money. Then if the SPY closes above 187 at expiry I get called away on 2 calls and I'm ok with it because I was trying to covered write some stock anyways. But if it goes to 186.50 I've made a $1.50 kicker for my portfolio. Yay! Only do these for a net credit or even money, never for a debit.

3) Right now with 100K, that is about 540 shares of SPY, so I would pick up 5 or 6 June 165 or 167 Puts. I would move that out to Sep if the VIX gets below 13. If I had a mishmash of single stock positions I would beta weight it (Think or Swim) can do that. Then if the beta is .75 to SPY you only need three quarters the number of puts. Roughly.

Now, if the market drops I wouldn't do much with my Vega exposure until the market is down about 4-5%. Then move it in. If the market goes up 5% I would move the puts up 5%. That kind of thing.

A trader might wonder why volatility gets cheap or expensive. Same as equities – supply and demand! When I was primarily a long gamma trader (for most of my career), meaning long options and trading the 'bend', I sometimes wondered why people smashed volatility down to ridiculous levels. Now that I'm on the opposite side, the overwrite business, I understand it.

Funds like mine are mandated to sell calls against their holdings, regardless of volatility level. Some funds have more discretion, i.e. they will only sell 'rich' implied volatility and won't sell the cheaper ones, but funds like mine have to sell them all. In Canada, where liquidity isn't that great, this creates an options market that is skewed to the downside because the market makers know that most of the flow will be hitting the bid. They keep the option bids low so that they can buy them cheaply.

Another thing newbies need to know is synthetics – they are incredibly important and something that I always teach traders.

Long 1 call and short 100 shares of stock= long 1 put (let's forget about dividends and interest for now)

Short 1 calls and long 100 shares of stock= short 1 put

If I ask someone, are you comfortable being short a naked put? most will say no of course not! but if I say, are you happy being long a covered write (long stock short calls) they say sure. that doesn't make sense because those are the exact same positions from a risk standpoint. plug them into any position graphing software and see.

Folks need to understand synthetics better. It helps to understand why a market maker loves to buy cheap calls at the top. I used to love doing that because I would sell stock against them on a delta and turn a significant portion into synthetic puts. i.e. I buy 100 at the money calls and sell 5000 shares of stock. now I have 50 calls and 50 synthetic puts (long 50 calls and short 5000 shares= long 50 synth puts) – now the position is a straddle, long 50 calls and long 50 puts!

GM: Also, you mentioned the VXX/SPY Swan catcher. Can you explain more about that and give a current example?

Right now if I had 500 shares of SPY, I could buy 5 10% out of the money puts in June. Let's say 167 puts. Those are going to cost me as time goes on in the form of theta (and perhaps in Vega if the volatility on them drops). What I can do to hedge that Vega is buy VXX puts and attempt to put on the protection for close to free.

VXX is a product that erodes over time because 85% of the time the VIX futures curve is in a contango and the product sells cheap futures and buy more expensive ones on a daily basis. So currently the futures are in a bit of a contango, but could be a much more curved one. So we are going to benefit from the roll yield that I mentioned. As well, the VIX cash is usually below the futures, as it is now, and the two have to converge by VIX expiry. So it is likely that VXX will also go down because of that.

We need to try to cover the Vega on the spy puts that we bought with VXX puts or put spreads. When volatility is cheap on VXX we buy straight up puts, when more expensive we will buy put spreads. When extremely expensive we might sell VXX call spreads. So if the Vega on your SPY puts is let's saying 200, you need to hedge out 200 by buying a short VXX position that is short 200 deltas. For every downtick in SPY volatility VXX should go down $1 – therefore -200 VXX deltas will cover +200 Vega in SPY. Plus you're going to get the roll yield. All else being equal VXX

MUST go down over the long run with futures in a contango. Look at the VXX chart over the last 5 years – it has lost 98% of its value. The person who created it has even said that it is meant to go to zero, but they keep consolidating it when it gets too low.

FINAL WORDS FROM GAV

Congratulations! If you've made it this far, you're well on your way to becoming a successful butterfly spread trader. I put a lot of work into the book, and I REALLY hope it helps you in some way. Here are a few final thoughts to leave I would like to share with you.

YOU CAN DO THIS

Trading iron condors is not rocket science. You don't have to be some whiz at math, or technical analysis. Just start out by sticking to the basics and taking things slowly. Even the greatest traders had to start at the beginning.

EVERYONE MAKES MISTAKES

There's an old proverb (I think it's Japanese, but don't quote me) that says, "fall down seven times, stand up eight". You will make mistakes along the way, I guarantee it. I've made plenty. I've been trading for over 10 years and recently I entered a spread order as a **Buy** to Open rather than **Sell** to Open, before I realized my mistake I was down $600, then had to pay commissions and slippage just to get the positions back to what I wanted. All up it cost me nearly $1,000. So if you make a mistake, don't fret about it. Get back up, brush yourself off, and don't make the same mistake again.

KISS – KEEP IT SIMPLE STUPID

Honestly, don't try to overcomplicate or overthink things. Just keep it simple; sometimes the simplest things are the ones that work the best.

DON'T BE AFRAID TO ASK FOR HELP

It's a fabulous time to be alive; never in the history of mankind has communication been so instantaneous and information so easily accessible. There are loads of traders out there who are willing to help you. I'm more than happy to help, so if you have any questions, please don't hesitate to drop me a line.

REVIEW REQUEST

I hope after reading this book, you have a much greater knowledge of butterfly spreads than you did when you started.

If you enjoyed this book or if you found it useful, I'd be very grateful if you would post a positive review. Your support really does matter and it really does make a difference. I love hearing from my readers, I read all the reviews so I can get your feedback.

If you'd like to leave a review then all you need to do is go to the review section on the book's Amazon page [INSERT LINK]. You'll see a big button that says, "Write a customer review" – click that and you're good to go!

THANK YOU SO MUCH!

Thanks again, and I wish you nothing less than success!

Gavin McMaster
Link to book's Amazon page:
[INSERT LINK]

More Kindle eBooks From Gav

*Bullsh*t Free Guide to Iron Condors - Helping you avoid costly mistakes with this popular but controversial option strategy.*

http://amzn.to/13WZVNq

Excerpt from Bullsh*t Free Guide to Iron Condors

How To Handle A Low Volatility Environment

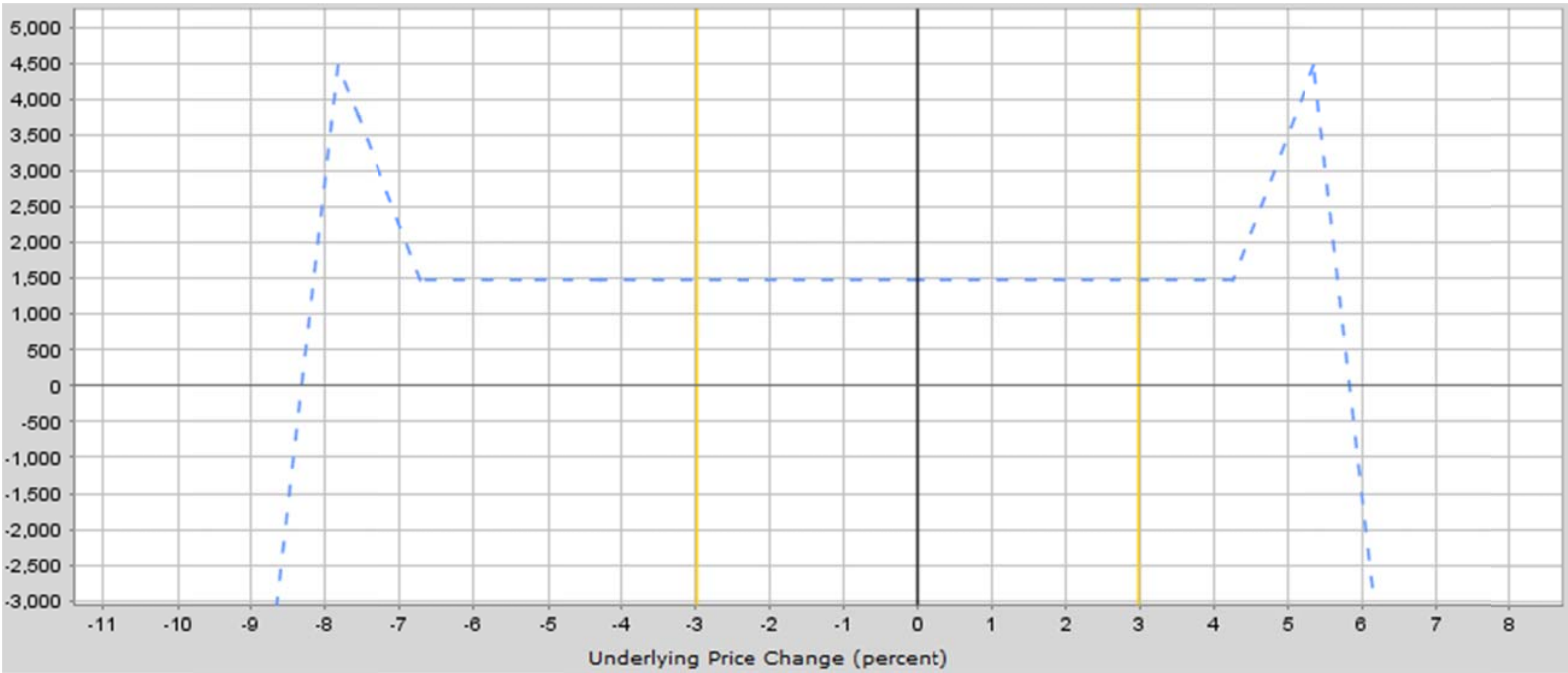
Low volatility environments can be especially risky for iron condor traders. High volatility always comes after a period of low volatility, it's a fact of life, but it can be brutal for iron condor traders. When implied volatility is low, you might look at a standard iron condor set up and think "Wow, this short strike is only 5% out of the money, which seems way to close for my liking". Or maybe you're not worried about that and enter the trade anyway. Shortly after, the stock drops 4% and all of a sudden you have a very large loss and a position that will be very difficult to adjust and finish with a profit.

Low volatility makes iron condor trades difficult to find and hazardous to trade. The high amount of Vega risk inherent in iron condors means that you are susceptible to sharp market moves, which is exacerbated in period of low volatility due to having to place you short strikes much closer to the stock price.

How then should we handle a low volatility environment? Should we stop trading completely and wait for volatility to shoot higher? Yes, that is one option, but probably not a very attractive option for you. Traders don't like sitting on their hands doing nothing, and no trades means no income. Luckily there is a way to continue to trade iron condors and decrease your Vega risk. The solution is called a "mouse ear" iron condor.

Mouse ear iron condors are basically a lower risk, lower return version of an iron condor. They may look complicated to set up, but they are actually fairly easy, albeit a little commission intensive. Mouse ears reduce your Vega risk and also give you the potential to land in the "profit zone" and achieve a much larger return.

This is what a mouse ear iron condor looks like:



Here is how the trade is setup:

Date: February 6, 2013

Strategy: Mouse Ear Iron Condor – RUT

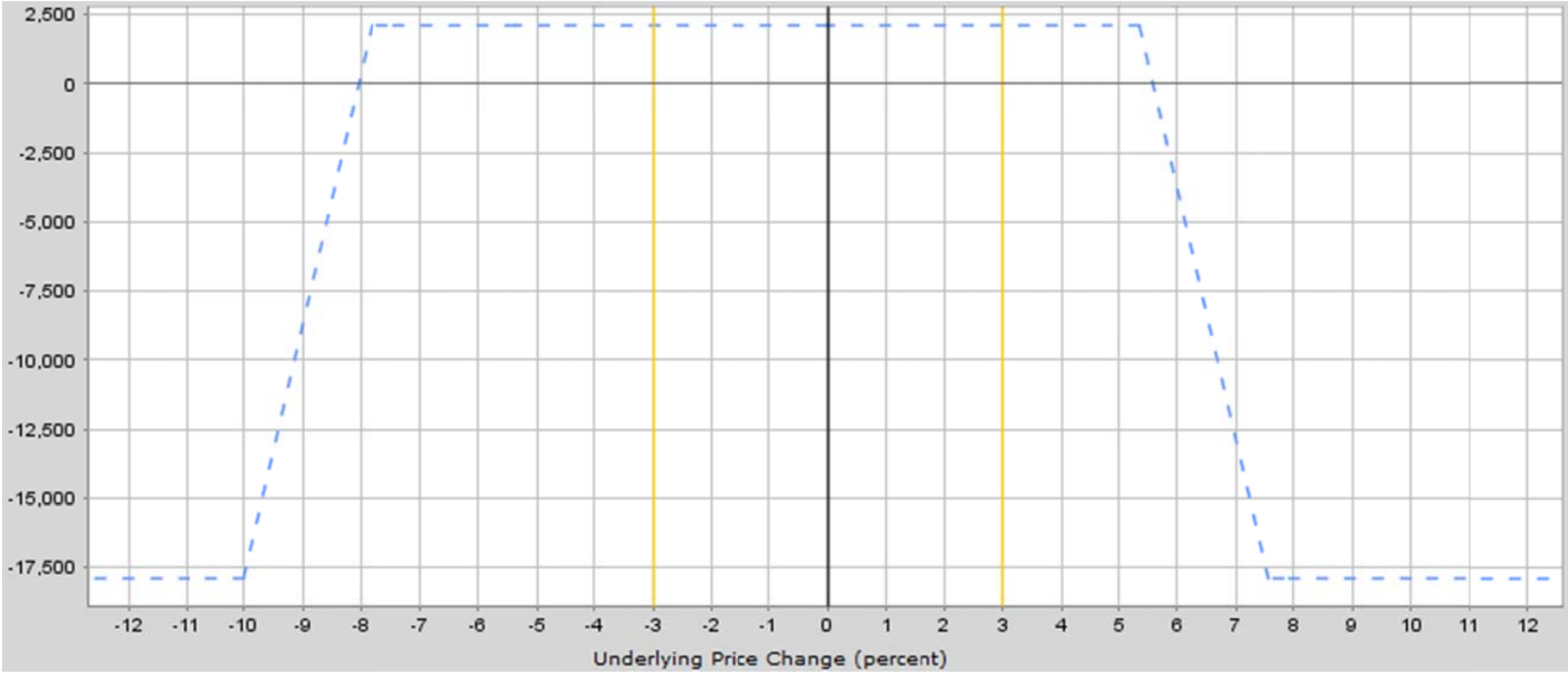
Current Price: $911

Trade Set Up:
Sell 10 RUT Mar 14th, 960 CALLS, Buy 10 RUT Mar 14th 980 CALLS for $1.00 ($100)
Sell 10 RUT Mar 14th, 840 PUTS, Buy 10 RUT Mar 14th 820 PUTS for $1.15 ($115)

Premium:
$2,150 (2.15 per spread) Net Credit for the iron condor.

Total Capital at Risk:

$17,850



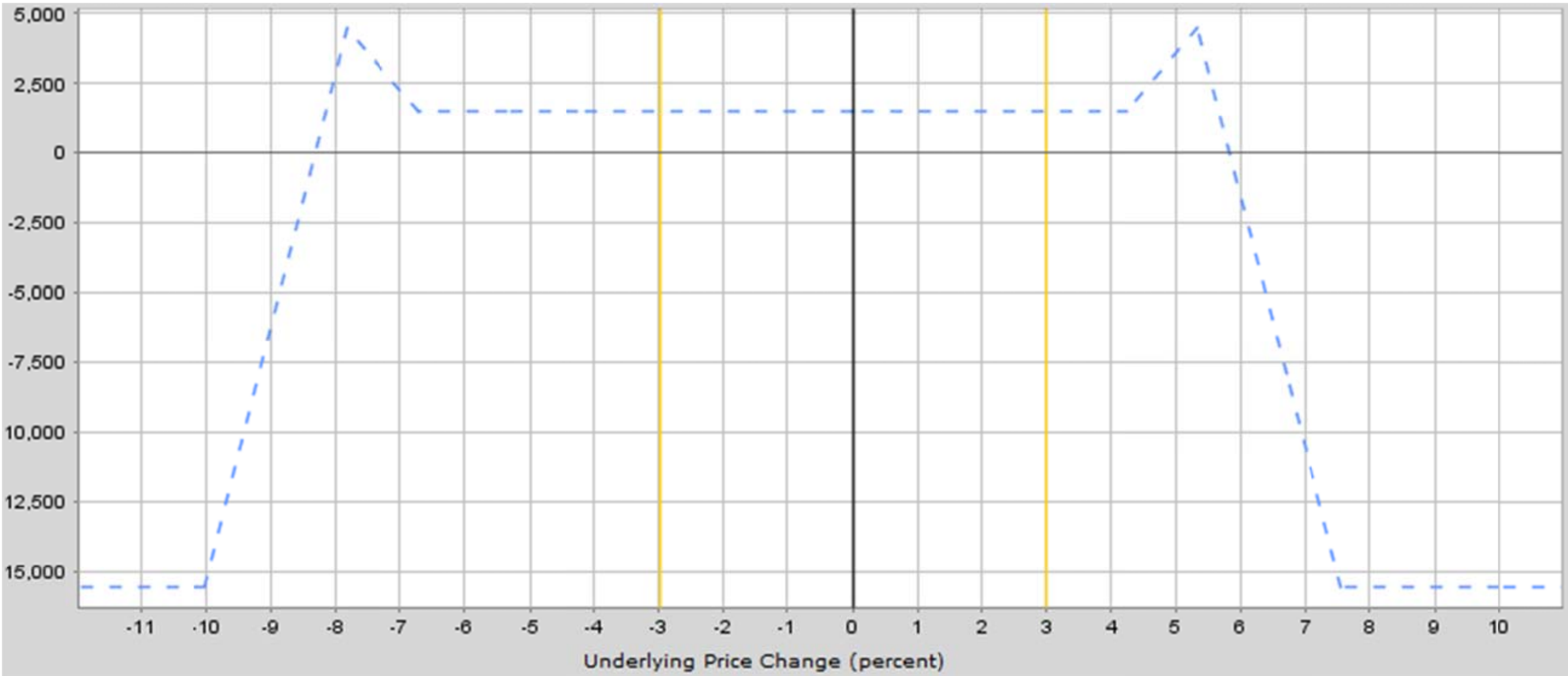
Now add the ears:

Buy 3 RUT Mar 14th, 950 CALLS, Sell 3 RUT Mar 14th 960 CALLS for $1.15 ($115)
Buy 3 RUT Mar 14th, 850 PUTS, Sell 3 RUT Mar 14th 840 PUTS for $0.85 ($85)

Premium:
-$600 (2.00 per spread) Net **Debit** for the ears.

$1,550 total premium received.

Total Capital at Risk:
$15,450



You can see above that I am basically adding a debit spread just in front of the iron condor strikes which gives the payoff graph the appearance of having "ears" at the short strikes. I've used a ratio of 3 debit spreads for every 10 iron condors, but you can play around with the numbers and see what works for you. I'm only using 10 point spreads for the debit spreads as opposed to 20 point spreads for the condor which helps keep the costs down but also results in a narrower ear or profit zone. Again, this is something that you can play around with to see what works.

Even though this strategy has a potential for a higher return if the underlying expires in the profit zone, you should be aware that it will be fairly unlikely as the profit zone is quite small. The main benefit of this variation is that you will fare better in the event of a sharp market move during the course of your trade. You can see this via the different greeks.

Standard Iron Condor

Below you see the setup for our iron condor. The delta is skewed a little to the downside as I was slightly bearish at the time. Notice that the Vega is -407.

Underlying	Position	DeltaDollars	Delta (Δ)	Gamma (Γ)	Vega	Theta (Θ)
RUT		-18,357	-20	-4	-407	78
RUT MAR 14 '13 820 Put	10	-61,895	-68	2	374	-118
RUT MAR 14 '13 840 Put	-10	96,080	105	-3	-520	151
RUT MAR 14 '13 960 Call	-10	-79,548	-87	-4	-453	79
RUT MAR 14 '13 980 Call	10	27,005	30	2	192	-33

Mouse Ear Iron Condor

Now, let's take a look at our mouse ear iron condor. Delta is still negative although slightly less so, but Vega is now -320 as opposed to -407. That's a 21% lower Vega exposure as opposed to the standard iron condor.

Underlying	Position	DeltaDollars	Delta (Δ)	Gamma (Γ)	Vega	Theta (Θ)
RUT		-10,844	-12	-3	-320	61
RUT MAR 14 '13 820 Put	10	-61,895	-68	2	374	-118
RUT MAR 14 '13 840 Put	-13	124,904	137	-4	-676	196
RUT MAR 14 '13 850 Put	3	-36,601	-40	1	185	-52
RUT MAR 14 '13 950 Call	3	39,155	43	2	193	-34
RUT MAR 14 '13 960 Call	-13	-103,412	-113	-6	-589	102
RUT MAR 14 '13 980 Call	10	27,005	30	2	192	-33

So you can see that a mouse ear iron condor has a lower exposure to Vega while also providing an opportunity for extra profit if the stock closes within one of the ears at expiration.

<< Get your copy of Bullsh*t Free Guide to Iron Condors >>

Excerpt from Bullsh*t Free Guide to Butterfly Spreads

Using Directional Butterflies for Low Cost High Reward Trades

Using butterflies to make cheap directional bets is one of my favorite strategies, so I'm going to enjoy writing about this topic. So far we have only looked at the "traditional" way to trade butterflies, which is as a neutral income trade. You can use butterflies in many ways, so let's delve in to how you can use them to make low risk, high reward directional trades.

A traditional butterfly involves selling two at-the-money options. When using butterflies as a directional trade, we place the sold options out-of-the-money. A trader with a bullish bias would sell 2 out-of-the-money calls and a trader with a bearish bias would use out-of-the-money puts.

Before we go further into specifics, let's first consider the reasons why you might trade an out-of-the-money butterfly. The first reason is that it is a very cheap way to gain directional exposure, or hedge an existing portfolio or position. Let's say you are bearish on SPY over the next few weeks and want to take a directional exposure. The most obvious way to do this would be to simply buy put options. The main problem with being long puts is that you suffer from large amounts of time decay. The stock needs to start moving down soon after you enter your trade; otherwise the position starts to decay.

SPY is trading at $161.20 on July 1st, 2013 and you think it might decline to $155 over the next two weeks. You buy a July 19th $157 put for $0.89. Your risk is $89, your profit potential is unlimited and your breakeven price is $156.11.

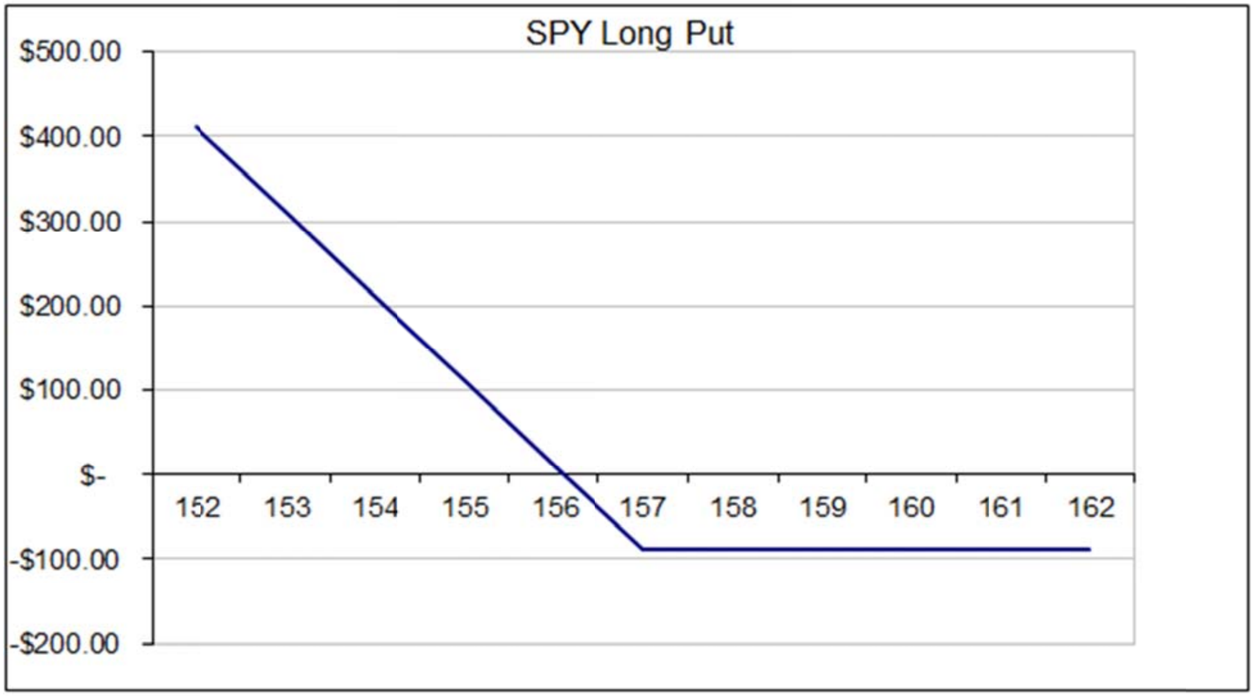
Date: July 1st 2013,

Current Price: $161.20

Trade Details: SPY Long OTM Put

Buy 1 SPY July 19th $157 put @ $0.89

Premium: $89 Net Debit



As you can see, this position starts to make profits below $156.11, but you were only anticipating a fall to $157. Assuming your directional view is correct and SPY drops to around $157 over the two-week period, a directional butterfly would be a much better choice both from a risk and reward perspective. Let's analyze the trade:

Date: July 1st 2013,

Current Price: $161.20

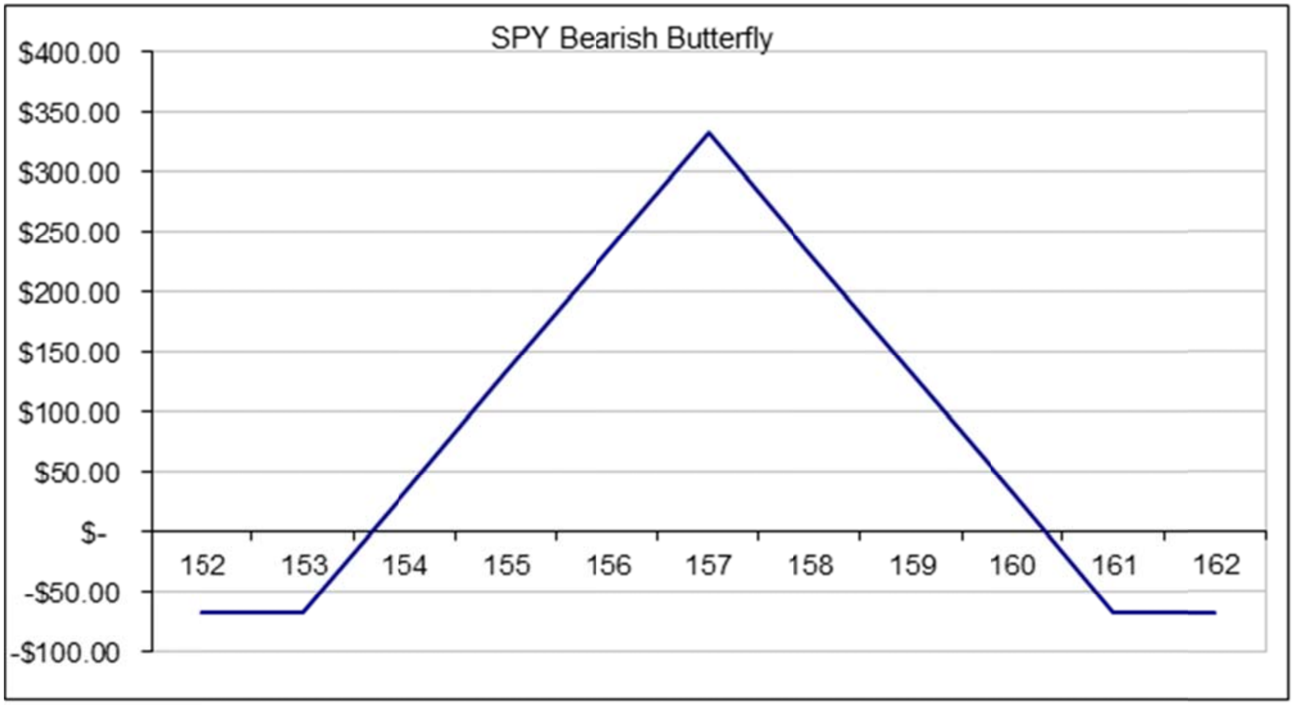
Trade Details: SPY Bearish Butterfly

Buy 1 SPY July 19th $153 put @ $0.39

Sell 2 SPY July 19th $157 put @ $0.89

Buy 1 SPY July 19th $161 put @ $2.06

Premium: $67 Net Debit



As you can see above, you are risking less capital, only $67 in this case, and looking at a nice return if SPY ends around $157. We know achieving the maximum return on a butterfly is unlikely, but it's possible to make around a $200 gain if SPY close between $156 and $158.50. To make the same $200 gain, the long put would have to decline to around $154.

Risking $67 as opposed to $89 may not seem like a big difference, but for someone trading 10 contracts, the difference would be $2,200 less capital at risk. That's pretty significant, if you ask me.

Let's look at some further examples of directional butterflies, this time using RUT. First, let's analyze a traditional neutral butterfly.

Date: July 1st 2013,

Current Price: $989

Trade Details: RUT Neutral Butterfly

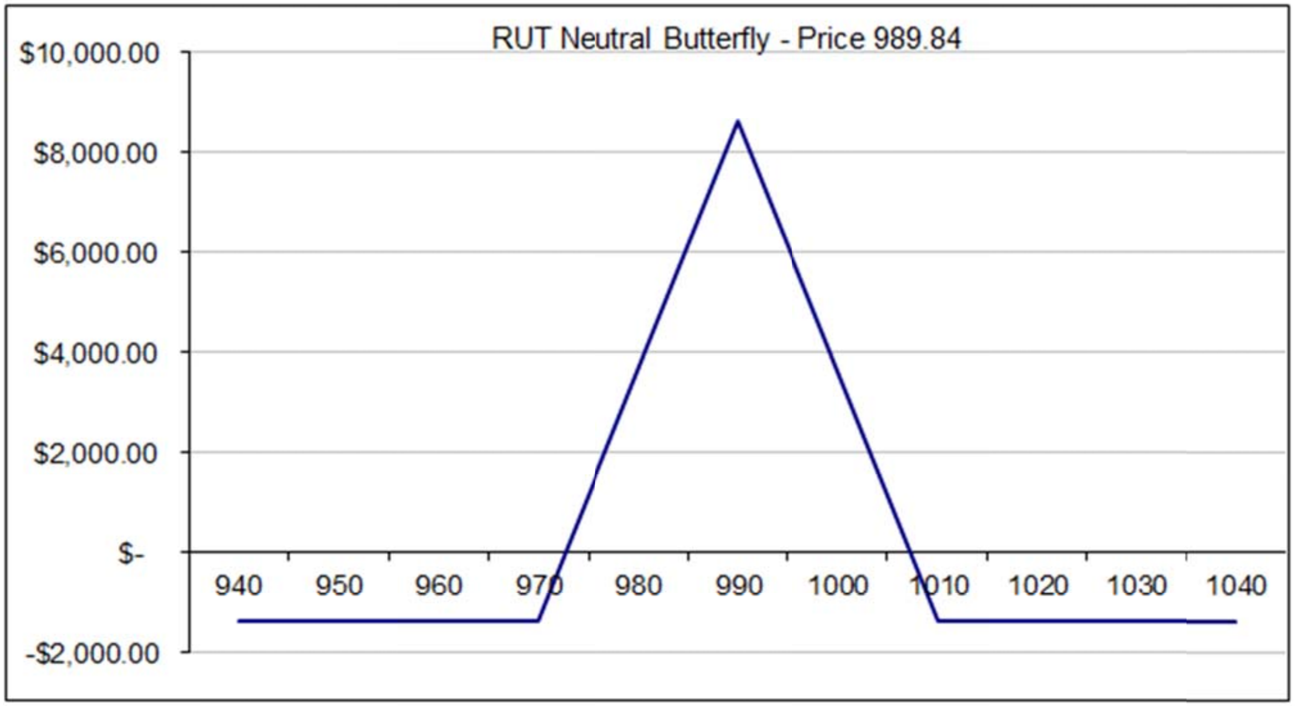
Buy 5 RUT Aug 15th $970 call @ $36.45

Sell 10 RUT Aug 15th $990 call @ $23.90

Buy 5 RUT Aug 15th $1010 call @ $14.10

Premium: $1,375 Net Debit

Delta Dollars	Delta (Δ)	Gamma (Γ)	Vega	Theta (Θ)
-9,218	-9	0	-73	44



Now let's look at a RUT Bearish Butterfly:

Date: July 1st 2013,

Current Price: $989

Trade Details: RUT Bearish Butterfly

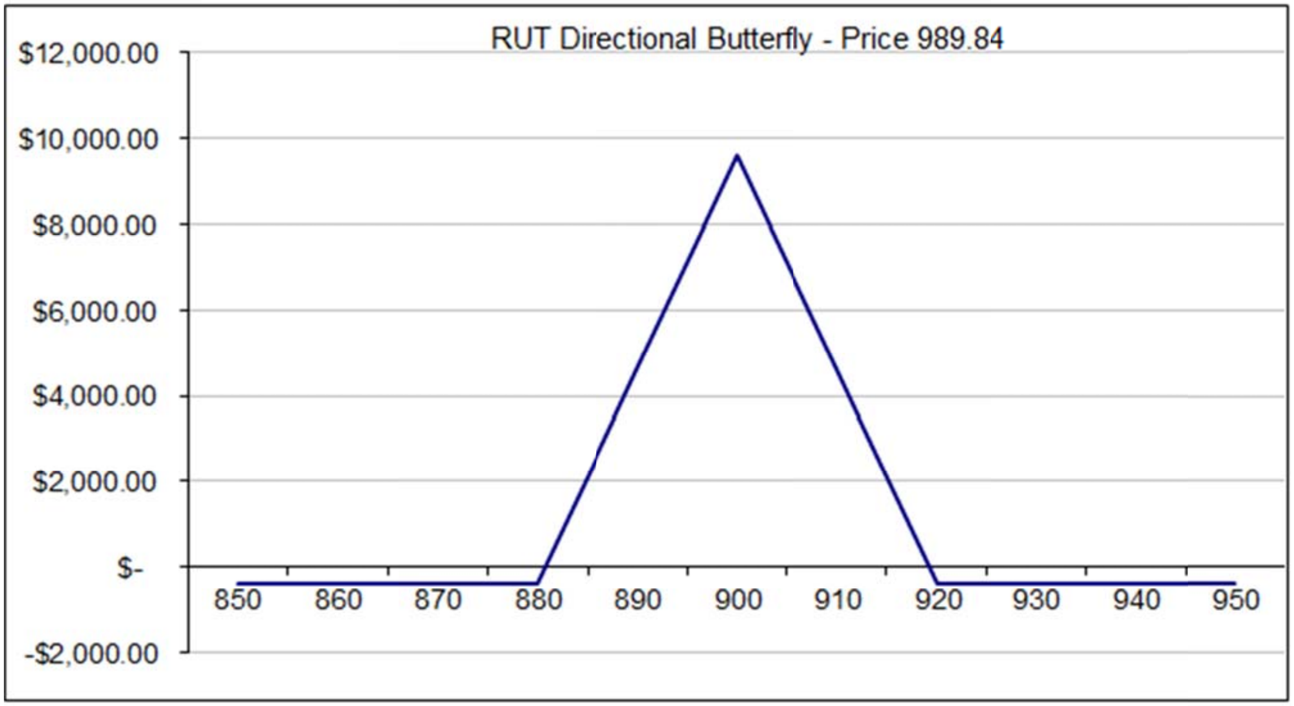
Buy 5 RUT Aug 15th $880 put @ $3.90

Sell 10 RUT Aug 15th $900 put @ $5.65

Buy 5 RUT Aug 15th $920 put @ $8.15

Premium: $375 Net Debit

Delta Dollars	Delta (Δ)	Gamma (Γ)	Vega	Theta (Θ)
-8,415	-9	0	18	-4



Looking at the payoff graph above, you can see that this is a very attractive trade from a risk / reward standpoint. Risking $375 to (theoretically) make nearly $10,000 is a good deal to me. Of course, RUT would have to drop around 10% for that to happen, but you can't argue with the risk / reward ratio. This type of trade is great to put on at the end of a long bull run when you think the market is due for a correction, or you can use it as a very low cost way to insure a portfolio of stocks.

There are a couple of other things to take note of here. The Vega on the bearish butterfly is positive, whereas with a traditional butterfly it is negative. Also Theta is negative, so time decay is working against you in this strategy. Hopefully it's obvious, but you are not using this as an income trade, which is what butterflies are typically used for.

Lastly, let's look at a directional butterfly using out-of-the-money calls for a bullish trade:

Date: July 1st 2013,

Current Price: $989

Trade Details: RUT Bullish Butterfly

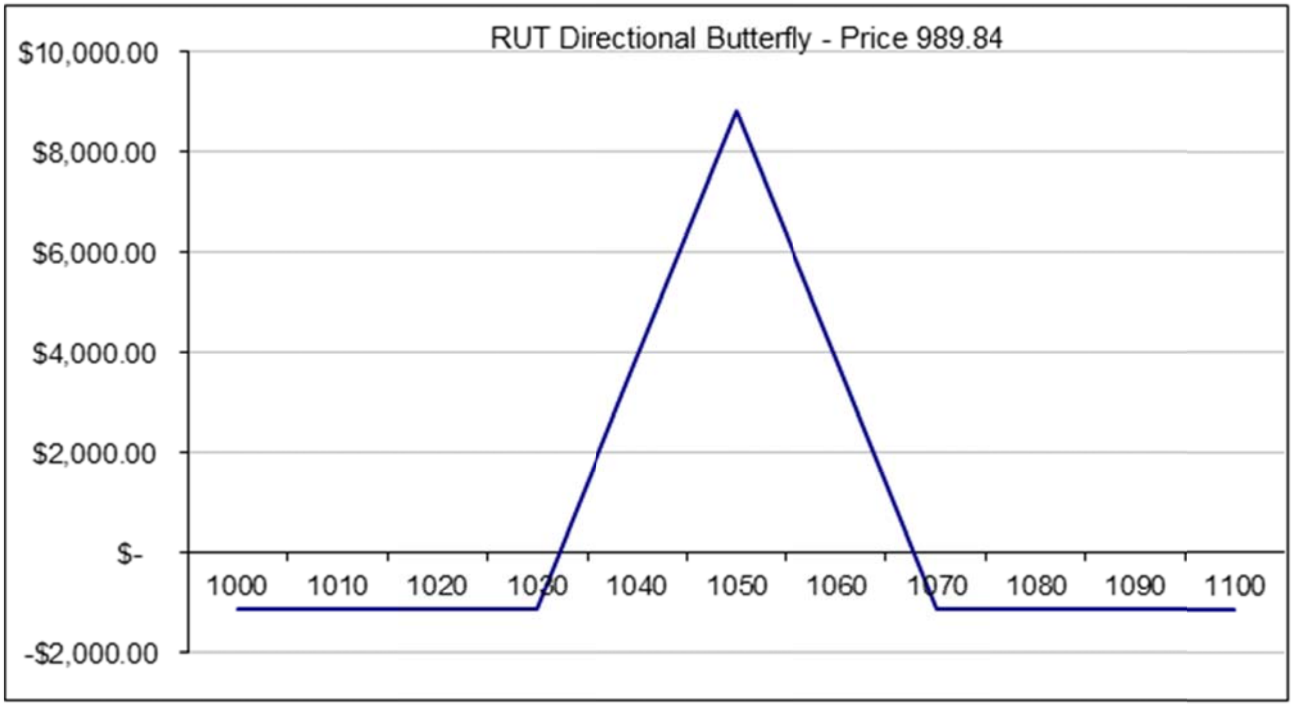
Buy 5 RUT Aug 15th $1030 call @ $7.20

Sell 10 RUT Aug 15th $1050 call @ $3.05

Buy 5 RUT Aug 15th $1070 call @ $1.20

Premium: $1,150 Net Debit

Delta Dollars	Delta (Δ)	Gamma (Γ)	Vega	Theta (Θ)
23,803	24	0	33	-11



Here again, you can see a pretty favorable risk / reward ratio, but the trade is much more expensive than the bearish butterfly, and in fact not that much cheaper than the neutral butterfly. There are two reasons for this. First, put options are skewed because markets tend to fall faster than they rise. As such, out-of-the-money puts are more evenly priced compared to the calls.

Once you start to go deep out-of-the-money with the calls, those options have very little value. You can see this in the option prices of the bullish and bearish butterflies. The put strikes were traded at much more even prices - $8.15, $5.65 and $3.90. The calls were traded at a much greater variance - $7.20, $3.05 and $1.20.

The second reason is that the bullish butterfly is not as far out-of-the-money as the bearish butterfly. The sold puts are $90 below the price and the calls are only $60 above. The reason for this is I wanted to have a similar delta (i.e. similar probability) of the short strikes for both the puts and calls. The delta of the short $900 puts was -0.12 and the short $1050 calls was 0.12.

At August 14th, a day and a half before expiry, RUT was trading at around 1050, having rallied strongly through July and early August. The bullish butterfly could have been closed on August 14th for $6,150, a profit of $5,000 on a $1,150 investment.

A Few Things To Keep In Mind

Directional butterflies might be completely new to you, so let's go over some things to keep in mind before you dive in.

Butterflies are a net debit trade so we want to be paying as little as possible. You have to weigh up the cost of the butterfly with how far you expect the stock to move. The further out-of-the-money you go, the cheaper the trade will be, but the less likely that the stock will end near your sold options. You can use delta as a guide such as I did here, look at support and resistance levels, or use a standard deviation measurement.

Short term trades are great with this strategy. I generally don't advocate trading weekly options, but in this case, directional butterflies using weekly options are a great way to get leverage on your directional opinion. I find around 15 days is a good sweet spot, but you can still go further out in time such as I did with RUT above.

Set a price target for the stock and structure your butterfly with the short strikes at that level. Try to think about where the market has the *potential* to go. Could it move 5% in a week? 10% in a month?

You might find this strange to hear, but Theta and Vega are not overly important in this trading strategy. The Neutral RUT butterfly has Vega of -73 and Theta of 44, but the directional trades were 18, -4 and 33, -11, so the exposure to these greeks is much less of a factor with directional butterflies.

Given that you are risking such a small amount of capital, you can accept a greater loss than you usually would for a traditional butterfly. For example with the RUT Bearish Butterfly only requiring $375 of capital, I would be willing to accept up to a 50% loss on the position.

It can make sense to hold these position until closer to expiry than you normally would with a traditional butterfly. The leverage is what we're after here, so it makes sense to hold out for that big winner, given we only have a small amount of capital at stake.

Unlike other directional trades, a large move in the opposite direction early in this trade will not have dire consequences. Compare that with a long put or long call, which can be decimated by an adverse directional move.

Using short-term directional butterflies can be a great way to hedge a credit spread or iron condor that is under pressure, while allowing you to remain in the trade.

Trading a butterfly in this manner is a directional trade, as you still need to stock to move in the direction of your sold options in order to be profitable. The benefit of this type of trade is that the cost of being wrong is minimal.

OTHER RECOMMENDED READING

There are a couple of books that I recommend, but it depends on what stage of you development you are at. For beginners, who still feel they need to learn some of the basics of options trading, check out the following books:

The Bible of Options Strategies – Guy Cohen
How I Made $2,000,000 In The Stock Market – Nicolas Darvas
Options Made Easy – Guy Cohen

For those who have a good knowledge of options, and want to take things to the next level, check out these books:

Options As A Strategic Investment – Lawrence McMillan
Option Volatility and Pricing – Sheldon Natenberg
Trade Your Way to Financial Freedom – Van Tharp

Definitely check out some of the above books - I guarantee you will not be disappointed.