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F O R E W O R D

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I bought my first call almost 25 years ago; at that time puts hadn't even started trading. Like a lot of people who get hooked, that first trade was a winner – which only led me to think I knew way more than I did. Succeeding years have taught me otherwise.

In the intervening years, I have traded as well as sat on the sidelines. I have read a number of options books to improve my understanding of options theory. But I have never been a professional trader.

In my role as President of thinkorswim, I am working with people who have made their livings trading options. In addition, I have been working closely with Charles on his book to make it more comprehensible to those who have not been floor traders.

Charles is a natural born teacher. He is enthusiastic about options and loves all of the nuances of options and their possibilities in different positions.

These attributes are important and come through in his writing, but are not the reasons to read this book. You should read this book because it is not another “put/call parity” and “how butterflies are constructed” options book. Those elements are dealt with properly, but this book really covers how to get to the heart of options positions using the insights of a market maker.

I would compare this book in its field to Percy Boomer's ‘On Learning Golf’, a book that has stayed in continuous print for over 50 years. Like that classic, Charles' book moves beyond the mechanics of his profession, giving the reader the true feel for trading options, speculating and hedging.

If you take to heart the lessons in this book, you will be well equipped to trade, fully understand your positions and operate in different types of markets.

Read it, and good luck trading.

Joel Blom  
CEO, thinkorswim

There are numerous ways to trade. There is no easy method to be effective and successful on a long term year to year basis, so far. It is even more challenging to recognize a person who understands advanced trading techniques, and is successful in utilizing them. Some well educated people struggle and fail, while others, who are not well educated, thrive and are considered to be among the industry's most successful. Charles Cottle is gifted as a trader and an educator, as an author and a creative thinker.

A number of years ago I was fortunate enough to work under the auspices of Charles, a young trader at the CBOT. He taught me a priceless skill, that of defensive trading. Three words stick in my mind today from that time: organization, efficiency and discipline. Charles emphasizes critical issues like these throughout this fascinating book.

All of Charles Cottle's experiences have been combined to create this text. Online traders, trade-checkers, fund managers, experienced traders and chief executive officers of companies can all benefit by using the information presented. Whether you are dealing with derivative exposure, day trading or complex position manipulation, the text contains an abundance of examples of methodology derived from real trading experiences that reinforce the vital concepts presented in this book.

Charles demonstrates how to optimally combine the science of derivatives and the art of position maintenance in a concise, fun and easy way. Each topic is presented objectively and creatively in a user friendly manner to be used as a guide for the reader. The trader becomes empowered to develop their own style of trading. The art of position dissection is revealed in a way that traders will appreciate. In reality positions evolve from one moment to the next and require constant adjusting for consistent, long-term profitability. Using charts and graphics, complex spreads are reviewed, and analyzed simplistically to demonstrate the many ways that a position can be managed. It is vital to view an options position in various ways, not only to generate ideas, but also to be better prepared to adjust, or rid the position of unnecessary risk and salvage the residual value of the position.

In the trading environment one must be prepared for the Federal Reserve to act, the economy to adjust and the world to accommodate all the unexpected events that occur at anytime and in any place. Trading is ongoing and in a constant state of flux. From Sunday evenings in the United States until Friday afternoons, the markets are in motion ready to

accept all the data and react accordingly. Are you ready? Do you have as many tools in your tool box to handle all that you require? Can you ever have too many tools at your finger tips?

Considered by many in the worldwide options trading community as a leading educational expert, Charles has developed a user-friendly system of defensive trading and discusses it with the intensity experienced in a live trading environment. He has produced a text that guides the reader from the most simple to more advanced trading strategies and position diagnosis. Nuances are discussed, and the veil of mystery and complexity associated with options trading is removed. A vast world of financial opportunity is revealed. Using this information, both new and existing markets can be tapped employing limited and unlimited risk strategies, depending upon the trader's ability, financial means and comfort level. Charles explains how to achieve objectives in the most efficient and effective way. Numerous humorous stories, further add to the appeal of this educational work that will surely prove to be the bible for successful options traders. The compilation of the material will be valuable to readers for years to come.

Alan Gordon Rottman

17-Year Floor Trader and Equity Owner; Chicago Mercantile Exchange/London International Futures Exchange.

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**P R E F A C E**

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**WHY ANOTHER OPTIONS BOOK?**

This book is the revision of *Options: Perception and Deception* that was geared towards professional entrepreneurial market makers who trade their own account. The increase in online trading has now leveled the playing field. Commissions are cheap so convoluted (3 to 4 strike positions) may now be traded in customer and IRA accounts. Better tools are therefore required, such as option analytical software and deeper education. These are available from the thinkorswim trading application, education at the web site and through consultation with thinkorswim brokers. Such resources aid retail customers in competing with professional traders.

I have selected topics that help clarify concepts that have made a difference in the careers of many professional traders. I have removed methods to monitor and control positions with dozens of strikes from this version as retail investors have little need for such measures. I share my blunders, I think, even more than my triumphs. Most books on options talk about all the great ways to make money, but a lot of things have to go right in order for that to happen. This book is more about what can get in the way. It is different because it provides realistic examples of what goes through the mind of the individual who has the trade on. It talks about the market's emotive powers to the opportunities and pricing available to the trader at given times over the life of the position carried. All sorts of alternative ways to achieve objectives are explored in order to help round out the reader's understanding and to find ways to get out of, or massage, a position. Unique illustrations help to sort out the confusing information that goes with an options position.

The reader needs to be somewhat prepared with the following prerequisite knowledge: an understanding of basic option strategies, i.e. what a call and a put are, jargon such as: in-, at- and out-of-the-money, strike price, premium, time value, volatility, exercise, assignment, expiration, intrinsic and extrinsic value and other common options terms.

Familiarity with some of the common strategies will also be useful, such as a bull and bear spread, butterfly, strangle, straddle, calendar (time) spread, back spread and ratio spread. Most of this information is

available almost anywhere but thinkorswim has presented some of the best, material on its website.

A lot of people say that options trading is gambling. I would have to agree up to a point. For one thing, there is no house stacking the odds against anybody, although the human condition is an obstacle in itself. A trader should get to know his or her trading self long before charging full speed ahead. Options trading is not like the normal process of investing, even though it is done in an investment account and with all sorts of investment information available to help in the decision making process. This fact in itself gives a trader better odds than any casino. Certainly, some options strategies turn into more conventional investments via the exercise process.

Undoubtedly, people can make piles of money by buying cheap out-of-the-money calls, while enjoying limited risk. That is true but they will probably lose their wagers most of the time just because the odds are against the options going in-the-money most of the time. Options are a wasting asset and will expire in a relatively short period of time. There are better ways to play the options game. A little amount of education can go a long way in ensuring long-term profitability.

My grandfather used to buy stocks and put the certificates in a safe for thirty years and then see how they were doing. Those were investments. The same can be done with options but only for days, weeks or months. It is usually wiser to keep abreast of the position and be prepared to make an adjustment.

A friend asked me whether the recent bear market would hurt my business as an online stock and options broker. Traditionally bear markets have been bad for the brokerage business, to say the least, but options can be a trader's best friend in a bear market. The record volumes of options trading by retail investors in the recent bear market reflects more awareness of this fact.

As the NASD<sup>1</sup> says, "Options are not suitable for everyone". I agree but not enough people who they are suitable for are using them yet. I believe that options are for almost all stockholders. Why? Because a long stock position acts almost exactly the same as a long call and a short put at the same strike. Keeping this in mind, and the type of market that we have witnessed in the last year, people should have been thinking

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<sup>1</sup> NASD

about what could have been done about the short put aspect of their long stock positions. They could have covered that put until things calmed down, or perhaps have bought a different put above or below it, or two for each one. The same people should always be considering position protection and enhancement because, even without a bear market, stocks can plummet.

### **Today's Option Trading Landscape**

Option trading is on its way to becoming a household word, evolving from the four letter word that it has earned for burning so many market participants. The players that are still around have learned from the school of hard knocks that mistakes can be avoided if they trade with tried and true rules. Most of the two-dozen option plays and strategies covered in this book are totally inappropriate for almost everybody. There are, however, a handful of strategies that are suitable for all players.

Volume levels have been picking up and are going to explode into the stratosphere. This will translate into more liquidity, tighter markets and better customer fills<sup>2</sup>. The bid/ask spreads are getting narrower as market makers, on competing exchanges, fight for order flow (the edge<sup>3</sup>). As technology progresses, option spread trading will become more and more prevalent and they will become easier and cheaper to transact. This will, in turn, allow for more players and more liquidity.

There can be an enormous amount of complexity to options but this book will attempt to keep it simple and to the point. All other complexities that go deeper into the subject matter are footnoted and will be made available to anyone at [www.thinkorswim.com](http://www.thinkorswim.com) where probably any options question can be answered by our staff.

The approach of this text will be to stretch the reader's mind in order to allow him or her to handle any situation that can confront the investor while trading options. At the end of the day, perhaps 99% of all customers will find one or two spread strategies, to put on or leg into, that will be their bread and butter positions.

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#### <sup>2</sup> Fill

Term used to describe the fact that an order has been executed. A fill includes the time, quantity and price of a given instrument.

#### <sup>3</sup> Edge

Term used for the potential profit margin afforded to market makers by having a bid price below and an ask price above a theoretical value.

I would venture to guess that not many speculators have ridden a call or the shares of Yahoo (NASDAQ:YHOO) from almost nothing to \$250 a share. Perhaps there are some lucky souls that have ridden Yahoo from \$250 back down to \$11 and change with naked puts or a short stock position. There is really no way of telling how many day traders / speculators there are that can ride a play for that kind of a move. Most of the players would have been ecstatic to take 50 points out of a one of those moves in the shares. Still others would have been jumping up and down to take even \$10. Still, a lot of traders would have taken their profits with less than 5 points.

Given people's desire to take profits quickly in the world of volatile Internet stocks, the feature of 'unlimited profit potential' long naked calls or puts is only worth employing if the options are cheap to buy. They have not been and probably still are not. Without getting too technical, when markets are volatile, demand for options keeps options' premiums (implied volatility) high. In many cases, the prices are really on the moon making them too expensive to buy. On the other hand, margin requirements make shorting naked options quite a challenge to many. What can one then do? In a word: Spread. Spreads make it simple to take advantage of almost any type of market action.

In order to be profitable using options it is vital to conserve capital long enough for the market to start contributing funds to one's account in the way of profits. Good luck is a nice thing to have but a sound approach begins by identifying the factors that cause losses. Once learned, options become easy to deploy without any mysteries of where the money goes to and comes from. Everything is quantifiable as long as one understands how to measure it.

The best way for options knowledge to be absorbed is through experience, which can be costly in the options business. Learn from the triumphs and the mishaps that are passed on throughout this book. These experiences are supported by graphic illustrations and lessons. This is what the book is about and that is what my work at thinkorswim is about. Feel free to email me: RiskDoctor@thinkorswim.com

It's amazing that in this day and age, experienced traders will actually take the time to help customers with their trades and positions (while the market is open) and strategy questions (after the close). Brokers that understand and teach...what a concept!

Charles Cottle

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## GLOSSARY

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CHAPTER

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**PICKING UP WHERE THE REST LEAVE OFF  
SYNTHETICS**

When talking about options, we are talking about alternatives. By studying alternatives and the relationships between various option configurations, it is possible to gain considerable insight into feasible trading strategies and the amount of risk involved in each. A position may be looked at in many different ways. There is the raw (actual) position consisting of the exact options that contribute to an overall strategy. For every raw position there is a number of alternative positions called synthetic positions (synthetics). A synthetic position has the same risk profile as its raw position and achieves the same objectives. Once the reader fully grasps the concept of synthetics, it can be used to assess risk with a great deal more perception. We will explore the concept of position dissection, that is, positions that are broken down into useful components or spreads, so that we may understand how these items impact the overall position in terms of quantifiable risk. This will aid decision-making in building strategies and making position adjustments to the original position (which is crucial for ongoing success in the options arena).

Following an introduction to synthetics, the basic mechanics of locked<sup>1</sup> positions called conversions, reversals, boxes and put-call parity are explained. With these tools the reader will be able to fully comprehend the discussion on position dissection.

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<sup>1</sup> Lock

Locked positions usually refer to conversions, reverse conversions, boxes, and jelly rolls. It seems as though they cannot lose money, but they can. The factors that can affect *locks* vary between products. If the options were European style with futures-style margining, a lock would truly be bulletproof.

One could argue that this is much more than a retail investor needs to know about options in order to trade them. Is it better to know more or less about something that can make or lose money?

## THE NATURE OF A POSITION

There are three main reasons that traders lose money. First, they simply have a wrong opinion of the market in a game where money is made and lost based on opinions. Second, traders lose their discipline and the patience to follow their own rules. They may have a pattern of riding losing trades, coupled with taking profits too soon on winning trades. A third reason can be explained by ignorance about the nature of their risk and market nuances.

Consider this brief true story that demonstrates where risk has not been correctly assessed:

**Story: Covered-Write:** A trader once came up to me on the floor of the exchange and asked, “What do you think about selling the 90 calls at about 9.00, and buying the stock here at about 96.00, one to one (one call for each 100<sup>2</sup> (100) shares)?” His reasoning was that if the stock stayed at current levels, traded higher or at least stayed above 90 he would have a profit of about 3.00 (\$300) for each one to one spread. That assumption is correct but I then asked him, “Hold that thought to the side for a moment and instead consider, as an alternative, selling the same quantity of 90 puts at 3.00 naked<sup>3</sup>?” He was quick to answer, “No, never, I would hate

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<sup>2</sup> 100

The “oo” in “10oo” is used so that the reader can think of the quantity of underlying shares in terms of units that options can exercise into. Therefore 10oo stands for either 10 units or 1,000 shares of stock (most stock options represent 100 shares of the stock). The “10” refers simply to the number of contracts worth of underlying. On some foreign exchanges, one stock option represents 50 shares, so 100 = 50 shares. To maintain consistency throughout the book, the quantity of underlying will be expressed as if it were an option contract equivalent, that is “1 underlying contract” will be expressed as “100” meaning either 100 shares of U.S. stock, 1 futures contract (one futures contract is delivered upon exercise of a futures option), or 150 in the case of a 3 for 2 stock split.

<sup>3</sup> Naked

A naked position has open-ended exposure, that is, with undefinable, unlimited risk. However, naked put exposure is limited to the strike price minus the premium collected. “Naked Between Spread Legs” was a working title of this book and coulda woulda shoulda been.

to be naked short puts!” I then showed him that the two trades are virtually identical. Being naked short puts is very suitable for certain investors in certain circumstances but it seemed reasonable to assume that the trade was not for this particular person. **End**

Had the trader in the example known that a covered write was like a short put he would have realized that he himself would not do the trade. This is where synthetics come in. It would have been a suitable trade had the trader been willing to be short naked puts and had the financial resources to cover the trade. However, this trader did not know, that for all intents and purposes, a covered write<sup>4</sup> *IS* a short put. A full understanding of the consequences of a position beforehand is essential. No matter how the position is viewed (including synthetically), the trader should be happy with it, know approximately how long he wants to remain in the trade, and know how he will handle it under profit and loss scenarios.

## ANOTHER WORD ABOUT COVERED WRITES

The above covered write example describes this extremely popular strategy (most common in the equity market). The covered write consists of long an underlying instrument and short a call. The package emulates or is synthetically a short put. Out-of-the-money calls are usually written during a given expiration month against<sup>5</sup> each 100 shares of stock to enhance the investor's rate of return. The premium collected is an enhancement if the call expires worthless and the stock is the same price or higher. It is also an enhancement if the call is assigned when in-

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### <sup>4</sup> Exception for Covered Write vs. Short Put

A short put differs from a covered write when a stock is involved in a merger, buyout, or special dividend. In such a case, a person short the put would not participate in some benefits that a shareholder would. In a partial tender offer, where part of the purchase is with stock and part is with cash or other instruments, there can be a wide disparity between the synthetic relationships (see “*Stocks Involved in Tender Offers*” in Chapter 3). Briefly, it would be more profitable to have the covered write in the case of a partial tender offer than a short put.

### <sup>5</sup> Against

Against is synonymous with *versus*, meaning “offset” or “hedged”. If I have long deltas with one set of contracts and short deltas to offset them using other contracts, it is said that the first set of contracts are “against” the second set.

the-money because the writer's total proceeds on the sale of his or her shares is the strike price plus the premium collected and that had to have been greater than the available stock price at the time of the call sale. It would not turn out to be an enhancement if the call expired worthless while the stock declined an even greater amount than the premium collected.

This is why covered writes are not suitable for everyone. There are risks to the downside. It can suit long-term retirement account investments as well as widows, orphans and other *trust-funders* very well, that is, people who never intend to sell their stock.

It was a very popular strategy during the bull market of the 1980s, but unfortunately brokers were putting the wrong kind of clients into the covered writes. It is not prudent for some investors to initiate long stock/short call positions as a spread. If a broker had asked these same people whether they would have liked to sell puts naked, they may well have hung up on him. These positions added to the 1987 crash because they created more positions that had to be liquidated or required new hedges, which helped to create selling pressure and panic.

My friend Joe put it best when he said of the October 1987 crash, "What do you expect when 350 million shares in New York have to be hedged with 350 kids from Highland Park?" (Suburb on Chicago's North Shore where many of the traders in the S&P 500 futures and OEX pits live or grew up.) A covered write offers a limited amount of protection and is inadequate in a severe market decline. The sad truth is that many of the brokers themselves were shocked when they realized just how inadequate these so-called hedges were. I would not call a covered write a "hedge", although it can be a reasonable strategy for some people.

It is important to understand the nature of risk and the synthetic properties that are inherent in options. People too often look at how much they can win and not often enough at what they can lose. This approach has made many people rich, but it is unfortunately only a matter of time before the market eventually ruins those who carry positions that they were not prepared to deal with under different scenarios. Traders often suffer from tunnel vision and lose sight of the fact that they hold a position on a security that they never wanted. It is usually too late to act by the time that they realize this.

## LOCKS

Synthetics are most useful to arbitrageurs who look for opportunities to purchase one instrument cheaper than they sell another or to purchase a combination of instruments that emulate and/or offset their initial purchase, with the intent of profiting from a mispriced relationship. Some arbitrages or “arbs” involve straightforward strategies while others, such as those that involve interest and dividend streams, may be somewhat complicated and non-transparent<sup>6</sup>.

To make the best possible use of synthetics and dissection as tools for trading derivatives, one has to have an understanding of the properties pertaining to locked positions or locks. Lock is a term used to describe a position that has locked in a profit or a loss and theoretically cannot lose any money from that point forward. Spreads that are commonly referred to as locks are conversions/reversals, boxes, and jelly rolls. Boxes and jelly rolls are a combination of the conversion/reversal. This explanation of locked positions will therefore concentrate on the conversion/reversal.

### SYNTHESIS: USING A CONVERSION/REVERSAL (C/R)

A conversion is a spread consisting of long underlying, long put, and short call with the same strike at the same expiration ( $+u + p - c$ ). A reversal is the opposite spread, consisting of short underlying, short put, and long call ( $-u - p + c$ ). Notice that a reversal is the reverse of a conversion. This means that if two parties trade this spread with each other, one would end up with the conversion and the other with the reversal. If the trade is executed at ‘fair value’, there will be no profit or loss. The object for each party is to trade into the conversion or the reversal at better than fair value.

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<sup>6</sup> Non-transparent

A nontransparent value is one that has other income or expenses associated with it and is not clearly visible (e.g., if you buy stock today and hold it for one year, the cost is greater than the purchase price today because you are either forgoing the interest (implicit interest) on the money you paid or you have to borrow money to buy it with and pay interest on that. Of course, if you receive dividends, your cost is reduced to some extent.

## FAIR VALUE EQUATIONS

The conversion/reversal is a forward value (because it represents interest or interest minus dividend flows until expiration). It can be positive or negative (+/−) and is expressed as a debit (dr.) or a credit (cr.). In other words, the C/R is a spread where the *strike* and *call* are traded (a strike is not traded but upon exercise the underlying is traded at the strike's price) against or versus (**vs.**) the **underlying** and **put**. The price is equal to either a small debit (paid) or a small credit (received).

$$C/R = (k + c) \text{ vs. } (u + p)$$

where:

$k$  is the strike price

$c$  is the call price

$u$  is the underlying price (stock, futures, cash instrument or cash index)

$p$  is the put price.

The conversion/reversal price is equal to the difference between  $(k + c)$  and  $(u + p)$ . Again, the  $k$  value, though not actually traded, is the price at which the underlying will eventually be transacted upon exercise. It is therefore accounted for in the computation of the spread price.

	Buy	Sell
The conversion <i>price</i> is:	$(u + p) -$	$(k + c)$
	Buy	Sell
The reversal <i>price</i> is:	$(k + c) -$	$(u + p)$

Suppose that in this example the C/R is theoretically worth zero (and it would be if the amount of quarterly dividend was equal to the cost of carry until expiration). The conversion  $+ u + p - c = 0$ , and the reversal  $- u - p + c = 0$ . Each is considered to be flat<sup>7</sup> by many traders. The profit for a market maker (who competes to buy on the *bid* and sell

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<sup>7</sup> Flat

Conversions and reversals are not always flat (see Chapter 3). C/Rs are really flat only if the option contract is designed with futures-style margining, and the underlying is a future. With futures-style margining, a fraction of the full amount of the purchase or sale price of the options can be margined with U.S. Treasury bills instead of using cash. Interest would not be a factor because there is no cash flow. In this example, the dividend, although not specified, happens to be equal to the present cost of carry so that for today:  $k + c = u + p$ .

at the *ask* price) for example, comes from transacting the trades. If  $(k + c)$  and  $(u + p)$  are not equal, then a profit or loss is made. If either side of the equation is sold for a higher price than the other is bought, then the trader has locked in a profit. The following two examples illustrate profitable trades. Each generates a .25 credit (received) on the three-legged transaction, that is, a profit. The option prices in the examples are different for the reversal than they are for the conversion. If they were the same then one of the trades would have had to have been done for a .25 debit (paid), that is a loss.

For the following examples, assume that the theoretical values (TV)<sup>8</sup> for the options at the stock price of 101.00 are 2.00 for the call and 1.00 for the put.

Reversal example:

The  $c$  is bought at 1.85 when the market is 1.85 (bid) – 2.15 (ask)

The  $u$  is sold (shorted) at 101.00

The  $p$  is sold (shorted) at 1.10 when the market is .90 – 1.10

Consider that the  $k$  is bought at 100.00. It represents the stock's purchase price at expiration because the trader will either exercise the 100 call if it is in the money or be assigned on the 100 put if it is in the money. So:

$k + c$	versus	$u + p$
100 + 1.85 paid	and	101.00 + 1.10 received
101.85 debit	add	102.10 credit
Net Result: .25 credit		

Therefore, the net result is a reversal that has been executed for a .25 credit (received). Since  $k$  and  $c$  were bought cheaper than  $u$  and  $p$  were sold, the reversal was traded for a profit.

Conversion example:

The  $c$  is sold (shorted) at 2.15 when the market is 1.85 (bid) – 2.15 (ask)

The  $u$  is bought at 101.00

The  $p$  is bought at .90 when the market is .90 – 1.10

---

<sup>8</sup> **Theoretical Value**

An estimated price of a call or put derived from a mathematical model, such as the Black-Scholes or binomial models.

Consider that the  $k$  is sold at 100.00. Again, it represents the stock's sale price at expiration because the trader will either be assigned on the call if it is in-the-money (ITM), or exercise the put if it is in-the-money. So:

$k + c$	versus	$u + p$
100 + 2.15 received	and	101.00 + .90 paid
102.15 credit	add	101.90 debit
Net Result: .25 credit		

Therefore, the net result is a conversion that has been executed for a .25 credit (received). Since  $u$  and  $p$  were bought cheaper than  $k$  and  $c$  were sold, the conversion was traded into for a profit.

At this point, there is very little to worry about for a while but by the time expiration approaches, pin risk<sup>9</sup> may become a problem and perhaps there will be an opportunity for an early exercise depending on where the stock is trading at the time. Details on these factors and more in Chapter 3.

## PUT-CALL PARITY

Put-call parity is an equation used in option pricing models to describe the relationship between puts and calls. If you have the call or put price you could derive the other by using this equation. Position dissection uses it to prove that a dissected position has the same risk profile as the original raw position. To show you a simple way to prove the put-call parity, I will use the fair values from the last example for a conversion ( $+u + p - c$ ). The call price is 2.00, the put price is 1.00, and the underlying is 101.00. More scientific approaches can be found in other options books that emphasize the mathematical equations<sup>10</sup>. Here is a simple way to understand that this conversion basically does not make or lose

---

### <sup>9</sup> Pin Risk

The risk to a trader who is short an option that, at expiration, the underlying stock price is equal to (or "pinned to") the short option's strike price. If this happens, he will not know whether he will be assigned on his short option. The risk is that the trader doesn't know if he will have no stock position, a short stock position (if he was short a *call*), or a long stock position (if he was short a put) on the Monday following expiration and thus be subject to an adverse price move in the stock.

### <sup>10</sup> Mathematical Equations

*Option Pricing and Investment Strategies* by Richard M. Bookstaber, 3rd ed. pp. 28–29.

anything by expiration irrespective of where the underlying settles owing to the put-call parity.

By performing “what-if” analyses, it can be determined that the position breaks even at all levels. Begin by checking, for example, at 101.00 (the current stock price), 100.00 (the strike price), and then twice the strike price at 200.00 and half the strike price at 50.00. What is the theoretical value and P&L at each of these price levels for the three instruments traded? What is their sum? If the sum is zero then there is no profit or loss.

In Exhibit 1–1, the theoretical value at each of the test levels is determined. If the option is in the money, it is worth the intrinsic value, which is the difference between the strike and the underlying price. If the option is out of the money, it is worthless. Remember that the underlying was bought at 101.00, the 100 put was bought at a fair value of 1.00, and the 100 call was sold at a fair value of 2.00.

The trade in Exhibit 1–1 will be worth zero at expiration. It follows that if either spread in the previous reversal and conversion examples was executed for a .25 credit, there would be a .25 profit. Notice also that the mnemonic, CUP can be used to remember this type of what-if example. How full will your CUP be after the trade?

### E X H I B I T 1 – 1

+u at 101 / +100p at 1 / –100c at 2 (The slashes “/” represent position separators).

	@ 50 TV P&L	@ 100 TV P&L	@ 101 TV P&L	@ 200 TV P&L
c	0 + 2	0 + 2	1 + 1	100 – 98
u	50 – 51	100 – 1	101 0	200 + 99
p	50 + 49	0 – 1	0 – 1	0 – 1
sum	0	0	0	0

In reality, locks do not usually trade at expiration unless they are at the money (to avoid pin risk). Consider the calculations in Exhibit 1–2. Unlike the last example, this assumes an exercise of the in-the-money option. At expiration there is an exercise (X). The trader delivers the stock, that is, the  $k$  is sold at 100.00. The premium of the exercised option is retained in a short option and lost in a long option.

Notice that the end result is again zero, which proves that this particular conversion is flat.

---

**E X H I B I T 1 – 2**


---

Exercise to Deliver the Underlying Stock at a Sales Price of 100  
 +u at 101 / +100p at 1 / - 100c at 2 / -k at 100

	@ 50	@ 100	@ 101	@ 200
	TV P&L	TV P&L	TV P&L	TV P&L
c	0 + 2	0 + 2	X + 2	X + 2
u	50 - 51	100 - 1	101 0	100 + 99
p	X - 1	0 - 1	0 - 1	0 - 1
k	100 + 50	no X* 0	100 - 1	100 - 100
sum	0	0	0	0

\*Pin Risk. Assume no exercise and cover short stock at 100

### POSITION DISSECTION 101

Position dissection works under the premise that locked positions such as conversions, reversals, and boxes can be removed from the position because they are basically neutral and can be used as filters to uncover and detect different aspects about a position that may not at first be apparent. Dissection allows the user to alter his or her perception of a position in order to have more information about how to proceed with a trade and measure risk.

Begin by carding up the position, which simply means to write it down. The origin of the word carding comes from the trading floors where many traders still use position cards to keep track of their positions.

There are numerous ways to card up trades and account for position changes, but the format used in this book will be easy to follow and consistent. Whichever way works best for the individual is fine as long as it is methodical and consistent. It is strongly recommended, however, that in the beginning trades be written down and the synthesis performed by hand even though most traders have access to computers. This promotes understanding and makes it easier to memorize the position. All positions will be displayed in the format shown in Exhibit 1–3. “Raw” refers to the actual position. “Net” refers to the position after dissection or synthesis.



strongly recommended that net contracts be checked following each stage of the dissection.

### COMMON LOCKS CARDED UP

In Exhibit 1–4, section A, one can see that a conversion (top) is the exact opposite of a reversal (bottom). Sometimes the spread is referred to by one name: conversion/reversal. Section B shows a long box (top) and short box (bottom). Section C shows a long jelly roll (top) and short jelly roll (bottom). The top jelly roll is regarded as long because it is long time (long the further dated combo<sup>11</sup> and short the near term). The opposite is true for the short jelly roll.

## E X H I B I T 1 – 4

Position Configurations																																															
<p><b>May 99 Conversion</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="3">May</td></tr> <tr><td colspan="3">+1u</td></tr> <tr><td style="border: none;"> </td><td style="text-align: center;">99</td><td style="border: none;"> </td></tr> <tr><td style="text-align: center;">1</td><td></td><td style="text-align: center;">1</td></tr> </table>	May			+1u				99		1		1	<p><b>Long May 98/99 Box</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="3">May</td></tr> <tr><td style="border: none;"> </td><td style="text-align: center;">98</td><td style="border: none;"> </td></tr> <tr><td style="text-align: center;">1</td><td></td><td style="text-align: center;">1</td></tr> <tr><td style="border: none;"> </td><td style="text-align: center;">99</td><td style="border: none;"> </td></tr> <tr><td style="text-align: center;">1</td><td></td><td style="text-align: center;">1</td></tr> </table>	May				98		1		1		99		1		1	<p><b>Long May/June 99 Jelly Roll</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="3">May</td></tr> <tr><td style="border: none;"> </td><td style="text-align: center;">99</td><td style="border: none;"> </td></tr> <tr><td style="text-align: center;">1</td><td></td><td style="text-align: center;">1</td></tr> <tr><td colspan="3">June</td></tr> <tr><td style="border: none;"> </td><td style="text-align: center;">99</td><td style="border: none;"> </td></tr> <tr><td style="text-align: center;">1</td><td></td><td style="text-align: center;">1</td></tr> </table>	May				99		1		1	June				99		1		1
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<sup>11</sup> Combo

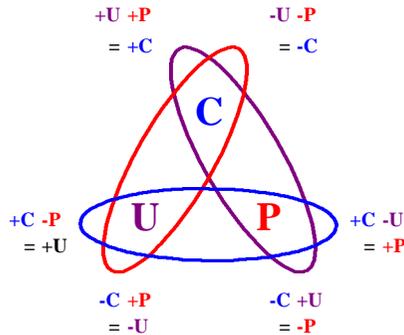
Trading jargon for a combination. Usually refers to a same strike call and put “combo” where one is long and the other is short, creating synthetic underlying and is often another term for synthetic stock. When synthetic stock, a combo must be composed of *calls* and *puts* on the same stock, strike price and expiration. The amount of long options and short options nets out to zero. Buying a combo is buying synthetic stock; selling a combo is selling synthetic stock. For example, a long 60 combo is long 1\*60 call and short 1\*60 *put*. Another type of combo can consist of options at two different strikes in which case it would not be synthetic stock.

An examination of the use of a simple conversion or reverse conversion (reversal) to “synthesize out” a different position shows you something about the risk that may not have been perceived before the dissection process.

Once the properties of put-call parity are understood, it will be easy to understand that long a call is equal to long underlying and long a put of the same strike ( $+c = +u + p$ ).

If	$+c = +u + p$	then;	$-c = -u - p$
and	$+p = +c - u$	and	$-p = -c + u$
and	$+u = +c - p$	and	$-u = -c + p$

Therefore, a conversion  $= +u + p - c = 0$  and  
 a reversal  $= -u - p + c = 0$ .



Any of the individual components,  $c$ ,  $u$  or  $p$  by itself can be emulated by the other two components, with the plus sign for long and the minus sign for short the conversion/reversal. For example, as illustrated above, the  $c$  on its own equals the  $u$  and the  $p$  grouped together in an oval. Specifically, when the  $u$  and the  $p$  are both long it equals a long  $c$  (displayed to the upper left of the big C) and when the  $u$  and  $p$  are both short they equal a short  $c$  (displayed to the upper right of the big C).

Since a conversion is the exact opposite of a reversal, the spread will sometimes be referred to as a conversion/reversal (C/R) when it is not specifically one or the other.

## TOOLS FOR DISSECTION

The two tools that are used most frequently in this book for position dissection are the synTool, which takes out conversions and reversals, and the box tool which removes boxes.

synTool        boxTool    

Using the boxTool is basically taking out a conversion at one strike and a reversal at the other, without the underlying positions that would offset each other. Once one of these locked positions is removed from the position, we can then see a new position. The C/R and box positions are referred to as zero-sum spreads, meaning they are basically flat.

A trader should remain cognizant that C/Rs and boxes have some additional, contract-specific risks. These risks should not be ignored because they are still alive, even though they represent a lower priority than the risk that the trader wishes to focus on. Once it has been established where the biggest fire is burning the trader's position, and that has been dealt with, lesser problems can be attended to. The trader develops a hierarchy of risks, including C/Rs and boxes, so that the focus remains on the imminent danger, the most risky aspect of his position. The trader may not be able to attend to lower priorities, but at least he or she will be in control of the major risk of the position.

By using three synTools, one can remove C/Rs from the position with an *imaginary* trade. It may seem strange to do this, especially if there is no complete C/R in the position. When a position is synthesized, the intent is to view that position differently and thereby gain a new awareness for future adjustments. The awareness comes from turning some calls into puts at the same strike, and at another strike turning the puts into calls. Any long underlying (+  $u$ ) is turned into a long combo meaning (+  $c - p$ ) usually and any (-  $u$ ) is turned into a short combo (-  $c + p$ ). The underlying does not always have to be changed into a combo. Sometimes a (+  $c$ ) may be turned into a (+  $u + p$ ), or a (+  $p$ ) into a (+  $c - u$ ) depending on the situation.

To be used properly, the synTools must be used in a group of three (imaginary trades) for much the same reason that in accounting there is an offsetting credit for every debit. If a bookkeeper posts a debit, a credit has to be posted somewhere or the books are out of balance. If one part of the synTool is missing, the position will be out of balance and not

synthetic to the raw position. This will result in a misperception of the actual position.

The trades using the synTools in effect form a template, which yield a synthetic position when overlaid on an existing position. Used another way, that is with a different amount, or at another strike, or used in reverse, yields another synthetic version of the trade. It is up to the trader to decide how the position is best viewed. This choice will vary among traders according to styles, current objectives, and experience; irrespective of how the position is viewed, it is the same as its synthetic versions. The way the trader views his or her position depends on the time in the expiration cycle, the price level of the underlying, the implied volatilities, the implied volatility skew<sup>12</sup> shape, and the trader's market objectives.

**Example:** How can long 20 Oct 50 calls and short 1000 underlying (+20 Oct 50c / -1000u), be +10\*50 straddle? (The asterisk ' \* ' is used to separate quantity from contract). First, the trader cards up the position as shown in Exhibit 1–5, then it is synthesized as shown in Exhibit 1–6.

### E X H I B I T 1 – 5

+20 Oct 50c / -1000 u As Carded-Up

$nc$ +   -   	$rc$ +   - 20     +10 (+20c - 10u)	$-1000$  50  	$rp$ +   -     +10 ( - 10u)	$np$ +   -   
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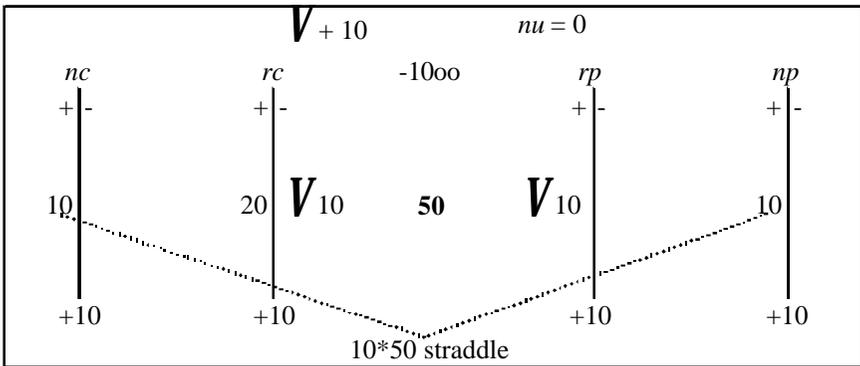
#### <sup>12</sup> Implied Volatility Skew

The implied volatility skew shape, which is often called the skew or the smile, refers to the graph of implied volatility levels plotted against each strike for a given month. *Volatility skew*, or just “skew”, arises when the implied volatilities of options in one month on one stock are not equal across the different *strike* prices. For example, there is skew in XYZ April options when the 80 strike has an implied volatility of 45%, the 90 strike has an implied volatility of 47%, and the 100 strike has an implied volatility of 50%. If the implied volatilities of options in one month on one stock ARE equal across the different strike prices, the skew is said to be “flat”. You should be aware of volatility skew because it can dramatically change the risk of your position when the price of the stock begins to move.

The trader has applied a locked strategy—a conversion with an imaginary trade—to the position, canceling out as much intrinsic value as possible and leaving a long straddle. If 10 actual conversions were traded, the position would result in a raw position of 10 long straddles. The conversion synthesis applied has removed the embedded reversal from the position. For risk control, the straddle becomes the first priority and the reversal becomes the second.

**EXHIBIT 1 – 6**

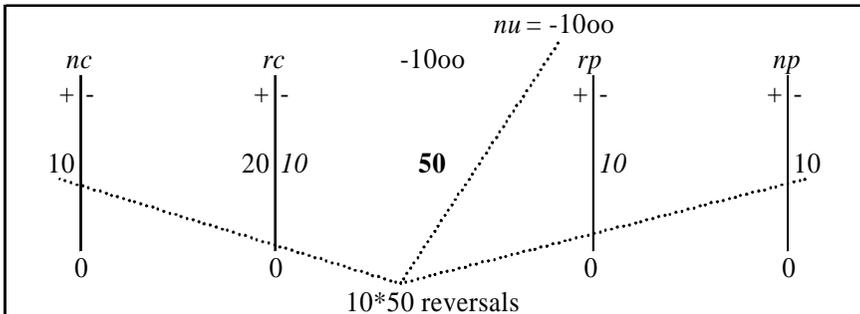
+10 Synthetic Straddles  
 After Dissecting Out 10 Reversals by an Imaginary Trade of 10 Conversions



To prove that there is a reversal embedded in the position, notice the original raw position, long 20 Oct 50 calls and short 1000 underlying (+20 Oct 50c -1000ou), but this time, the trader sells 10 straddles in an actual trade (actual trades will be italicized in Exhibit 1–7). The resulting position is 10\*50 reversal.

**EXHIBIT 1 – 7**

10\*50 Reversals as a Result of Selling 10 Actual Straddles

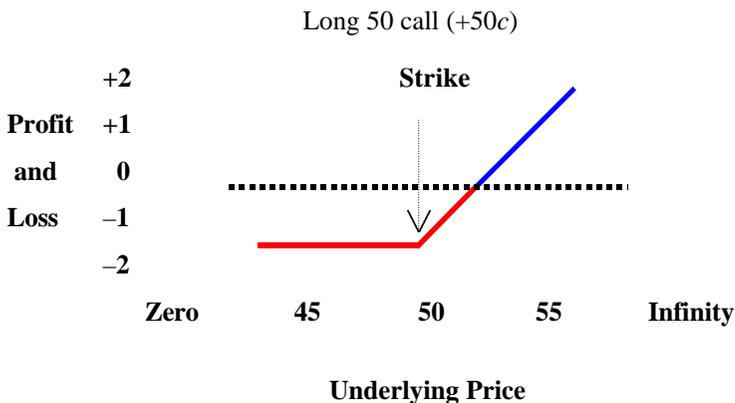


It does not matter whether a set of three synTools are used first or a set of four boxTools, as long as each is a complete set and the proper longs and shorts are adhered to.

### SYNTHETIC ALTERNATIVES

This area includes many of the typical theoretical hockey-stick graphs (risk profiles) presented in the pamphlets put out by exchanges, banks, and brokerage houses, and in other books on options, as well as on many web sites. Rather than reinvent the wheel, the graphs are provided as a reference for the synthetics that apply to them. In the area below, the dashed line represents the area of loss while the area above the dashed line represents the area of profit. The vertical-axis represents the potential profit and loss as the underlying price changes along the horizontal-axis. It should be made clear that when discussing a position, (e.g. long a 50 call in Exhibit 1–8), it can refer to the risk profile of one of two positions: a long 50 call (+50c), or a spread combination of long underlying and a long 50 put (+ u / +50p). Both positions are virtually identical and have the same risk profile.

#### EXHIBIT 1 – 8

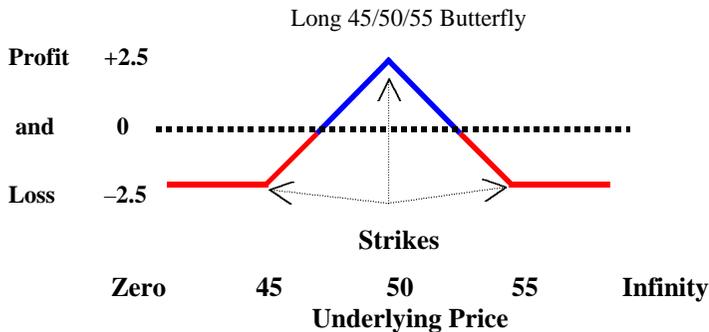


Long 10\*50 butterfly<sup>13</sup> or +10\*45/50/55 butterfly, means that the position is +1\*45 / -2\*50 / +1\*55 butterfly, 10 times. Details of whether

<sup>13</sup> Butterfly Risk Profile

it is a *call* butterfly or *put* butterfly or *iron* butterfly<sup>14</sup> are not specified because they all have the same basic expiration butterfly risk profile as shown in Exhibit 1–9.

### EXHIBIT 1 – 9



This long butterfly risk profile can result from an infinite amount of contract combinations. The following is a list of 10 examples of long 45/50/55 butterfly, 10 times. The first 4 are the most common and are usually executed as 2 vertical<sup>15</sup> spreads. The next 3 positions could have started off as long stock and later been hedged off with a married put<sup>16</sup>. Further trades would then have resulted in the long butterflies. The last 3 are example positions that could have started off with bullish long calls (in bold italics) and subsequently turned into bearish long puts by shorting the stock (also in bold italics). Again, further trades would then have resulted in the long butterflies.

---

The various butterfly risk profiles (call, put, and iron), though slightly different due to exercise and other market nuances, are for all intents and purposes the same.

#### <sup>14</sup> Iron Butterfly

An iron butterfly will be long or short according to its “wings,” that is, long the wings or outer strikes means the butterfly is long, and vice versa.

#### <sup>15</sup> Vertical Spreads

A bull spread and a bear spread

#### <sup>16</sup> Married Put

A long put that goes with long stock creates a hedge. The whole package emulates a long call (see long call diagram on p.16).

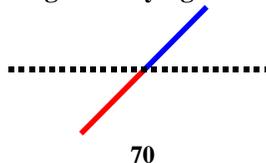
### 10 Examples of Long 10\*45/50/55 Butterflies

1.  $+10*45c / -20 *50c / +10*55c$  Call Butterfly
2.  $+10*45p / -20 *50p / +10*55p$  Put Butterfly
3.  $+10*45p / -10 *50p / -10*50c / +10*55c$  Iron Butterfly
4.  $+10*45c / -10 *50c / -10*50p / +10*55p$  Gut Iron Butterfly
5.  $+10*45p / -20 *50c / +10*55c / +1000*u$  Call Butterfly using *Synthetic 45c*
6.  $+10*45p / -20 *50c / +10*55p / +2000*u$  Call Butterfly using *Synthetic 50c*
7.  $+10*45c / -20 *50c / +10*55p / +1000*u$  Call Butterfly using *Synthetic 55c*
8.  $+10*45c / -20 *50p / +10*55p / -1000*u$  Put Butterfly using *Synthetic 45p*
9.  $+10*45c / -20*50p / +10*55c / +2000*u$  Call Butterfly using *Synthetic 50p*
10.  $+10*45p / -20 *50p / +10*55c / -1000*u$  Put Butterfly using *Synthetic 55p*

The next section is intended for review. It is a compilation of the basic expiration risk profiles, each with the associated synthetics (common alternative configurations<sup>17</sup>) in parenthesis.

### THE RISK PROFILES

#### Long Underlying

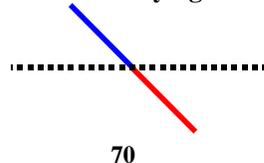


Long Underlying (+u)

Long 70 Combo

(Long 70 Call / Short 70 Put) (+70c / -70p)

#### Short Underlying



Short Underlying (-u)

Short 70 Combo

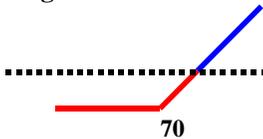
(Short 70 Call / Long 70 Put) (-70c / +70p)

#### <sup>17</sup> Common Alternative Configurations

Examples involving one strike will use the 70 strike. Obviously, what works for the 70 strike also works for the 75, 80, 85, and 90 strikes.

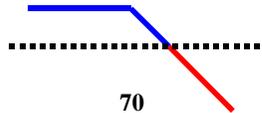
Examples involving two strikes will use the 70 / 75 strikes. What works for the 70 / 75 strikes also works for the 75 / 80, 80 / 85, 85 / 90, as well as the skip "one" strike relationships, namely the 70 / 80, 75 / 85, 80 / 90. It is perhaps necessary to mention that it also works for skip "two" and "three" strike relationships, etc. Examples involving three strikes will use the 70 / 75 / 80 strikes. Examples involving four strikes will use the 70 / 75 / 80 / 85 strikes. Examples involving five strikes will use the 70 / 75 / 80 / 85 / 90 strikes.

**Long Call**



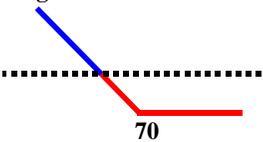
Long 70 Call (+70c)  
 Long 70 Put / Long Underlying (+70p / +u)  
 “Married Put”

**Short Call**



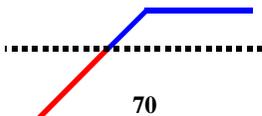
Short 70 Call (-70c)  
 Short 70 Put / Short Underlying (-70p / -u)  
 “Covered Write”

**Long Put**



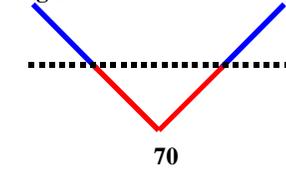
Long 70 Put (+70p)  
 Long 70 Call / Short Underlying (+70c / -u)

**Short Put**



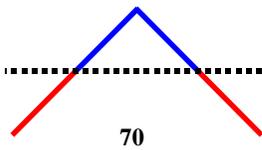
Short 70 Put (-70p)  
 Short 70 Call / Long Underlying (-70c / +u)

**Long Straddle**



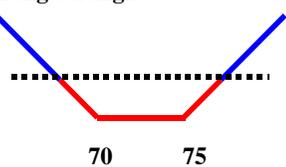
Long 70 Straddle  
 Long 70 Call / Long 70 Put (+70c / +70p)  
 Long 2\*70 Calls / Short Underlying  
 (+2\*70c / -u)  
 Long 2\*70 Puts / Long Underlying  
 (+2\*70p / +u)

**Short Straddle**



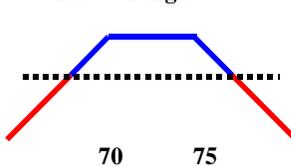
Short 70 Straddle  
 Short 70 Call / Short 70 Put (-70c / -70p)  
 Short 2\*70 Calls / Long Underlying  
 (-2\*70c / +u)  
 Short 2\*70 Puts / Short Underlying  
 (-2\*70p / -u)

**Long Strangle**

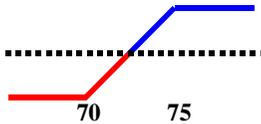


Long 70/75 Strangle  
 Long 70s and Long 75s  
 Long 70 Put / Long 75 Call (+70p / +75c)  
 Long “Guts” Strangle  
 Long 70 Call / Long 75 Put (+70c / +75p)

**Short Strangle**



Short 70/75 Strangle  
 Short 70s and Short 75s  
 Short 70 Put / Short 75 Call (-70p / -75c)  
 Short “Guts” Strangle  
 Short 70 Call / Short 75 Put (-70c / -75p)

**Bull Spread**

70/75 "Bull Spread"

*Long 70s and Short 75s*

Long "Call Spread" or Long Call "Vertical"

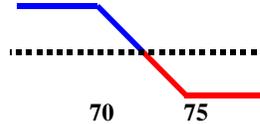
Long 70 Call / Short 75 Call (+70c / -75c)

Short "Put Spread" or Short Put "Vertical"

Long 70 Put / Short 75 Put (+70p / -75p)

"Fence", "Tunnel" or "Collar"

Long Underlying / Long 70p / Short 75c

 $(+u / +70p / -75c)$ **Bear Spread**

70/75 "Bear Spread"

*Short 70s and Long 75s*

Long "Put Spread" or Long Put "Vertical"

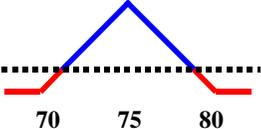
Short 70 Put / Long 75 Put (-70p / +75p)

Short "Call Spread" or Short Call "Vertical"

Short 70 Call / Long 75 Call (-70c / +75c)

"Reverse Fence," or "Reverse Collar"

Long Underlying / Short 70c / Long 75p

 $(+u / -70c / +75p)$ **Long Butterfly**

Long 75 Butterfly

*Long 70s, Short 75s, Long 80s*

Long "Call" Butterfly

Long 70 Call / Short 2\*75 Calls /

Long 80 Call

 $(+70c / -2*75c / +80c)$ 

Long "Put" Butterfly

Long 70 Put / Short 2\*75 Puts

Long 80 Put

 $(+70p / -2*75p / +80p)$ Long "Iron" Butterfly<sup>15</sup>

Long 70 Put / Short 75 Put /

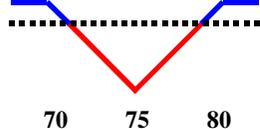
Short 75 Call / Long 80 Call

 $(+70p / -75p / -75c / +80c)$ 

Long "Gut Iron" Butterfly

Long 70 Call / Short 75 Put /

Short 75 Call / Long 80 Put

 $(+70c / -75c / -75p / +80p)$ **Short Butterfly**

Short 75 Butterfly

*Short 70s, Long 75s, Short 80s*

Short "Call" Butterfly

Short 70 Call / Long 2\*75 Calls /

Short 80 Call

 $(-70c / +2*75c / -80c)$ 

Short "Put" Butterfly

Short 70 Put / Long 2\*75 Puts /

Short 80 / Put

 $(-70p / +2*75p / -80p)$ 

Short "Iron" Butterfly

Short 70 Put / Long 75 Put /

Long 75 Call / Short 80 Call

 $(-70p / +75p / +75c / -80c)$ 

Short "Gut Iron" Butterfly

Short 70 Call / Long 75 Put /

Long 75 Call / Short 80 Put

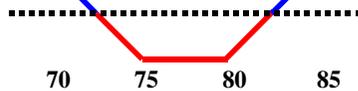
 $(-70c / +75c / +75p / -80p)$

**Long Condor**



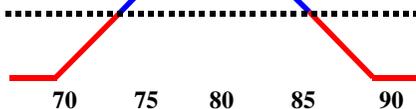
Long 70/75/80/85 Condor  
 Long 70s, Short 75s, Short 80s, Long 85s  
 Long “Call” Condor  
 Long 70 Call / Short 75 Call /  
 Short 80 Call / Long 85 Call  
 (+70c / -75c / -80c / +85c)  
 Long “Put” Condor  
 Long 70 Put / Short 75 Puts /  
 Short 80 Put / Long 85 Put  
 (+70p / -75p / -80p / +85p)  
 Long “Iron” Condor  
 Long 70 Put / Short 75 Put /  
 Short 80 Call / Long 85 Call  
 (+70p / -75p / -80c / +85c)  
 Long “Gut Iron” Condor  
 Long 70 Call / Short 75 Call /  
 Short 80 Put / Long 85 Put  
 (+70c / -75c / -80p / +85p)

**Short Condor**



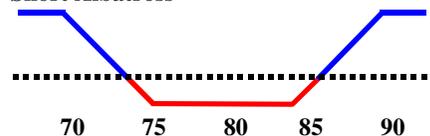
Short 70/75/80/85 Condor  
 Short 70s, Long 75s, Long 80s, Short 85s  
 Short “Call” Condor  
 Short 70 Call / Long 75 Call /  
 Long 80 Call / Short 85 Call  
 (-70c / +75c / +80c / -85c)  
 Short “Put” Condor  
 Short 70 Put / Long 75 Puts /  
 Long 80 Put / Short 85 Put  
 (-70p / +75p / +80p / -85p)  
 Short “Iron” Condor  
 Short 70 Put / Long 75 Put /  
 Long 80 Call / Short 85 Call  
 (-70p / +75p / +80c / -85c)  
 Short “Gut Iron” Condor  
 Short 70 Call / Long 75 Put /  
 Long 80 Call / Short 85 Put  
 (-70p / +75p / +80c / -85p)

**Long Albatross**



Long 70/75/80/85/90 Albatross  
 Long 70s, Short 75s, Short 85s, Long 90s  
 Long “Call” Albatross  
 Long 70 Call / Short 75 Call /  
 Short 85 Call / Long 90 Call  
 (+70c / -75c / -85c / +90c)  
 Long “Put” Albatross  
 Long 70 Put / Short 75 Put /  
 Short 85 Put / Long 90 Put  
 (+70p / -75p / -85p / +90p)  
 Long “Iron” Albatross  
 Long 70 Put / Short 75 Put /

**Short Albatross**

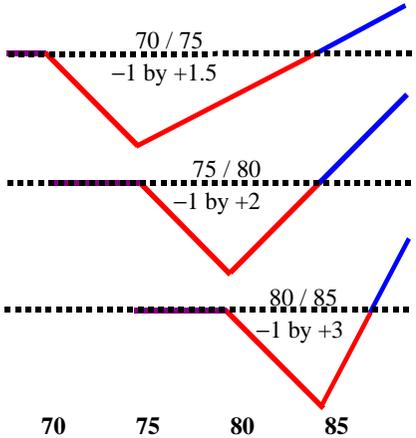


Short 70/75/80/85/90 Albatross  
 Short 70s, Long 75s, Long 85s, Short 90s  
 Short “Call” Albatross  
 Short 70 Call / Long 75 Call /  
 Long 85 Call / Short 90 Call  
 (-70c / +75c / +85c / -90c)  
 Short “Put” Albatross  
 Short 70 Put / Long 75 Put /  
 Long 85 Put / Short 90 Put  
 (-70p / +75p / +85p / -90p)  
 Short “Iron” Albatross  
 Short 70 Put / Long 75 Put /

Short 85 Call / Long 90 Call  
 Call (+70p / -75p / -85c / +90c)  
 Long "Gut Iron" Albatross  
 Long 70 Call / Short 75 Call /  
 Short 85 Put / Long 90 Put  
 Put (+70c / -75c / -85p / +90p)

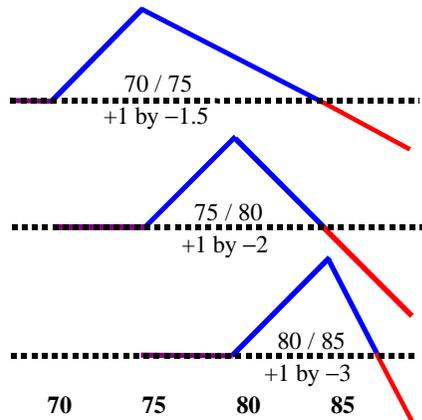
Long 85 Call / Short 90  
 (-70p / +75p / +85c / -90c)  
 Short "Gut Iron" Albatross  
 Short 70 Call / Long 75 Put /  
 Long 85 Call / Short 90  
 (-70p / +75p / +85c / -90p)

**Call Back Spread\***



"Call Back (LongMore) Spread"  
 Short the lower strike, Long a greater  
 quantity of the higher strike options  
 (- Lower K c / + More Higher K c)

**Call Ratio Spread\***



"Call Ratio (ShortMore) Spread"  
 Long the lower strike, Short a greater  
 quantity of the higher strike options  
 (+ Lower K c / - More Higher K c)

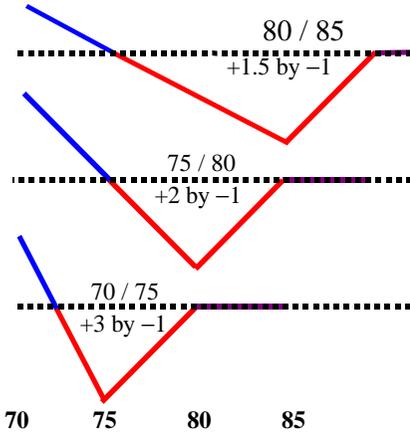
\* These three examples each assume the spread was executed at an even money (no debit or credit) cost represented by the left part of the spread profile being equal to and overlapping the dashed zero profit and loss line:

The top spread profile represents the 70/75 spread with a ratio of 1:1.5 (1/ 1.5).

The middle spread profile represents the 75/80 spread with a ratio of 1:2 (1/2).

The bottom spread profile represents the 80/85 spread with a ratio of 1:3 (1/ 3).

**Put Back Spread\***



“Put Back (LongMore) Spread”

*Short the higher strike, Long a greater quantity of the lower strike options*

(-Higher K c / + More Lower K c)

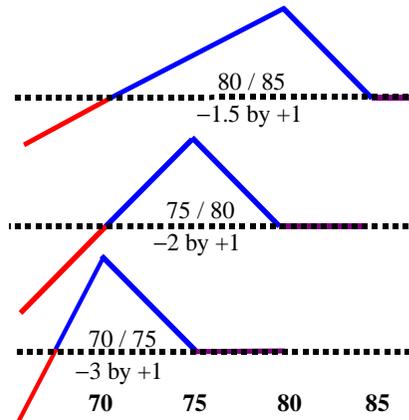
\* These three examples each assume the spread was executed at an even money (no debit or credit) cost represented by the left part of the spread profile being equal to and overlapping the dashed zero profit and loss line:

The top spread profile represents the 80/85 spread with a ratio of 1:1.5 (1/ 1.5).

The middle spread profile represents the 75/80 spread with a ratio of 1:2 (1/2).

The bottom spread profile represents the 70/75 spread with a ratio of 1:3 (1/ 3).

**Put Ratio Spread\***

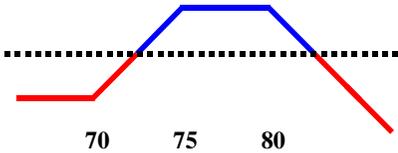


‘Put Ratio (ShortMore) Spread’

*Long the higher strike, Short a greater quantity of the lower strike options*

(+Higher K c / - More Lower K c)

**Call Christmas Tree**

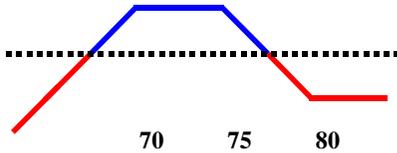


Long Call Christmas Tree

*Long 70s, Short 75s, Short 80s*

Long 70 Call / Short 75 Call / Short 80 Call  
(+70c / -75c / -80c)

**Put Christmas Tree**

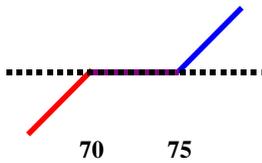


Long Put Christmas Tree

*Short 70s, Short 75s, Long 80s*

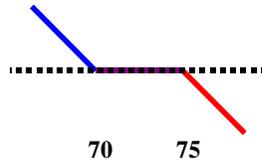
Short 70 Put / Short 75 Put / Long 80 Put  
(-70p / -75p / +80p)

**Long SemiStock**



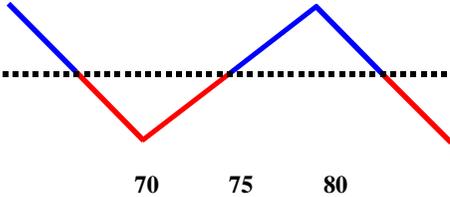
Long "SemiStock"  
 Short 70s and Long 75s  
 Short 70 Put / Long 75 Call ( $-70p / +75c$ )  
 Long Underlying /  $-70 / +75$  Bear Spread  
 (both  $c$  or both  $p$ )

**Short SemiStock**



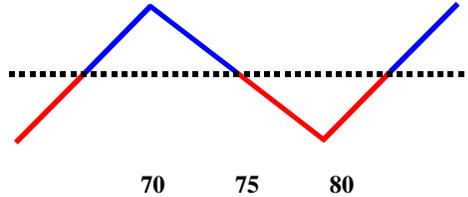
Short "SemiStock"  
 Long 70s and Short 75s  
 Long 70 Put / Short 75 Call ( $+70p / -75c$ )  
 Short Underlying /  $+70 / -75$  Bull Spread  
 (both  $c$  or both  $p$ )

**Risk Conversion**



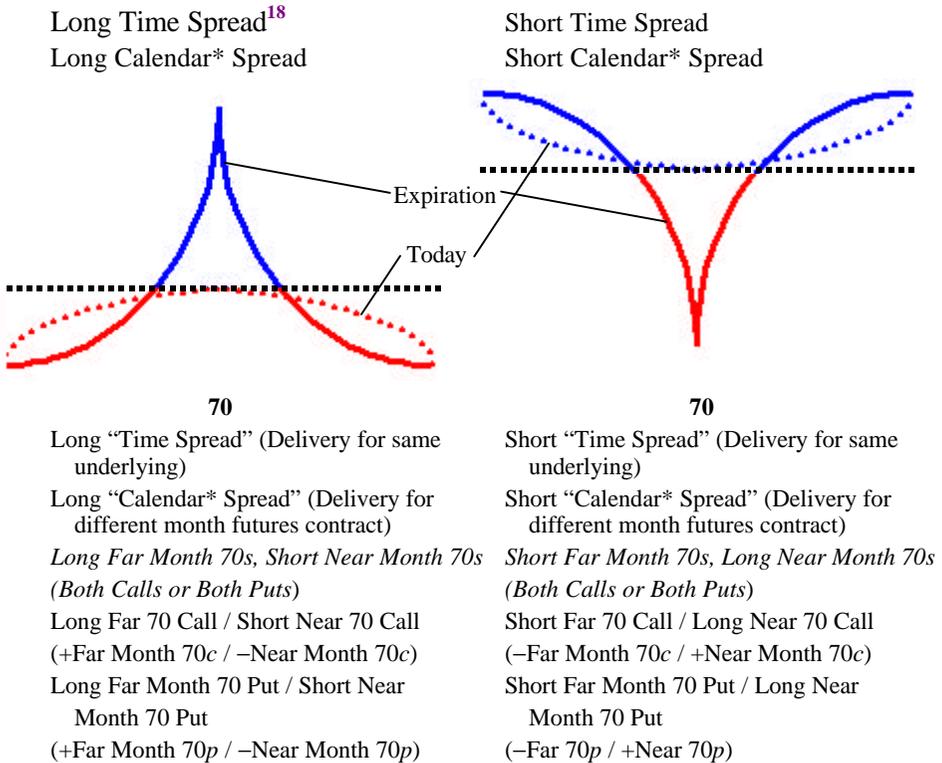
"Risk" Conversion  
 Long 70s and Short 80s  
 Long some 70 Puts / Short equal amount  
 of 75 Calls / Long an appropriate amount  
 of Underlying in order to be Delta Neutral  
 ( $+X*70p / -X*75c / +u$ ) [Delta Neutral]  
 Bull Spread / Short Underlying  
 (Delta Neutral)  
 ( $+70s / -80s / +u$ ) both  $c$  or both  $p$   
 (Delta Neutral)

**Risk Reversal**



"Risk" Reversal  
 Short 70s and Long 80s  
 Short some 70 Puts / Long equal amount  
 of 75 Calls / Short an appropriate amount  
 of Underlying in order to be Delta Neutral  
 ( $-X*70p / +X*75c / -u$ ) [Delta Neutral]  
 Bear Spread / Long Underlying  
 (Delta Neutral)  
 ( $-70s / +80s / -u$ ) both  $c$  or both  $p$   
 (Delta Neutral)

## OTHER RISK PROFILES



There is one more spread called the “Diagonal Spread,” which can be extremely versatile as far as profiles go. It acts like a vertical and a time spread that have been merged.

The graphs in the previous section include many risk profiles that involve two or more strikes. One can use the synTool to achieve all the synthetics presented with them. However, use of the boxTool for dissection can save steps because two strikes are dissected at once. Box dissection can show us some interesting properties about a position.

### <sup>18</sup> Time Spreads and Calendar Spreads

The difference between a calendar spread and a time spread is that in a *calendar spread*, when the options are exercised, each delivers a different futures contract, adding intermonth *spread risk*. (The terms are often used interchangeably or synonymously).

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CHAPTER

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2

**A JUST CAUSE FOR ADJUSTMENTS**

This chapter starts with a realistic series of trades from the perspective of an advanced retail customer. We witness how he speculates and manages a position in a particular stock. His position drastically changes as his market opinion changes. Readers should not be overly concerned about not being able to follow these trades the first time through, because the lessons that follow will help to develop the necessary thought processes to grasp it the second time around. Instead, it might be interesting to note what the reader’s self-assessment might be. Is he or she able to follow the scenario and is it generating new ideas? Moving on, we will get a healthy dose of the thought processes involved in position adjustment in general, and we will see how positions evolve in Options Metamorphosis.

The reader will then be prepared to delve into Chapter 3 for the “Nuts and Bolts of Options”, a more in-depth look into the usefulness of the Greeks.

**TRADING BARRAGE**

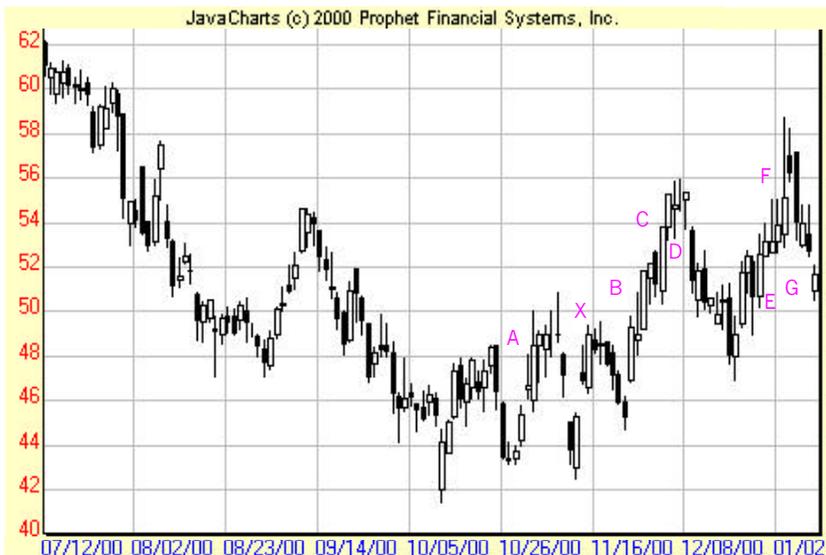
Gil Bates thought XYZ was a good value. It was down by over 50% from its 52 week high in July and Gil, fully clothed, began writing (selling short) 10 August 50 puts naked. When they expired worthless he did the same trade with the September options. In October he did it with the 45 puts and was almost assigned but the stock popped back up above the strike. He went back to the 50 strike again with the November options. Gil’s trades, starting with the Nov 50 puts (Trade A), are denoted on the candlestick chart in Exhibit 2-1. Up until then, all the puts had expired worthless allowing Gil to keep the premium that he had collected. However, in November, on the last day of expiration, the stock was trading at around 48. Gil was assigned, put the stock, and

therefore became long 1000 shares at 50 (Trade X). The stock dropped a few points over the next week but Gil wasn't too worried because he liked the stock long-term and his cost was a lot lower owing to all of the premiums that he had collected over the past few months.

The stock worked its way back to 51 by the next week, so Gil wrote (sold short) 10 January 55 calls (Trade B) giving him a covered write, in anticipation of the market running out of steam. He considered his position, at that point, to be synthetically short 10 Jan 55 puts. That was good because the market rallied further and the real 55 puts traded down to 4.00. He considered covering them (buying them back) at 4.00 because he thought that the market would have trouble getting through a resistance level. He did, however, first look at the price of the Feb 55 puts, Jan and Feb 50 and 60 puts, in case there was a better do (trade). After a little homework, Gil decided that he liked the value of buying the Jan 50/55 put bear spread for 2.00, twice as many times (20) (Trade C) for the same money, rather than buying back the 10 lot of Jan 55 puts for 4.00. This put him into the Jan 50/55 (+1 by -2) put ratio spread, synthetically, 10 times for a total of +10 by -20 (he also carried the Jan 55 conversion 10 times).

## EXHIBIT 2 – 1

Trades by Gil Bates



About a week later, after a breakout fake-out it looked ugly to Gil. He bought another 20 of the Jan 55 puts (Trade D) outright. The market moved lower and then began to bottom out over the next two weeks. Gil decided to buy the Jan 50 calls 20 times (Trade E). After a week of up-ticks he bailed out his 1000 stock (Trade F). It went a little bit higher but failed again, and so when it dropped a few bucks over the next few days he shorted another 30 lot of 50 puts that were almost at-the-money (Trade G).

Gil started to get confused about his position, which is what sometimes happens, and decided to dissect the position that he had. In Exhibit 2-2 we can see a list of the trades and the overall position after each trade.

In Exhibit 2-3 we can see the reasoning behind each trade and the position's basic risk exposure following each trade, by looking at the synthetic relationships.

Further analysis of this position continues on the next page in 'An Argument For Box Dissection'.

**E X H I B I T 2 – 2**

Trades and Overall Position After each Trade

Buy (+) Sell (-)	Trade	Position After the Trade
-10 Nov 55p	A	-10 Nov 55p
+1000 u via eXercise	X	+1000 u
-10 Jan 55c	B	+1000 u / -10 Jan 55c
+20 Jan 55p / -20 Jan 50p	C	+1000 u / -10 Jan 55c / -20 Jan 50p / +20 Jan 55p
+20 Jan 55p	D	+1000 u / -10 Jan 55c / -20 Jan 50p / +40 Jan 55p
+20 Jan 50c	E	+1000 u / +20 Jan 50c / -10 Jan 55c -20 Jan 50p / +40 Jan 55p
-1000 u	F	+20 Jan 50c / -10 Jan 55c -20 Jan 50p / +40 Jan 55p
-30 Jan 50p	G	+20 Jan 50c / -10 Jan 55c -50 Jan 50p / +40 Jan 55p

## E X H I B I T 2 – 3

Reasoning Behind each Trade and the Basic Risk Exposure for Gil Bates

Reasoning	Trade	Basic Risk Exposure
Cheap way to buy stock if assigned	A	Short 10 Nov 55 puts
After several expiration Gil was assigned	X	Long 1000 u
Resistance and to enhance his return	B	Short 10 Jan 55p
Wanted an orderly down move over time	C	(+10 Jan 55p / -20 Jan 50p)
Turned really bearish when rally fizzled out	D	+10 Jan 55p / 20 Jan 50/55 Bear Spreads
Higher low after a bounce	E	Long ratioed 55 straddle (+20c by +10p)
Getting short at double top area	F	Long ratioed 55 straddle (+10c by +20p)
Taking profit but still in a strategy	G	See Exhibit 2 - 4

### AN ARGUMENT FOR BOX DISSECTION

We can see why some market makers want to understand the intricacies of position dissection and go through the process, but what does a retail investor/trader do with this knowledge? Good question! The answer is that one does not necessarily have to get out of the trades that one gets into. By trading different options rather than liquidating the ones one has, the position changes to suit one's new opinion of market conditions. Some adjustments can create a minor change while others can reverse the position completely. The best way to explain this point is continue with the realistic trading scenario, earlier in the chapter, where Gil Bates has had a barrage of trades.

Gil has now got to sort it all out. After a number of trades, the practice of position dissection can help him to determine some possible next moves. It is good to be prepared before the fact. The market takes no prisoners. One has to be decisive and be ready to act fast when a market created opportunity arises. The total premium on the table is \$15,000, but that number is totally misleading. Most of that money is tied up in boxes and is not going anywhere. We shall soon see what remains on the table, but keep in mind that these figures do not include a contingent liability (put side of this position) that could develop as a result of a market drop far below 45. Although it is common for traders to refer to naked puts as having unlimited risk we really cannot say that it is unlimited because the underlying can only go to zero. The raw

position in Exhibit 2-4 shows what trader Gil Bates has on after about two months of trading.

**EXHIBIT 2 – 4**

Gil's Raw Position						
<i>nc</i>	<i>rc</i>	<i>u = 51.00</i>			<i>rp</i>	<i>np</i>
+   -	+   -				+   -	+   -
	20	3.00	<b>50</b>	2.00	50	
	10	1.00	<b>55</b>	5.00	40	
	+10				-10	
Calls Net Value = 5,000 dr. Puts Net Value = 10,000 dr. Total = 15,000 dr.						

Simply, this position is the result of Gil's accumulation of inventory (longs and shorts) that resulted from the market's behavior (in Gil's mind anyway). The market's behavior presented opportunities that advertised, to Gil, values that were, from a risk / reward standpoint, attractive enough to entice him into each trade. There were seven actual trades and one obligatory transaction where an option was assigned (shown as 'Trade X').

There are an infinite number of ways to dissect this position. I will start by introducing four specific ways. These use the boxTool to remove each of the four corners of the box, one at a time. This means that Gil will imaginarily liquidate the +20\*50 calls with an imaginary box trade and see what remains. Gil then will do the same, in a completely new set of dissections, with the -10\*55 calls. He will do the same with the -50\*50 puts and the +40\*55 puts.

Let us review, compare and judge the net positions in Exhibit 2-5. Which of the five looks like the most desirable position to have from a risk management standpoint? Or does the Raw Position, the way it is, seem more manageable?

Although each position has been derived from the Raw Position, the way that each is viewed can undoubtedly lead to different decisions on what the next trades might be.

Examine the dissections 1 through 5, which follow in Exhibits 2-6 to 2-10. They each display the boxTool as a template overlaying the original position to create five new and different perceptions. The

current market prices are listed to help Gil consider his options (alternatives).

**EXHIBIT 2 – 5**

Review and Compare the Net Positions

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"><i>nc</i></td> <td style="width: 33%;"></td> <td style="width: 33%;"><i>np</i></td> </tr> <tr> <td>20</td> <td>50</td> <td>50</td> </tr> <tr> <td>10</td> <td>55</td> <td>40</td> </tr> </table> <p><b>Raw Position</b></p>	<i>nc</i>		<i>np</i>	20	50	50	10	55	40	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"><i>nc</i></td> <td style="width: 33%;"></td> <td style="width: 33%;"><i>np</i></td> </tr> <tr> <td></td> <td>50</td> <td>30</td> </tr> <tr> <td>10</td> <td>55</td> <td>20</td> </tr> </table> <p><b>Dissection 1</b></p>	<i>nc</i>		<i>np</i>		50	30	10	55	20	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"><i>nc</i></td> <td style="width: 33%;"></td> <td style="width: 33%;"><i>np</i></td> </tr> <tr> <td>10</td> <td>50</td> <td>40</td> </tr> <tr> <td></td> <td>55</td> <td>30</td> </tr> </table> <p><b>Dissection 2</b></p>	<i>nc</i>		<i>np</i>	10	50	40		55	30
<i>nc</i>		<i>np</i>																											
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10	55	40																											
<i>nc</i>		<i>np</i>																											
	50	30																											
10	55	20																											
<i>nc</i>		<i>np</i>																											
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	55	30																											
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<i>nc</i>		<i>np</i>																											
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**Dissection 1**

This creates long 10 OTM calls at 1.00 and 10 put ratio spreads, each (+2 by -3) for a 4.00 debit. I prefer to think of the ratios in terms of a common denominator of one and consider that there are 20 spreads (instead of 10), each (+1 by -1.5) instead of (+2 by -3), for a 2.00 debit, i.e. paying 5.00 once and collecting 2.00 one and a half times [which is 3.00] netting out to a 2.00 debit). This method is discussed further in Chapter 5.

**EXHIBIT 2 – 6**

1.) Long 10 OTM Calls at 1.00 Debit and  
a Put Ratio Spread 20\*(+1 by -1.5) at a 2.00 Debit

<i>nc</i>	<i>rc</i>	<i>u</i> = 51.00	<i>rp</i>	<i>np</i>
+ -	+ -		+ -	+ -
10	20	3.00	20	30
	20	50	50	20
	10	1.00	40	20
	20	55	20	
+10	+10		-10	-10
Box Value = 10,000 dr. Calls Net Value = 1,000 dr. Puts Net Value = 4,000 dr.				

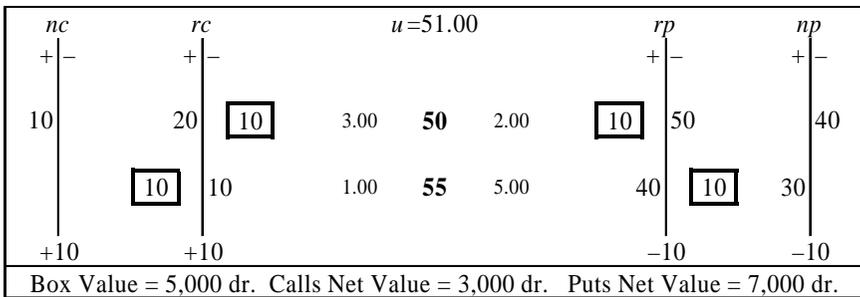
If Gil chooses to view his position as in dissection 1 (Exhibit 2–6), he can easily see that there is some potential liability from the open ended puts, exposure to the downside, and the value of the calls could be lost.

**Dissection 2**

This creates long 10 ITM calls at 3.00 and a put ratio spread (+1 by – 1.33) 30 times for a 2.33 debit (i.e. paying 5.00 once and collecting 2.00 one and a third times [which is 2.67] netting a 2.33 debit).

**EXHIBIT 2 – 7**

2.) Long 10 ITM Calls at 3.00 and a Put Ratio Spread 30\*(+1 by –1.33) at a 2.33 Debit



If Gil chooses to view his position as in *dissection 2* (Exhibit 2–7), and feels like taking a bit of money off the table, he may want to sell 10 of the 50 straddle to be left with a steeper 50/50 put ratio spread (+30 by –50) each (+1 by –1.6) for a 1.80 debit (5.00 minus [1.6\*2.00]).

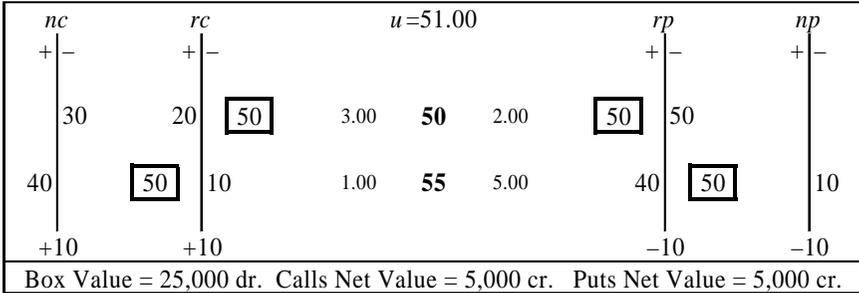
This position could profit in four possible scenarios: a decline in implied volatility, and / or a potential slow move downward to 50, sitting still for a while, or a small rally in the underlying but not above 53.20 because the break-even price is where the 55 puts will still be worth 1.80 at expiration. A move higher would cause some or all the 1.80 per spread to be lost. The worst scenario would be a large gap downward far below the short strike.

**Dissection 3**

This creates 30\*(-1 by +1.33) call back spreads, each at a 1.67 credit and short 10 ITM puts at 5.00 (the back spread is derived by multiplying 1.33 x 1.00 for a debit, versus a credit of 3.00 for the sale of each 50 call).

**EXHIBIT 2 – 8**

3.) 30\*(-1 by +1.33) Call Back Spread at 1.67 Credit and Short 10 ITM Puts at 5.00



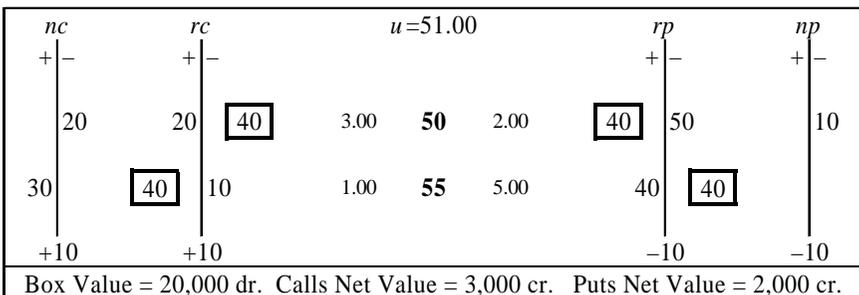
If Gil chooses to view his position as in dissection 3 (Exhibit 2–8), he may want to buy 10\*55p leaving the 30\*(-1 by +1.33) call back spread. This would only be prudent if the trader thought it likely that the underlying would spike up with an extended move, without, or in spite of, a collapse in implied volatility. Breaking down hard would also allow the 1.67 credit to be kept, if both calls go out worthless. A slow move upward to 55 would be the worst case for this position.

**Dissection 4**

This creates 20\*(-1 by +1.5) call back spread at 1.50 credit and short 10 OTM puts at 1.00 (the back spread is derived by multiplying 1.50 x 1.00 for a debit, versus a credit of 3.00 for the sale of each 50 call).

**EXHIBIT 2 – 9**

4.) 20\*(-1 by +1.5) Call Back Spread at 1.50 Credit and Short 10 OTM Puts at 1.00



If Gil chooses to view his position as in dissection 4 (Exhibit 2–9), he may want to buy 10\*50p leaving the 20\*(-1 by +1.5) call back

spread. Again, this would only be prudent if he thought it likely that the underlying would spike up. Since the ratio is not very steep, the rally must be huge, and happen very quickly. A slow move up to 55 would be the worst scenario for this position.

**Dissection 5**

The fifth dissection also uses the boxTool with a quantity other than one of the position quantities (i.e 20 from the 50 calls, 10 from the 55 calls, 50 from the 50 puts, or 40 from the 55 puts) in each of the box's corners. One might use, for example, the average position quantity of the four corners for the dissection or a number that seems to make sense from a position size and ratio aspect. The idea is that the imaginary trade of the box offsets the largest possible quantities of position inventory. In this case, three corners of the box get reduced while both puts maintain their long/short status, and the position of the 50 calls shifts from long to short but reduces in size. The position of the 55 calls shift from short to long, but the quantity increases a bit.

**E X H I B I T 2 – 1 0**

5.)  $10^*(-1 \text{ by } +2)$  Call Back Spread at 1.00 Credit and  $10^*(+1 \text{ by } -2)$  Put Ratio Spread for a 1.00 Debit

<i>nc</i>		<i>rc</i>		<i>u</i> = 51.00				<i>rp</i>		<i>np</i>	
+ -	+ -	+ -	+ -					+ -	+ -	+ -	+ -
10	20	30		3.00	50	2.00	30	50	20		
20	30	10		1.00	55	5.00	40	30	10		
+10	+10						-10	-10			
Box Value = 15,000 dr. Calls Net Value = 1,000 cr. Puts Net Value = 1,000 dr.											

This creates  $10^*(-1 \text{ by } +2)$  call back spread at 1.00 credit (2 x 1.00 debit versus a 3.00 credit) and  $10^*(+1 \text{ by } -2)$  put ratios spread for a 1.00 debit (2 x 2.00 credit, versus a 5.00 debit).

By viewing the position that results from dissection 5 (Exhibit 2-10), it is evident that buying  $10^*45p$  would turn the put side into a long butterfly, which would limit the exposure to an amount equaling the cost of the 45 put. This purchase could easily be financed by capturing excess premium from the sale of up to  $10^*55$  calls. If the trader likes the

value of the butterfly and/or it meets with his or her market opinion, the above dissection leads to a rather simple adjustment.

Following dissection, the trader's choice of position depends on what the he or she feels comfortable with and what meets his or her market objectives. By dissecting the position, the trader is searching for inappropriate aspects of it. This activity serves to optimize the potential of that position.

Dissection can be a valuable tool even for the simplest hedging strategies. When dissecting a position, do not forget about the locks that are removed. To have a complete understanding of synthetic positioning it is necessary to be aware of the nuances involving arbitrage "locks". A locked position is theoretically fully hedged. It is usually not necessary for anyone except market makers and risk managers to know about locks in great detail. The reason that it is mentioned here is that the concept must be accepted as valid before embracing the methods of position dissection. The fact that these positions are not as secure as many believe is of consequence to those only with very sizable positions where a minor loss multiplied by a huge quantity of contracts can really add up.

**Next Move?** Gill needs to be prepared for his next move. What should he do if: the market rallies, the market breaks, if it sits still for a while or he becomes edgy due to uncertainty before an important company information announcement? The thing is to be ready for when a market created opportunity arises.

## ADJUSTMENT ALTERNATIVES

There are various ways to adjust an options position and we now see why many traders seldom get out of their position the way they got into it. How to adjust has traditionally depended on one's commission structure because those paying high commissions (e.g., retail customers) did not adjust so readily. Now that stock and options markets have moved closer toward commission less trading, retail investors can utilize the power of adjusting. There comes a point when it is time to take a profit, take a loss, or exit the trade because the reason for holding the position is no longer valid, and high commissions should no longer keep the retail trader from making the trades.

Whenever traders wish to try something new with options, they should proceed with caution. If they trade too big too soon, they can be ruined. Trading small is best for testing new ideas. When traders start to

profit consistently and are able to manage positions with very little anxiety, it may be time to increase the size of the trades.

Imagine going into a dark cave for the very first time; you would go slowly and feel your way around. If you go too fast, you might trip and either fall into a hole or bang your head on a stalactite. Small steps are best to test the path. Once you have traveled the path enough times and started seeing a new light, you can follow it and can walk a little faster. With more light, you can even run.

**Do What You Know and Know What You Do.  
Do It Right and Be Comfortable With It.**

**MANAGING THE BEAST**

With so many alternatives (*options*) available, it may be prudent to change the “nature of the beast” (i.e., adjust the position) instead of exiting the initial trade due to a new market opinion or pricing considerations. We saw how Gil Bates made his trades but let’s examine closer just what we can do with a simple 10 lot of calls. The following example illustrates when it makes sense to adjust the initial position.

Suppose that a trader has a bullish call position, for example, long the 10 Oct 50 calls at \$2.00, that was initiated when the underlying market was at \$49.00. The market then rallies to \$54.00. The call value has now appreciated by 2.00 to 5.00. Looking at the grid of prices on the next page, the trader can choose from an infinite number of alternative strategies in an attempt to take profits while remaining in the market with a new strategy. Scenarios A to I, which follow, demonstrate some possible strategies. Note: the actual cost<sup>1</sup> and the “fair cost<sup>2</sup>” (prices presently available in the market) will be discussed in the next section.

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<sup>1</sup> **Actual Cost**

Actual or synthetic cost based upon the put call parity equation, assuming cost of carry until expiration equals the dividend:  $k + c = s + p + i - d$ , or **strike + Call price = Stock price + Put price + Interest – Dividend.**

<sup>2</sup> **Fair Cost**

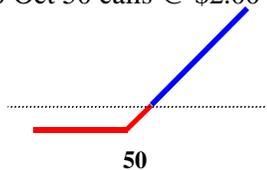
This is what it would cost to put the position on at present market prices. This term is only used when the trader decides to make an options trade as an adjustment to an existing position. Since the position being adjusted has been executed in the past, one would make a biased evaluation (in the present) if they used prices particular to those transactions made in the past.

Stock and Options Prices with the Underlying at \$54.00

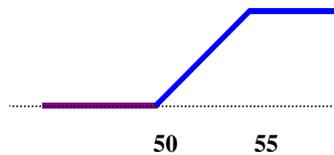
*Stock \$54.00*

Call \$	Strike	Put \$
9.25	<b>45</b>	.25
5.00	<b>50</b>	1.00
2.00	<b>55</b>	3.00

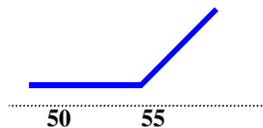
Long 10 Oct 50 calls @ \$2.00



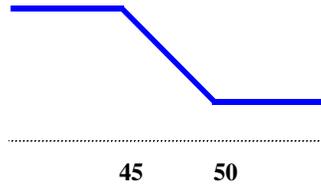
- A. Sell 10 Oct 55 calls at 2.00. The result is **10\*50/55 bull call verticals**, each for even money (fair cost = 3.00 debit). The trader is still long, but not as aggressively so, and has limited the possible gain.



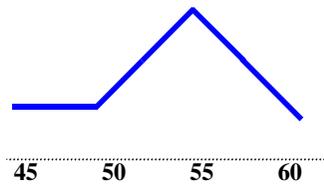
- B. Sell 10 Oct 50 calls and buy 10 Oct 55 calls for a 3.00 credit (sell 50/55 call vertical i.e., bear spread). The result is **long 10 Oct 55 calls**, each for a 1.00 credit (fair cost = 2.00 debit). The trader is still long, but for a price that is cheaper than free, and has limited risk.



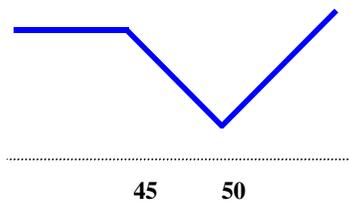
- C. Sell 10 Oct 45 calls at 9.25. The result is **10\*45/50 bear spreads**, each for a 7.25 credit (fair cost = 4.25 credit). The trader anticipates a downward move.



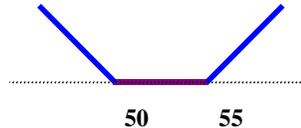
- D. Sell 20 Oct 55 calls at 2.00. The result is a **50/55 call ratio spread** (+10 by -20), each (+1 by -2) for a 2.00 credit (fair cost = 1.00 debit). The trader would now like the market to stay around 55.



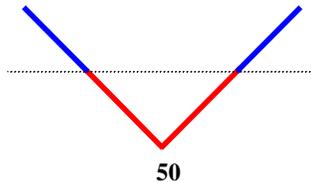
- E. Sell 5 Oct 45 calls at 9.25. The result is a **45/50 call back spread** (+10 by -5), each (-1 by +2) for a 5.25 credit (fair cost = 2.25 credit). The trader now hopes for a large move in either direction, preferably upward.



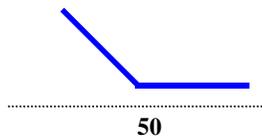
- F. Buy 10 Oct 55 puts at 3.00. The result is **long 10 Oct 50c / 55p “guts” strangle**, each for a 5.00 debit (the minimum possible value for this gut strangle is 5.00) (fair cost = 2.00 debit). This will win if there is a large move in either direction.



- G. Buy 10<sup>3</sup> Oct 50 puts at 1.00. The result is **long 10 Oct 50 straddle**, each for a 3.00 debit (fair cost = 6.00 debit). This will win if there is a big move in either direction. Since the underlying is already at 54.00, a continued move upward will generate a profit. A break from here would most likely be a loss until the underlying goes below 47.



- H. Sell 1000 shares at 54.00 (10 calls x 100 shares each). The result is synthetically **long 10 Oct 50 puts** for a 2.00 credit<sup>4</sup> (fair cost = 1.00 debit). The trader anticipates a downward move.



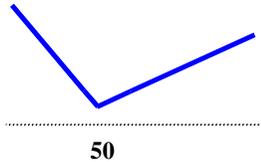
<sup>3</sup> 10

At this point, it might warrant purchasing more than 10 to achieve market neutrality. This would be called a ratioed strangle.

<sup>4</sup> 2.00 Credit

Selling the 100 stock at 54.00 is the same as selling 1 combo, which is selling the call and buying a put for a 4.00 credit. Since the original call cost 2.00 debit and we now receive 4.00 credit, the puts are synthetically owned for a net 2.00 credit. (For a cost of 2.00 better than free.)

- I. Selling only 800 shares at 54.00, assuming a hedge ratio of .80 for the Oct 50 calls, results in **long a synthetic** ratioed straddle <sup>5</sup> **at the 50 strike** (+2\*50c/+8\*50p). Each of the 2\*(+1c by +4p) spreads, for a 6.00 credit <sup>6</sup> (fair cost = 9.00 debit<sup>7</sup>). The trader would profit from a large move in either direction, but eventually more so from a downward move.



This could go on and on, but by now one should have the idea. Once the trader has any of these aggregate spreads on, the strategy could evolve into many alternative configurations or risk profiles. Unlike a stock trader, who generally uses stop orders or mental stops to limit his or her risk, an options trader often adjusts rather than exits a position, providing that the position does already contain built in stops, as it were, by virtue of its design. This way he or she may be able to recoup some or all of the loss (where applicable) and even go on to profit. The adjustment turns the original strategy into a more appropriate one given current price levels, even though the trader's position is (perhaps temporarily) running at a loss.

When the nature of the beast is changed, it is essential that traders realize that any adjustment is identical to the liquidation of their old

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<sup>5</sup> **Ratioed Straddle**

A ratioed straddle is not 1 : 1, meaning one call for every one put.

<sup>6</sup> **6.00 Credit**

Selling the 800 stock (.80\*1000) at 54.00 is the same as selling 8 combos for 4.00 credit (5.00 credit for the calls and a 1.00 debit for the put). That's a total credit of 32.00 versus the original purchase of 10 calls for a 2.00 debit (20.00) leaves a running credit of 12.00. Since the result be 2\*(+1c by +4p) spreads, each is for a net credit of 6.00.

<sup>7</sup> **9.00 Debit**

Selling the 800 stock (.80\*1000) at 54.00 is the same as selling 8 combos for 4.00 credit (5.00 credit for the calls and a 1.00 debit for the put). That's a total credit of 32.00 versus the present purchase price of 10 calls for a 5.00 debit (50.00) leaves a running debit of 18.00. Since the result be 2\*(+1c by +4p) spreads, each is for a net debit of 9.00.

strategy and the initiation of a new strategy without all of the trades. One new trade changes the nature of the strategy and a new position exists at that point.

To decide whether an adjustment is really something that traders want to do, it is important to realize that they must like the current price (alternative cost) of the adjusted spread. In other words, they should look at the spread that they will end up with synthetically, and then assess its value and their reason for putting it on. This is the point where understanding the concept of synthetics separates the women from the girls. It is better to think about the most basic risk profile in the most simple<sup>8</sup> terms (i.e., synthetic terms) as opposed to the actual price terms.

At every stage in the analysis of the alternatives and adjustments to a position, traders should ask whether they would put this spread on having had no position whatsoever. They must make the decision based upon the “fair cost” disregarding all the previous prices paid or received (actual cost) on the aggregate spread. If the answer is that they, “would not on the trade”, then this particular adjustment is not right for them. Their thinking should be consistent whether the position has just been initiated or has already been on for some time. The trader should get out of the position if the risk / reward profile is not attractive from this point forward. Some of the most important revelations for traders occur when they understand at what point they are contradicting themselves. This is when the “lights go on” and they really learn from their misperceptions.

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#### <sup>8</sup> Simple Terms

Example: A “fenced” position (+u / + lower strike put and short higher strike call) is best viewed in its simplest terms, namely, a bull spread. Manage the bull spread by watching either the long call spread or the short put spread, whichever is more liquid.

## ADJUSTMENT COSTING

The following tables examine trades A to I from the perspective of actual and fair cost.

### Actual Costs

#### *First Trade and Second Trade = Total for each spread*

- A. 10 @ 2.00 debit and 10 @ 2.00 credit = 10 @ 0 or even
- B. 10 @ 2.00 debit and 10 @ 3.00 credit = 10 @ 1.00 credit
- C. 10 @ 2.00 debit and 10 @ 9.25 credit = 10 @ 7.25 credit
- D. 10 @ 2.00 debit and 20 @ 2.00 credit = 10 @ 2.00 credit
- E. 10 @ 2.00 debit and 5 @ 9.25 credit = 5 @ 5.25 credit
- F. 10 @ 2.00 debit and 10 @ 3.00 debit = 10 @ 5.00 debit
- G. 10 @ 2.00 debit and 10 @ 1.00 debit = 10 @ 3.00 debit
- H. 10 @ 2.00 debit and 1000 @ 54.00 credit = 10 @ 2.00 credit
- I. 10 @ 2.00 debit and 800 @ 54.00 credit = 2 @ 6.00 credit

### Fair Cost (3.00 more times 10)<sup>9</sup>

#### *Present Value of First Trade and Second Trade = Total*

- A. 10 @ 5.00 debit and 10 @ 2.00 credit = 10 @ 3.00 debit
- B. 10 @ 5.00 debit and 10 @ 3.00 credit = 10 @ 2.00 debit
- C. 10 @ 5.00 debit and 5 @ 9.25 credit = 5 @ 4.25 credit
- D. 10 @ 5.00 debit and 20 @ 2.00 credit = 10 @ 1.00 debit
- E. 10 @ 5.00 debit and 5 @ 9.25 credit = 5 @ .75 debit
- F. 10 @ 5.00 debit and 10 @ 3.00 debit = 10 @ 8.00 debit
- G. 10 @ 5.00 debit and 10 @ 1.00 debit = 10 @ 6.00 debit
- H. 10 @ 5.00 debit and 1000 @ 54.00 credit = 10 @ 1.00 debit
- I. 10 @ 5.00 debit and 800 @ 54.00 credit = 2 @ 9.00 debit

Obviously all the current costs look less attractive than the actual costs because it costs 30.00 (10 contracts times 3.00) more. The important point here is that it may not make sense for some players to make any adjustment. Take scenario A for example. If there was a poll taken from the viewers of CNBC which asked whether or not they would ever buy a 5 point vertical for \$3.00 (current cost) the results would

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<sup>9</sup> 3.00 more times 10

Had there been no prior position, the calls would have otherwise cost 5.00 instead of 2.00 meaning 3.00 more for 10 calls each turning into 10 spreads, 6.00 more for 10 calls turning into 5 spreads, and 15.00 more for 10 calls turning into 2 spreads.

probably be a resounding 100% saying “***NO WAY!***” Even if a professional group were polled, probably 70% would concur. Therefore, scenario A is rolling into a situation where one would have 3.00 on the table and it can go up to 5.00 or down to zero. That is risking 3.00 to make 2.00. A discussion in Chapter 6 discusses what on earth the other 30% might be thinking when compelled to risk 3.00 to make 2.00. Scenario B, on the other hand involves a strategy with unlimited upside potential. It is therefore difficult to say definitively how much the premium is worth. Its value would be calculated using the usual variables such as time to go, proximity to the money and volatility.

### **RULE THE BEAST**

1. Predetermine strategy based on market opinion.
2. Predetermine point of entry based on an attractive price level.
3. Predetermine profit-and-loss objective based on pain threshold.
4. Enter the market.
5. Ongoing “live” reassessment of the position at current price levels.

Would the trader execute the same trade now if he or she were not already in the market? If the answer is yes, then the traders should do nothing and stay in the position. If the trader would never execute the trade at this point, this is where he or she should either exit the trade or change the nature of the beast. Failure to do so is a contradiction of desires. In example A, again, the trader would have to like the idea of having a long call vertical at the current price of \$3.00 which can only go to \$5.00. If he or she had no position and prefers not to buy that spread for \$3.00, then it is pointless to stay in the trade. It would be inappropriate to stay in the trade just because it was legged<sup>10</sup> into for free. Long-term consistent winnings in the market have much to do with taking profits. If that spread goes from \$3.00 to worthless, the trader will wish that he or she had taken the profits. There is no justification for

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<sup>10</sup> **Leg, Legging, Legged**

Legging is trading into a spread on separate orders. When the quoted spread price is too wide or not a desirable price, traders will do what is referred to as legging into the position by executing one side first and then at a later time entering an order to transact the second leg (the other side). There is transaction risk in getting ‘caught between legs’. As an example, the market moves a large amount adverse to the first leg of the position resulting in the price of the overall spread to be executed being at undesirable levels. It can be dangerous to leg spreads but sometimes that is the only way in or out of a spread position.

adjusting into positions that the trader normally would not put on at current prices.

**Rule the Beast (continued)**

6. Redetermine strategy based on new market opinion.
7. Predetermine point of entry for adjustment (changing the beast).
8. Predetermine a profit-and-loss objective.
9. Exit or adjust the position.
10. Ongoing “live” reassessment of the basic position profile in simplest terms at current price levels.

When thinking about speculating with any options strategy (e.g., purchasing calls, puts, straddles or verticals) remember that the trader should not only think in terms of the maximum cost of that strategy. For example, the trader decides to buy a straddle (put and a call at the same strike price) because he or she believes that the market will make a large move in one direction or the other (but does not know which). The trader is willing to risk, \$10,000. The straddle is going for \$1,000, which means that the trader can afford ten spreads and ride them through to expiration. An alternative would be to buy the straddle, 6 or 7 times, leaving \$3,000 or \$4,000 to have in reserves for adjustment purposes.

**OPTION METAMORPHOSIS**

As time goes by and the market unfolds, positions evolve. The most common position held worldwide is long underlying. There are many hedging strategies available to the holder of the underlying. The most popular, which is not a true hedge, is to sell calls against the underlying to enhance the investor’s rate of return on the investment. As many readers may well know, this is a “covered write.” The risk profile is that of a short put. If the real put is eventually purchased to lock in a profit, the position evolves into a conversion. Instead of the same strike put being bought, the higher or lower strike may be bought, and the position evolves into a bear or bull spread. These are examples of options metamorphosis.

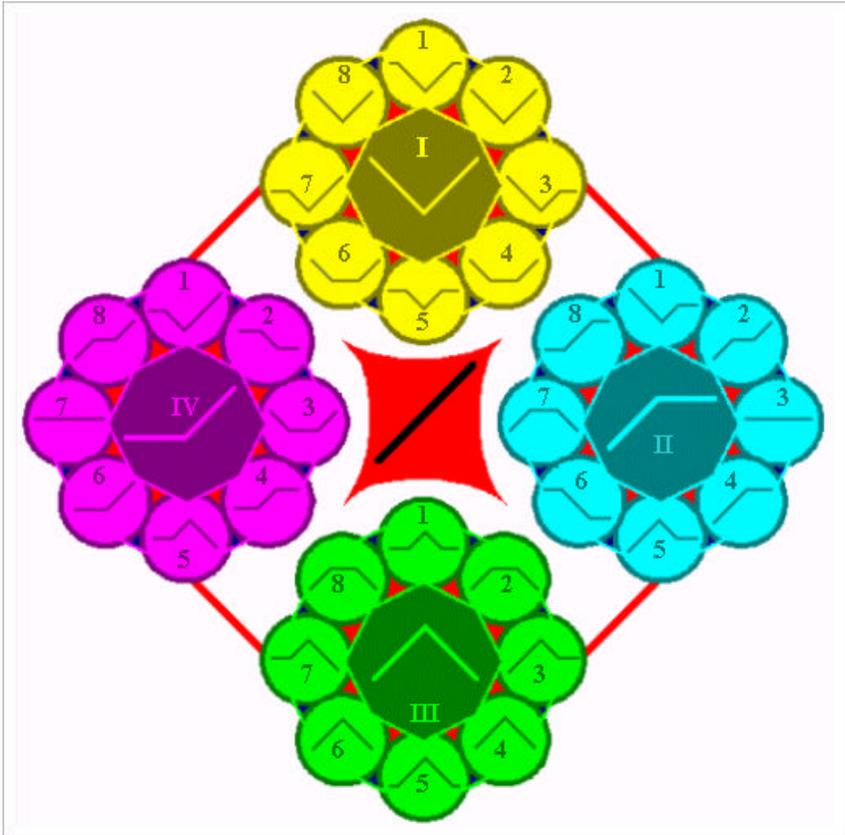
Exhibit 2–11 shows in great detail how positions can evolve into new spreads with a minor adjustment. Exhibit 2–12 contains explanations to the graphs in Exhibit 2–11. Strategies are presented in the form of a flowchart that starts in the center of the diagram with a graph of a long underlying position.

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**E X H I B I T 2 – 1 1**


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## Options Metamorphosis



The square indicates that there is a choice of four directions in which to go. Small investors, brokers, and institutional hedgers will find this exercise particularly useful. An initial hedge of selling calls or buying puts can take on one of four alternative forms:

1. In quadrant I, the investor turns the long underlying into a long straddle by purchasing two puts against the position. He will profit if the market becomes volatile and moves significantly in one direction or the other.

2. In quadrant II, the investor turns the long underlying into a short put by selling a call against the position to enhance the rate of return on the underlying investment. Profit will result from a stable to higher market.
3. In quadrant III, the investor turns the long underlying into a short straddle by selling two calls against the position. He will profit if the market does not move or if implied volatility declines.
4. In quadrant IV, the investor buys a put. The investor turns the long underlying into a long call by purchasing a put for downside protection while maintaining the upside profitability potential.

## **E X H I B I T 2 – 1 2**

### Explanation of Options Metamorphosis

#### **LONG UNDERLYING SHARES**

##### **I LONG STRADDLE: by BUYING twice the amount of PUTS**

- 1 SHORT BUTTERFLY with a 4 strike value range: by SELLING a STRANGLE two strikes out.
- 2 LONG STRADDLE rolled to a higher strike: by TRADING twice the amount of BEAR SPREADS with the sale strike = to the original hedge strike.
- 3 PUT (LongMore) BACK SPREAD: by SELLING a higher strike CALL.
- 4 LONG STRANGLE : by TRADING a BEAR SPREAD with the sale strike = to the original hedge strike.
- 5 SHORT BUTTERFLY with a 2 strike value range: by SELLING a surrounding STRANGLE.
- 6 LONG STRANGLE : by TRADING a BULL SPREAD with the sale strike = to the original hedge strike.
- 7 CALL (LongMore) BACK SPREAD: by SELLING a lower strike PUT.
- 8 LONG STRADDLE rolled to a lower strike: by TRADING twice the amount of BULL SPREADS with the sale strike = to the original hedge strike.

##### **II SHORT PUT (Covered Write): by SELLING a CALL**

- 1 PUT (LongMore) BACK SPREAD: by BUYING twice the amount of lower strike PUTS.
- 2 LONG SEMI-STOCK: by BUYING a higher strike CALL.
- 3 CONVERSION (Flat): by BUYING a same strike PUT.
- 4 SHORT PUT rolled to a different strike: by TRADING a VERTICAL SPREAD with the sale strike = to the original hedge strike.
- 5 PUT (ShortMore) RATIO SPREAD: by BUYING half the amount of higher strike PUTS.
- 6 BEAR SPREAD: by BUYING a higher strike PUT.
- 7 SHORT STRANGLE: by SELLING a different strike CALL.
- 8 BULL SPREAD: by BUYING a lower strike PUT.

##### **III SHORT STRADDLE: by SELLING twice the amount of CALLS**

- 1 LONG BUTTERFLY with a 2 strike value range: by BUYING a surrounding STRANGLE.
- 2 SHORT STRANGLE : by TRADING a BULL SPREAD with the purchase strike = to the original hedge strike.
- 3 PUT (ShortMore) RATIO SPREAD: by BUYING a higher strike CALL.
- 4 SHORT STRADDLE rolled to a higher strike: by TRADING twice the amount of BULL SPREADS with the purchase strike = to the original hedge strike
- 5 LONG BUTTERFLY with a 4 strike value range: by BUYING a STRANGLE two strikes out.
- 6 SHORT STRADDLE rolled to a lower strike: by TRADING twice the amount of BEAR SPREADS with the purchase strike = to the original hedge strike.
- 7 CALL (ShortMore) RATIO SPREAD: by BUYING a lower strike PUT.
- 8 SHORT STRANGLE : by TRADING a BEAR SPREAD with the purchase strike = to the original hedge strike.

##### **IV LONG CALL: by BUYING a PUT**

- 1 CALL (LongMore) BACK SPREAD: by SELLING HALF the amount of lower strike CALLS.
- 2 BEAR SPREAD: by SELLING a lower strike CALL.
- 3 LONG STRANGLE: by BUYING a different strike PUT.
- 4 BULL SPREAD: by SELLING a higher strike CALL.
- 5 CALL (ShortMore) RATIO SPREAD: by SELLING twice the amount of higher strike CALLS.
- 6 SHORT PUT rolled to a different strike: by TRADING a VERTICAL SPREAD with the sale strike = to the original hedge strike.
- 7 CONVERSION (Flat): by SELLING a same strike CALL.
- 8 LONG SEMI-STOCK: by SELLING a lower strike PUT.

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CHAPTER

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3

**NUTS AND BOLTS OF OPTIONS**

This chapter explores the variables that are the life-blood of option pricing. After a brief encounter with profit and loss scenario interpretation, we will cover the variables that measure options risk called the “Greeks”. The Greeks help sort out almost all of the confusion about how profits and losses occur. We will examine the effects that dividends and interest rates have on options pricing, and then look at how ‘early exercise’ works and can be played.

**PROFIT AND LOSS (P&L) SCENARIOS**

If the reader has not previously seen the theoretical P&L graphs for all of the option strategies, he or she should become familiar with them. Every exchange and most brokerage firms have produced pamphlets on them.

Exhibit 3–1 shows two profit-and-loss graphs, one of long 1 at-the-money put (3–1) and the other of long 1 at-the-money call (3–2). The tabular readouts of call (above) and put (below) suggest what the profits or losses for this particular day would be at a constant implied volatility if the underlying were to trade at each point between and including 93.00 and 107.00. The tables also display the theoretical delta, gamma, theta, and vega<sup>1</sup> for the current day.

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<sup>1</sup> Vega

Vega is not a Greek letter but it is widely accepted as ‘a Greek’ in the derivatives business. It is also known as omega ( $\tilde{\omega}$ ).

The theoretical assumptions are only as good as the data input. Stress testing<sup>2</sup> with changes in overall implied volatility and at each individual strike should be carried out. The best data input can come only as a result of trading experience in the market in question. However, to rely totally on that experience would be foolish because new experiences are made every day, and sometimes the market has a way of treating traders as though it were their first day of trading.

Compare the two P&L (grids) structures in Exhibits 3–1 and 3–2. They would be perfectly opposite were it not for the probability assumption, which implies that calls can theoretically go further in-the-money than puts and therefore have bigger deltas than puts when they are both at-the-money or equidistant from the money.

The put (Exhibit 3–1) and call (Exhibit 3–2) graphs are basically mirror images of each other. Simply remember that long calls are exactly the opposite of short calls and that they are basically the opposite of long puts (i.e., as far as directional aim and deltas go).

Some readers will cite minuscule differences between the Greeks of puts and the Greeks of calls at the same strike. For all intents and purposes, gamma, theta, and vega are the same for long calls and long puts. A fair wager would be that there is no way to make or save money by playing for any differences.

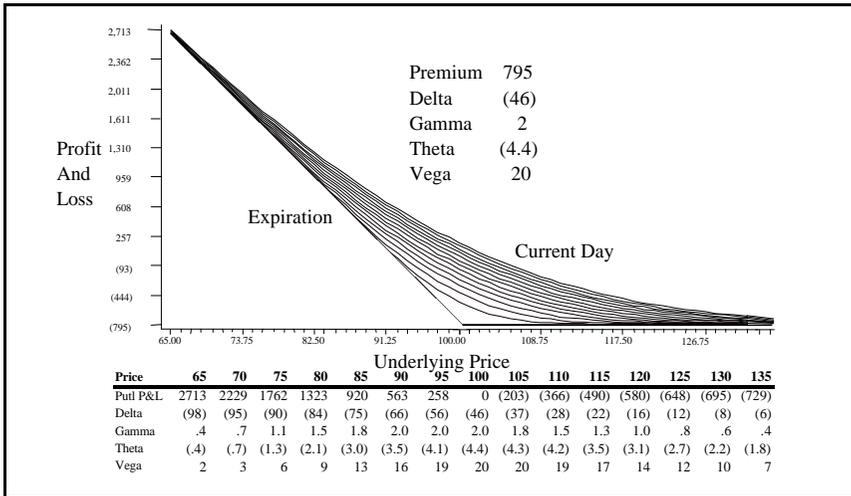
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## <sup>2</sup> Stress Testing

Performing tests on a position to see how much the profit or loss would be with certain market scenarios. What-if assumptions examine many possibilities for implied volatility levels as well as underlying price changes. The risk analyst, testing these same generic contract examples, would use the Black-Scholes model for calls, and the Binomial model for puts with the interest rate set to 0%. The contract value is \$100 for each point (1.00). each tick (.01) is equal to \$1.00 as in most U.S. equities.

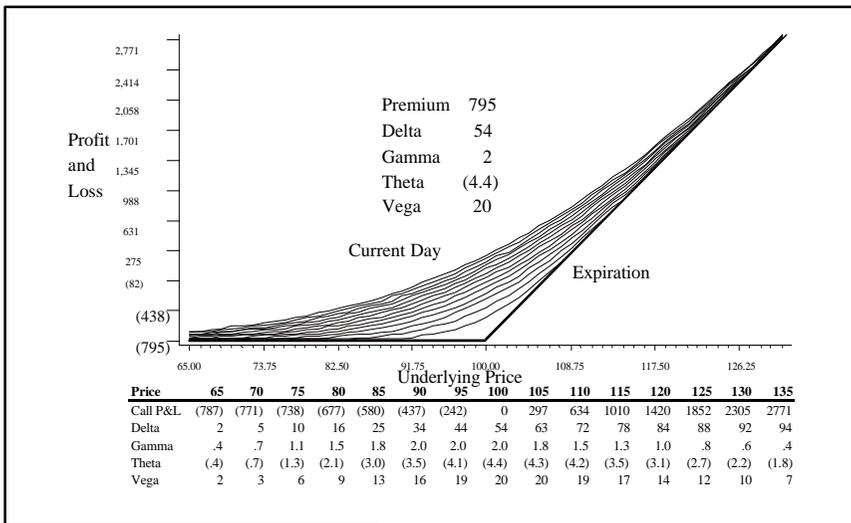
**EXHIBIT 3 – 1**

1\*100 Put starting with 91 days to go (0% Interest Rate<sup>3</sup> & Dividend = 0)



**EXHIBIT 3 – 2**

1\*100 Call starting with 91 days to go (0% Interest Rate & Dividend = 0)



**3 Zero Setting**

In reality there are different values for calls and puts right at the strike because of the cost of money and dividend payments.

## GLANCING GREEK TO GREEK

The Greek letters derived from statistical models, such as the Black-Scholes, represent the various sensitivities of options behavior. These are delta ( $\Delta$ ), gamma ( $\Gamma$ ), theta ( $\Theta$ ), omega ( $\Omega$ , better known as vega) and rho ( $\rho$ ). Successful traders from all over the world have varying degrees of understanding about ‘Greeks,’ how they can be used, and when they should be disregarded. It is common to find traders with sound mathematical backgrounds becoming so immersed in the formulas that they do not actually use the derivatives objectively. Some traders avoid using them because they do not fully understand their implications. Without a doubt, it is important to be fully versed in all of the types of risk to which one is exposed.

The purpose of this chapter is to explain how the Greeks change when the *underlying* moves, what happens to them over time, and why they are an indispensable tool for an investor. It is most important that traders understand the difference between how these tools are expected to and actually affect their profit-and-loss profile (P&L). They should also be very aware of where there is Greek exposure in their position, so that any elements of the position that work against the trader’s intended strategy can be eliminated. In addition, the traders’ position could be neutral with regard to all of the Greeks, but have extreme multi-expiration exposure.

Throughout this book, there will be discussions about various types of positions, commentaries on how the Greeks affect those positions, and exhibits of graphs depicting them. The variables that affect the Greeks are time, implied volatility, and the position of the underlying in relation to the strike prices.

Memorizing each Greek’s definition, exhibit, and property will help but it is also important to understand their interrelationships. Some general rules follow:

1. All of the Greeks except delta ( $\Delta$ ) are at their greatest value when they are at the money. (Scientifically speaking, this may not be the case, but for all practical intents and purposes it is true).
2. Gamma ( $\Gamma$ ) has an inverse relationship with theta ( $\Theta$ ). The more positive gamma there is, the more negative theta (time decay) there will be.

3. The effect of decreasing volatility is vega or omega ( $\Omega$ ) and is similar to the effect of time moving forward. Increasing volatility has the effect of time moving backward (if that were possible), i.e., increasing time until expiration is increasing volatility and vice versa.

## IMPLIED VOLATILITY

Implied volatility is a market driven factor and an extremely ambiguous component of the pricing model. It is very often talked about when options are discussed. Real rocket scientist, well capitalized, professionals try to predict the stability of the market from a statistical standpoint and play the odds. It is a dangerous game. Retail investors can use it to help them to line up all the options values in their analysis software in order to determine opportunities based upon a historic reference and make a play from there. The factors that go into calculating option theoretical values are the underlying price, time until expiration, the risk-free rate of return (interest), dividends (where applicable), the strike price, and a chosen volatility level. Assume that an actual options price and all of the factors used to determine the price are known except for the volatility level. Using algebra, the missing volatility level can be determined. This factor is known as implied volatility because the option's price implies something about the anticipated volatility of the underlying over a certain period of time in the future. Implied volatility is often interpreted as though it is actual money, because premium levels vary directly with implied volatility levels (i.e., the higher the implied volatility, the higher the option price). An option price can be analyzed to learn what is expected about the future volatility of the underlying instrument. If the option's premium is running at high-implied volatilities, then supply and demand is suggesting that the underlying will fluctuate in a volatile manner. Alternatively, if implied volatility is low, then traders believe that the market will not be so volatile in the near future. Although this prediction could be totally inaccurate, it is the buying and selling pressure of the options themselves that are reflecting market sentiment on the price volatility of the underlying for the future.

Implied volatility is only similar to money for a brief moment in time and with all other variables frozen. For example, if a trader buys

options with an implied volatility of 20% and sells them in the next moment, with all other variables remaining equal, at 21%, the trader should profit by 1%. However, since implied volatility changes differ according to the level of the underlying and the amount of time remaining, one's point of reference disappears and it is difficult to gauge values. For example, IBM is priced at \$75.00 with 31 days to go and a 20% implied volatility. The 75 call is valued at \$1.75. At \$74.00 with 22% volatility, the call is worth only \$1.45. If IBM is at \$76.00 with 30% volatility and 11 days to go, the call is worth only \$1.57. We can see from the above that volatility figures are best used for relative pricing purposes (relative to the other options as alternatives).

## RISK

Many aspects of risk must be considered when trading an options position. The following acronym may be useful to ensure that you are not overlooking anything:

**GLAD SNIP** (be happy to cut down your risk).

Greek risk— i.e. the derivatives' sensitivities, delta, gamma, theta, omega or vega and rho, as covered in this chapter.

Liquidity risk—When traders have too many contracts to get out of or into, or trade larger than the market will allow them to trade out of at fair value, they face liquidity risk. It can also happen that market makers accumulate positions that are heavily weighted predominantly at one strike, and are not able to get out of them. If traders believe that an option is undervalued or overvalued, they often hoard it. This makes it difficult for a retail investor to get out of that same position.

Assignment risk—Options are exercised because there is an economic benefit in doing so. If traders are assigned, they may lose out on collecting interest income or save an interest expense. They may receive or pay dividends and as in the case of cash settlement index options, lose positive or negative deltas.

Dividend risk—Although it is better to collect a dividend than to have to pay one, many profit opportunities justify the short selling of stock. Entities that are short stock on the date of record have to pay the dividend to the shareholder. There is a risk of a change in the exdividend date<sup>4</sup>, which has an effect on the cost of carry. Additionally, there is a risk of being subject to a greater or lesser dividend payment if the amount of the dividend changes while one is holding the stock position.

Skew risk—Skew, or the smile, refers to the possibility that implied volatilities can vary at different strikes. The risk is that the implied volatility for the strikes of long options can decrease while those for the strikes of short options can increase. It is therefore necessary to monitor the option's sensitivity to the P&L and the Greeks as implied volatility changes at the various strikes.

Net contracts exposure—Number of net calls and *puts* including the underlying, as calculated in Chapter 1 (long underlying counts as long calls and short puts and short underlying counts as short calls and long puts for this purpose).

Indigenous risk—Nuances that are specific to a given market. For example, OEX exercise of deep in-the-money options is based on what happens to the S&P 500 futures and the OEX (S&P 100) combos (synthetic futures) in the last few minutes of the day.

Pin risk—The dilemma of not knowing whether the short options will be assigned or whether one should exercise the long options of an at-the-money combo at expiration.

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<sup>4</sup> Change in the Ex-Dividend Date

Cost of carry is the finance charge for carrying a position. Certain positions generate negative carry when there is a credit balance, resulting in an interest rebate because the proceeds from short sales earns interest.

## NEUTRALITY DEPENDS ON ONE'S PERCEPTION

Being neutral is usually associated with being a market maker, because they generally trade flat (with little market exposure in their position). Investors flatten up to reduce their exposure when they need time to figure out their next move. No one is really happy about taking everything off. If there were one or two trades that one could make to get reasonably flat, traders could neutralize their position in order to get through an economic announcement or an earnings report without too much damage being done to the position. A major distinction to be made is that there is a big difference between current and eventual neutrality. Positions change over time, even when no trades have been made, because the underlying moves farther from some strikes and closer to others, and *implied volatility* changes. It is an art for traders to adjust their position to where they want it while all the variables are changing.

It can be helpful to understand what a market maker has to go through because sometimes it seems as though they will not provide a quote. Sometimes, they just need a little time to sort things out when the market gets busy. In many respects, because of all of the variables that have to be managed, market makers are much like performers in the circus who try to get eight plates spinning all at once on top of eight poles. They get a few started, but before they get to the fourth or fifth one, they have to go back, give numbers one and two another spin, and then proceed to the next. They must continually monitor the activity of all of them as they go along, because plates start to wobble, fall, and crash to the floor. The circus performers have to ensure that each one stays balanced. Option traders make a trade and find that all of a sudden one aspect of their position is no longer neutral, which necessitates another trade that could throw their position off with respect to some other sensitivity. This may explain why they seem unwilling, sometimes, to honor markets. Trades have to be made to neutralize and diversify the risks. At the same time, traders have to keep abreast of each level in GLAD SNIP, any speculative bias, and technical factors in the market.

Some other risks to be aware of in trading are: basis risk, collateral risk, credit risk, cross-market risk, currency risk, hedging risk, modeling risk, negotiating risk, position limits risk, regulatory risk, reinvestment risk, systems risk, tax risk, technology risk, transaction risk and yield-curve risk.

When teaching the Greeks, certain points can be made without the clutter of dividends and interest getting in the way. The following examples will therefore use a generic contract without dividends and with the interest rate set to 0% (making calls equal to puts at the strike). These examples can then be further stress-tested by performing ‘What-if’ scenarios using a risk analyzer.

### DELTA ( $\Delta$ )

Delta is of the rate of change of an option’s *theoretical value* as the underlying changes in value. A common definition for delta is the rate of change of an option’s theoretical value in relation to a one-point move in the underlying. An option’s theoretical value actually changes with the most infinitesimal move in the underlying. Another problem with the one-point definitions is that one point means different amounts in different markets, (e.g., strikes are five points apart in the OEX, S&Ps, and many U.S. equities, but there are ten strikes in one point of CBOT corn, four strikes in one point of Eurodollars, and one strike per point in T-notes).

Many veteran traders believe that delta represents the probability that the underlying will move sufficiently to bring the option in-the-money at expiration and that a .50 delta means that there is a 50% chance that the option will be in-the-money even if it is by only one tick. However, I am told that that is incorrect, mathematically speaking. The delta is used as the hedge ratio to determine what could be traded against the underlying. It is often considered to be equivalent to an amount of underlying at a specific price and at a specific point in time. Calls have a positive delta and puts have a negative delta. The sum of the absolute values of deltas add up to 1.00 (in this case, .51 for the call and  $-.49$  for the put). Some option pricing models calculate the sum of the deltas to be slightly above or below 1.00, but this is not significant to the discussion of delta at this point.

The call delta and the put delta at the same strike change at the same rate but inversely. This is the first indication that calls can be puts and puts can be calls. They become synthetically each other when either is offset by an equal amount of the underlying.

Suppose that the expiration is tomorrow and that a call is just out of the money. It looks as though it is going to expire worthless and the delta will be close to zero. If, in the last few moments of the trading day,

the market were to rally, bringing the call in-the-money, then the delta would change immediately to 1.00.

When there is a longer period of time to expiration, deltas change more gradually. Their properties are similar to what happens to deltas when implied volatility increases.

Just knowing that if volatility goes down it is like time going by faster makes it easy to guess what would happen to in-the-money and out-of-the-money deltas as volatility changes. Without looking it up, most readers would guess that out-of-the-money deltas go down as time goes by because there is less and less chance that they will go in-the-money. When volatility goes down, the implication is that there is little chance for those out-of-the-money options to also go in-the-money. If in-the-money options stay in-the-money over time, their delta will move toward 1.00 (–1.00 for in-the-money puts) at expiration.

If volatility decreases, it makes sense that in-the-money calls will have more of a chance of staying in-the-money, and so their deltas will also move toward 1.00. The effect of changes in implied volatility is often considered to be the most difficult sensitivity to comprehend. However, it is not complicated if one remembers that a decrease in implied volatility has the same effect on the option value as time going by, and that an increase in implied volatility has the opposite effect.

## GAMMA ( $\Gamma$ )

Gamma is the rate of change of the delta. Most traders use the net gamma value of their position to represent the number of underlying deltas or contracts that will be generated from a 1-percent move<sup>5</sup> in the underlying price. The deltas are created as a result of a move in the underlying (up or down). Positive gamma in a delta neutral position generates deltas that are favorable to the direction of the market. As the market moves lower, the position produces short deltas, while long deltas are produced as the market moves higher. For example, a trader owns 100 calls each with a positive 8.0 gamma for a total gamma of 8 (.08 x 100 shares per options contract). Positive 8 means that if the underlying moves 1 point from 100 up to 101, the trader's net delta position (for

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<sup>5</sup> 1-Percent Move

Some software allows the user to define the range that the gamma covers for example one percent, one-point or a one-strike.

each call) will move from +51 to a new delta of +59 at 101. If the market declines to 99, the net call delta of the position will be +43. The trader gets longer when the underlying moves up, and less long when it drops. Long gamma provides an opportunity to scalp gammas. A scalp trade is one where a trader gets in and out of the market very quickly. In this context, the trader takes advantage of selling out the long deltas manufactured on the way up and buying in the shorts manufactured on the way down for a small profit on each trade.

Exhibit 3–3, shows the theoretical values (premium) and the Greeks for the 100 call at the underlying stock price of 100 with many different implied volatilities.

**E X H I B I T 3 – 3**

100 Call Information at Many Implied Volatilities with 91 Days to go, Underlying at 100

Volatility	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%
<b>Premium</b>	398	498	597	696	795	894	993	1092	1191	1289	1387	1485	1583
<b>Delta</b>	52	53	53	54	54	55	55	56	56	57	57	58	58
<b>Gamma</b>	4	3	3	2	2	2	2	1	1	1	1	1	1
<b>Theta</b>	(2.2)	(2.7)	(3.3)	(3.8)	(4.4)	(4.9)	(5.4)	(6.0)	(6.5)	(7.0)	(7.6)	(8.1)	(8.6)
<b>Vega</b>	20	20	20	20	20	20	20	20	20	20	20	20	20

**Gamma Over Time:** At-the-money gamma goes up and away-from-the-money options’ gamma goes down. At expiration the at-the-money option’s gamma is at it highest while the rest are virtually zero. Keep in mind that on the day of expiration the king, the at-the-money strike, can fall and one of the dirty old rascals, the away-from-the-money strikes, could become king for a day.

**Gamma as Implied Volatility Changes:** Volatility going down has the same effect as the passage of time does. The farther the drop, the faster time goes by, so the at-the-money gamma goes up and the others dwindle a bit. Implied volatility increasing is like putting more time back on the clock, the at-the-money gamma falls and the other gammas are given a boost.

**Gamma as the Underlying Changes:** The further away the underlying moves from the strike, the smaller gamma gets. If you think about it, it makes sense that an in-the-money option with a delta of .99 requires a larger move in the underlying to change to 1.00 than an at-the-money option with a .50 delta does to change to .55.

**Remember:** With a lot of time to go or with high implied-volatility the gamma of the in-the-money, out-of-the-money, and at-the-

money options are relatively similar. Toward expiration, the away-from-the-money gamma dwindles, while the at-the-money gamma explodes.

### Relativity of Gamma

The higher the strike price, the lower the gamma. The values have an inverse relationship. As the underlying doubles in price, the gamma halves in value. In the case of a 2 for 1 stock split, when the strikes become half their previous value, gamma doubles at each strike. That is simply because a 1 point change in a stock that trades for \$50 amounts to the same percentage change as a 2 point change in a stock that trades for \$100.

An important thing to remember is that a position can consist of unlimited risk gammas and limited risk gammas. It is possible to have a neutral position with respect to gamma and suffer devastating losses due to the fact that the position was short unlimited risk gammas and long limited gain gammas against them. When I dissect my position, I make the distinction between the gammas that have naked risk attributes and those they are part of limited risk spreads. To distinguish between the two, I call the limited risk gammas, "*grammas*." The positions that they are part of do not have as strong an impact on P&L as the positions with unlimited risk.

### THETA (Θ)

Theta measures the amount of premium that will theoretically decay each day. Positive theta means negative gamma. There is a trade-off that has to be handled based on experience, comfort, and **discipline level**. No two people will handle any position in the same manner. It boils down to how much heat one can take, and how one handles the peaks and valleys in one's trading performance. Some traders will hold positions of positive gamma that generate losses daily, until the loss can be made up by either a large move and/or gamma scalping opportunities arise.

When theta is positive and the market is volatile, traders either cross their fingers and hope that the underlying eventually returns to close unchanged, or they use defensive hedges, selling into dips and buying on rallies (negative gamma scalps) to maintain delta neutrality and to play for options time decay. The idea is to lose a lesser amount on these hedges than the amount received in the way of time decay. Some

traders day-trade from the short gamma side and either cover on a breakout or get flat before the close.

Gamma and theta have an inverse relationship, as you will see in the following explanations.

**Theta Over Time:** At-the-money theta goes up and away-from-the-money options' theta goes down. At expiration the at-the-money option's theta is at its highest point, while the rest are virtually zero.

**Theta as Implied Volatility Changes:** Volatility decreasing has the same effect on options as when time passes. If volatility drops far, it has the same effect on the options as when time goes by faster, and so the at-the-money theta goes up and the others dwindle a bit. An increase in implied volatility lowers the at-the-money theta and gives the away-from-the-money options' theta a boost.

**Theta as the Underlying Changes:** The further away the underlying moves from the strike, the smaller theta gets.

Many traders who want to be long premium to take advantage of a big price move in the underlying in either direction, look at their time decay and calculate a maximum level of negative theta that they will tolerate (usually 1% of their capital). This does not mean that they will leave the position on for 100 days (1% is 1/100th) and that at the end of the 100 days they will have exhausted all of their trading capital. Theoretically, one could never lose all of the money. Realistically, one would still have almost 37% of the initial capital (I have calculated it), even after the 100 days has passed. This method is preferred as a guideline and a trading parameter to prevent traders from becoming overzealous when waiting for a move in the underlying.

## VEGA OR OMEGA ( $\Omega$ )

Vega or omega is a measure of the amount that theoretical values will change in relation a one percentage point change in implied volatility. Note that we are concerned with a 1% change, not with 1% of the implied volatility amount. For example, where implied volatility is 40%, the move is down to 39% or up 41% (not down to 39.6% or up to 40.4%).

It is difficult to maintain perfect vega neutrality with a position in several strikes because of the following factors:

1. Vega levels are different at each strike and change at different rates.

2. Supply and demand nuances (influenced in many cases by open interest) cause some strikes to trade at higher implied volatilities, while others may trade lower or remain unchanged.

The implied volatility levels between months do not always correlate with each other because the further months are part of a vega play, and the closer expirations are more of a theta versus gamma play.

At-the-money options have the greatest *price* sensitivity to the changes in implied volatility. Far-term options are more sensitive than near-term ones.

**Vega Over Time:** All Vegas go down over time.

**Vega as Implied Volatility Changes:** In examining what happens to vega as implied volatility changes, the most important lesson is that at-the-money *vegas* are not affected in the way that in-the-money and at-the-money options are. Vega remains constant when at the money and can be quite volatile when away from the money. This means that each option should change by the same amount on the current day for every one-percentage point change in implied volatility. From 38% to 39% represents the same vega as from 49% to 50%. Vega does not change as implied volatility changes. Vega is not affected by implied volatility changes at-the-money either. This relationship does not hold for away-from-the-money options. When the option is in the money or the same amount out of the money, the vega amount varies by a minuscule amount for every 1% change. This may however have a balloon effect on a ratio spread, as it can start to add up, especially when implied volatility becomes volatile.

**Vega as the Underlying Changes:** Like gamma and theta, vega is greatest at the strike. The further the underlying moves away from the strike, the smaller vega gets.

## RHO (P)

Rho is to interest rates what vega is to implied volatility. Most of the time it is of little concern, and is usually a trader's lowest priority. However, in periods when interest rates are volatile, rho can affect the market maker's profit and loss considerably. This is especially true in places like Brazil, where greater attention was placed on rho risk than delta risk because of the huge swings in interest rates that occurred in the

mid 90's. The sensitivity is greater for the instruments with more time until expiration, as it is in the case of vega. The more time there is, the more borrowing or lending is impacted by a change in interest rates.

## DIVIDENDS

When a stock has a dividend, there are a myriad of considerations for traders who have, or anticipate having, a position in that particular stock. Dividends have an unusual impact on the valuations of not only the everyday strategies but also on the locks. A change in the amount of the proposed dividend, the sudden declaration of a dividend, or a change in the ex-dividend date can create either unanticipated profit or loss for anyone having an existing position. An important lesson to be learned for anyone considering initiating a trade based on a deviation from a fair valuation is to check first to see whether something is wrong, whether a variable has not been considered, or whether any of the variables have changed. On the other hand, hesitating could result in a missed opportunity if nothing was wrong in the first place. This is a luxury that no trader can afford. Because of these unknown factors, there is a huge gap between the practical and theoretical approach to using options. Besides the list of variables that affect the valuations of every options strategy, the biggest and the most obvious unknown is: Where will the stock be when it is time to exercise? This unknown means that there is an opportunity for a rent-a-put early exercise play.

Dividend-paying corporations make an announcement of the dividend's particulars on a quarterly basis in the United States. In many countries, however, dividends are paid only once or twice a year. The announcement states the amount declared and the pertinent dates, important for both shareholders and market players, to consider. Along with the variables of time until expiration and the interest rate, these dates are required for valuation purposes. They are record date, payable date, ex-date or ex-dividend date, and the settlement dates for both the stock and the options. The latter two subject the trader not only to the dividend but also to the cost of carry.

### Record Date

The record date is the date set by the corporation paying the dividend and the stockholder must own “settled<sup>6</sup>” stock in order to be considered the “owner of record” so that he or she can receive the payment.

### Payable Date

The payable date, also set by the paying corporation, is the day when the cash payment will be paid to the owners of record. It is announced when the dividend amount and record date are declared.

### Ex-Date or Ex-Dividend Date

On or before the ex-dividend date or ex-date (this date is set by the paying corporation) the stock has to have been bought, sold, or shorted for it to be subject to the dividend. Keep in mind that dividends must be paid if the trader is short stock because the transaction needs time to settle, and that happens on the settlement date.

### Settlement Date for Stock

This is the date that the buyer becomes the owner of record. Stock settles in three business days in the United States<sup>7</sup> (e.g., a stock traded on Tuesday settles on Friday). Settlement is postponed a day for each holiday in between. For stock to be subject to the dividend it must be settled by the record date. On Friday, in this example, the buyer becomes the owner of record for dividend purposes.

Agreements at the time of transaction can be negotiated between the buyer and seller to alter the date. Stock traded for cash “same day settlement”<sup>8</sup> causes the buyer to become the owner of record by the same day’s close.<sup>9</sup> Similarly “next day settlement” causes the buyer to become the owner of record by the next day’s close.

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#### <sup>6</sup> Settlement

Settlement refers to the actual payment and transfer of ownership for the shares.

#### <sup>7</sup> Settlement Procedures

Settlement procedures vary from country to country.

#### <sup>8</sup> Cash Settlement

Based upon an agreement between buyer and seller at the point of sale, the stock will be settled by the end of the business day that it was transacted.

#### <sup>9</sup> Settlement by Agreement

The settlement of stock as a result of an option exercise also settles in three business days.

### Settlement Date for Options

Options settlement is the next day after the transaction. If an option is exercised on the same day that it is transacted, it follows that the option settlement will take place the next day and the stock settlement will take place in three days.

Keep in mind that if a stock is purchased, or an option is exercised, prior to the weekend, two extra (sometimes more if there is a holiday) days without carry should be factored into, or rather out of, the valuation.

Countries other than the United States have other variables to consider. First, in many countries<sup>10</sup> there is a different tax rate for dividend income (or expense) than there is for interest income (or expense). There may also be different tax rates for foreign and domestic investors. Long-term and short-term capital gains may be treated differently. There may also be different levels of taxation for corporations relative to individuals.

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Based upon an agreement between buyer and seller at the point of sale, the stock will be settled by the end of the business day that it was transacted.

### 10 International Dividends

Germany, for example, factors other variables into the valuation. These include the following:

*Koppelbesteuerungsabkommen*, an agreement between countries to avoid double taxation on dividends for foreign shareholders.

*Kapitalertragssteuer*, a tax reduction for foreign investors.

*Bruttodividende*, the gross dividend received by a German resident.

*Bardividende*, the net dividend paid by the company to the shareholder.

*Courtage*, a transaction fee paid to a broker (Amtliche Makler or Freimakler).

*Körperschaftsteuer*, or *Steuerguthaben*, the amount of tax credit for shareholders who are German residents.

These items are easier to calculate than they are to pronounce. Those people who perform the ostensibly prohibited act known as dividend stripping, however, do know how to pronounce them.

## EXERCISE NUANCES INVOLVING EQUITIES WITH DIVIDENDS

Puts are usually exercised after an ex-dividend date so that the person exercising them does not have to pay out the dividend. They are also exercised for the same reasons that normal puts are exercised, namely when the corresponding call becomes cheaper than the carry amount (do not forget about the rent-a-call option). No trader would be motivated to exercise puts before that date unless the carry on the stock, up to the ex-dividend date, is greater than the short call to be covered plus the dividend to be paid or lost. (Dividends are paid if the exercise results in a short sale, and lost if the exercise results in a long sale.) Keep in mind that the carry rate depends on whether the exercise resulted in borrowing (at say 7.5%) or lending (at say 5%) more or less capital.

Fair Value Equation:  $k + c$  vs.  $s + p + b$

$k$  = strike price,  $c$  = call price,  $s$  = stock price,  $p$  = put price,  $b$  = banking  
Banking is the interest payments or receipts minus the dividend payment.

Calls are usually exercised when the corresponding put dips below the dividend less the carry amount. This can be an opportunity for a rent-a-put situation unless, for the same reasons mentioned earlier, there is a very remote chance that the cheap options will go higher than (in this case) dividends less interest. Therefore, calls should only be exercised before the ex-dividend date so as to receive the most (when already short) or pay the least (when becoming long the stock upon exercise) amount of interest.

## NUANCES OF DIFFERENT STYLES OF CONTRACTS

Every options contract, apart from futures-style options, has nuances that affect the value of the conversions/reversals and boxes. The variables that allow the prices of locks to fluctuate, causing risks and opportunities, are interest (cost of carry) as it relates to Rho risk (price sensitivity to fluctuations in interest rates), dividends, takeovers and tender offers, supply and demand nuances, and exercise nuances as they relate to interest expense reduction or interest income enhancement. Some stocks are hard to borrow for shorting purposes, which puts price pressures on options (upward pressure on puts and downward pressure

on calls) that differ from those in normal situations. American-style, deep in-the-money options, especially those with cash settlement, can be exercised before their expiration date because of an economic benefit to the holder.

### **EXERCISE NUANCES AS THEY RELATE TO INTEREST INCOME OR EXPENSE**

The economic benefit to someone who exercises deep in-the-money options can be a reduction in interest expense or an enhancement to interest income, depending on their position. This can be accomplished by exercising puts or calls in futures, but only puts in equities. The point of exercise is not arbitrary, but the decision concerning whose contracts get assigned is random. If the out-of-the-money option becomes valued at less than the cost of carry on the deep in-the-money option plus the underlying, then the options may be worth exercising. It is for this reason that locks also change in value. Only American-style exercise allows options to be exercised before expiration, causing deep in-the-money options to always be worth at least parity (the in-the-money amount). Otherwise the “deeps” could trade below parity as they do in European-style options.

**Story: Mishandled Reversal:** In the summer of 1992 a group of traders, who had dissected their reversals out to the side and treated them as if there was no exposure, assumed that they were Greek and contract-neutral on the reversals. Although it was a limited risk problem, a large sum of money was involved because they had a huge size on. The reversal emulated a miniature bull spread and when the market collapsed, so did this bull spread. When the calls were trading significantly lower than the synthetic calls (cost of carry on the puts and stock), their puts were assigned. This left the traders with a loss of the difference between the calls and the carry costs. Since they had so many on, it cost them more than \$2 million. This nuance is discussed in detail in the section on equity reversals. **End**

The Black-Scholes model will value locks at significantly different values than the models that start to account for the early exercise

possibility long before the threat of exercise. The Modified Black-Scholes model for American-style options has the deep in-the-money options adjusted back up to parity, while the Black-Scholes model for European-style options will discount them (pricing the deep options below parity) in order to keep the price of the conversion/reversal equal to the cost of carry.

### **TO EXERCISE OR NOT TO EXERCISE?**

It should become clear after reading about early exercise nuances why it is beneficial to be in control of the exercise by being long the deep in-the-money options. There is a good reason to be willing to pay a little extra when buying them and charging a little more when selling / shorting.

Calls are almost never exercised early unless there is a dividend payable to holders of long stock, and it is an amount greater than the interest to carry that stock less the corresponding OTM put at the same price. This OTM put needs to be purchased in order to keep the trader's market exposure the same as it was before the exercise.

Puts are commonly exercised so that traders can save on the carrying costs of their long stock, or so that they can earn interest on being short stock (called short stock rebate). Exercise happens when the corresponding OTM call can be purchased for an amount less than or equal to the carry costs involved with the deep ITM put. The OTM call needs to be purchased in order to keep the trader's market exposure the same as it was before the exercise.

Exhibit 3-4 displays positions in the first column. Each position's exposure before an exercise is detailed. The next column shows the position and it's exposure after exercise of the option. The last column, Lost Attribute, identifies the missing element, which is needed in order to maintain the position exposure that one had prior to exercise. One therefore needs to purchase the corresponding out-of-the-money option in the same quantity. Obviously, it would be wise to buy options closer to the money, but prices available at the time of exercise may not be agreeable. In spite of this, the purchase should be made before one exercises, otherwise one will have the exposure of the lost attribute.

**EXHIBIT 3 – 4**

Consequence of Exercise

Position Before Exercise : Exposure	Position After Exercise :	Lost Attribute
Long Call : Limited Risk	Naked: Long Stock : Unlimited Risk	OTM Put
Long Call / Short Stock : Limited Risk	Flat : None	OTM Put
Long Call / Short Stock / Short Put : Flat	Short Put : Unlimited Risk Long	OTM Put
Naked Long Put : Limited Risk Short	Naked: Short Stock : Unlimited Risk	OTM Call
Long Put / Long Stock : Limited Risk Long	Flat : None	OTM Call
Long Put /Long Stock / Short Call : Flat	Short Call : Unlimited Risk	OTM Call

Understanding how the exercise can be used as a very high-reward for a low-risk strategy can be useful when an opportunity arises. Professional traders exercise in order to save on carrying costs that are greater than the amount that can be synthetically achieved with a different position configuration, or to collect a dividend when it is greater than the corresponding put plus the carry costs of the stock. This is because carrying costs and dividends can be translated into synthetic premium as a component of an option’s value.

A lot of traders exercise deep in-the-money puts (in order to receive interest on short stock) when the corresponding out-of-the-money calls of the same strike become cheap enough to buy. However, it is often beneficial to cover those cheap out-of-the-money calls but hold off exercising. It may be advantageous to wait a while before exercising because the remaining position generates a relatively low-risk / high-reward speculative position to the upside. The following story is about a favorite trade of my career. It was in the CBOT US Treasury Bond options and works a little different than a similar trade in a stock options contract. In the case of stocks, interest is calculated on the stock and the options. In the case of futures contracts, interest is only calculated on the options. Having said that, interest income and expense are also based upon movement in the futures, as I explained in the discussion of futures margin variation.

**RENTING OPTIONS**

**Story: Better to be Late for Early Exercise:** This story from 1985 relates the first time that I capitalized on the early exercise nuance. It will help you to understand how the exercise can be used as a very high reward, low risk strategy.

The trade started on March 1<sup>st</sup> and the saga lasted until May 20<sup>th</sup>.

It all began when a trader standing next to me in the bond options pit mentioned that he was going to exercise his 74 puts that night (76 days before expiration). He said this because he had just covered (meaning bought back the shorts) his 74 calls at 6 ticks ( $.06 = 6/64$ ) = (\$93.75 where each tick is worth \$15.625). Since the bonds were at 67.00, his 74 puts were at parity or 7.00 (\$7,000) each. The carry cost of each put, with the interest rate at 9.7%, was about 9 ticks (\$141). The calculation is  $\$7000 \times 76 \text{ days} / 365 @ 9.7\%$  which equals \$141 (call it 9 ticks). He was going to profit (or save) an extra \$47 (\$141–\$94) for each conversion on the put exercise.

Sometimes this concept is difficult to fully understand. Think of it this way: he bought back calls at 6 ticks that he was synthetically short at 9 ticks. Long futures at 67.00 and long the 74 puts at 7.00 means that \$7000 will either have to be borrowed, or will deplete capital that could be sitting in the bank earning interest of 9 ticks until expiration ( $f + p - k + \text{carry in ticks}$ ) =  $(67.00 + 7.00 - 74.00 + .09)$ . About a day earlier when those calls were trading for 9 ticks each, the conversion was valued at a 9-tick credit ( $f = 67.00, p = 7.00, c = .09$ ). Plug these amounts into the conversion equation:

$k = \text{strike}$      $c = \text{call price}$      $f = \text{futures price}$      $p = \text{put price}$

**Day 1**                       $(k + c) - (f + p)$   
                                     **Short                  Long**  
                                      $(74 + .09) - (67 + 7.00) = .09$  (9 ticks) debit

The trader bought the calls back at 6 ticks (.06).<sup>11</sup> To profit through exercise, the trader has to exercise the puts, which sells the futures at the strike, and in so doing he

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<sup>11</sup> European-Style versus American-Style

In European-style options the puts would be worth 6.61 (6 61/64, that is 3 ticks under parity) if the calls were worth .06. The C/R value would remain at .09, as opposed to the American-style C/R, the value of which changes as the underlying moves.

forfeits the put premium. This transaction unwinds the conversion by doing the reversal for a 6-tick (.06) debit. The profit is therefore 3 ticks (.03).

**Day 2**                     $(k + c) - (f + p)$   
                               **Buys**                    **Sells**  
                                $(74 + .06) - (74 + \text{zero}) = .06$  (6 ticks) debit

When the trader said that he was going to exercise the puts, I asked him to not exercise them, but to offer them out at parity with the futures (i.e., sell both at a total price of 74.00) because I wanted to buy them. He looked at me, a little bit confused, and yelled out "74 puts and futures at parity!" I said, "done". He asked how many. I told him that I would take all that he had (700 spreads). No one else in the pit wanted any. I then yelled out to the crowd, "74 puts and bonds 74.00 bid at 74.00" to see if anyone else wanted to participate one way or the other. No takers. We carded up the trade and I thanked him (the transaction costs to him were equal to the cost of exercising). He wondered why I wanted to do this, thinking probably that I had made a mistake because if I sold the real calls at .06 (the current price), I would have locked in a loss. This would be a loss because even though this would be the conversion for a 6-tick credit, it would cost me 9 ticks in interest to carry it until expiration.

Why did I do it? Hint: these were synthetic calls because I was long puts and futures 1:1. I was bullish because 67.00 was a former resistance point, which I believed would serve as a support level.

I could have bought 700 real calls for 6 ticks each, totaling 4,200 ticks equal to \$65,625. Instead I bought the puts and futures for 74.00. The total cash outlay for the puts was \$4.9 million (700 x \$7000). The carry cost for 76 days was \$98,967 (700 puts x \$7000 x 76/365 x 9.7 percent financing cost).

Any answer yet as to why I did it this way? Was it a mistake?

Before I tell you why, let me first tell you what happened next and draw a comparison with a trader named

Austin, who will have hypothetically bought 700 real calls for 6 ticks at the same time that I bought the synthetic calls.

The original trade was initiated at about 67.00 on the bonds (+700\*74p / +700f at parity + carry).

The bonds rallied to 68 and change, and I sold 700 real 74 calls at 12 ticks. Assume that Austin sold out at 12 ticks as well.

Examine the reward to risk ratios for Austin and myself:

<b>700 calls</b>	<b>Austin's Trade</b>	<b>My Trade</b>
<b>Risk</b>	6 ticks (\$65,625)	9 ticks (\$98,439)
<b>Reward</b>	6 ticks (\$65,625)	3 ticks (\$32,813)
<b>R/R Ratio</b>	1 to 1	3 to 1

Austin bought at 6 ticks and sold for 12 ticks, making a profit of 6 ticks. 6 ticks risk divided by 6 ticks reward, yields a 1 to 1 risk/reward ratio. I bought the futures and the puts for the synthetic price of 9 ticks (f+p-k+carry). It seems as though I only profited 3 ticks when I sold the real calls at 12 ticks, that is 9 ticks risk divided by 3 ticks reward, which yields a 3 to 1 risk/reward ratio.

Based upon this information, it would seem better to have taken Austin's trade, the real calls, as opposed to my trade, the synthetic calls. Most of you are probably wondering why I am still talking about this, but I will ask one more time: which is the better trade?

If it still seems as if Austin's trade was the better of the two, one might want to reconsider after having understood the non-transparent aspect of the trade. Non-transparency is a major cause of deception in options trading. The carry is the deceptive aspect in this case. It is assumed that I would have had to carry the position until expiration to have a synthetic cost of about 9 ticks. The advantage that I had over Austin was that if the market had dropped that day and he had sold each option at a price of 3 ticks, his total loss would have been \$32,813. If the market had dropped the day that I bought my synthetic calls I would have lost nothing because I could have exercised my puts. Exercising (selling futures at 74.00) would have gotten me

out at my spread cost of 74.00 (67.00f + 7.00p). My loss would have been the carry charge. There would have been no carry charge and therefore no loss if I had not carried it overnight.

The next day I sold the real calls at 12 ticks. The futures were up at 68.00, and so the conversion was worth about 7.65 ticks (\$120) ( $\$6000 \times 75/365 \times 9.7\%$ ). The carry charge on \$4,9 million at 9.7% for one night was \$1302. That is \$1.86 per contract or .119 of a tick. Now recalculate the transparent risk of 0.119 tick to the transparent reward of 4.35 ticks (12-7.65):

<b>700 calls</b>	<b>Austin's Trade</b>	<b>My Trade</b>
<b>Risk</b>	6 ticks (\$65,625)	0.119 ticks (\$1,302)
<b>Reward</b>	6 ticks (\$65,625)	4.35 ticks (\$47,578)
<b>R/R Ratio</b>	1 to 1	1 to 36.54

If it had been 2 days until I locked in the value, the carry charge would have been twice as much, and the risk/reward ratio would have been half as great, that is, 1 to 18.27. That is still a lot better than 1 to 1. In fact 50 days of carry would have still beaten the real call purchase. In my mind, I had decided to risk about \$4000 on the whole play (three days of carry). In the interim, if the futures had dropped a good amount, I would have exercised my puts to avoid the carry charges.

I call this strategy 'renting a call'. It also works for renting puts. Renting calls works in a very similar way in stock options, when the out-of-the-money call trades lower than the carry cost of the stock versus the put. Renting puts in equities works when the out-of-the-money put trades less than the dividends minus the carry. These early exercise plays are the very reason that the Black-Scholes model is inappropriate to use for American-style options pricing and analysis. The market activity that followed this trade was quite interesting. Although I cannot really say what Austin would have done with his trades, my position was on automatic pilot. The bonds broke for the next two days and the calls traded back down to 6 ticks. I bought them back at 6.

The profits at this point were roughly \$60,416, which was \$65,625 (6 ticks x 700 calls in and out) minus \$5,209 (carry for 4 days). Who knows whether Austin would have gotten long again there after he had sold out. The calls were lower than carry for me, and so I scooped them up, as the trader who had sold the puts and futures to me had done. I did not exercise as he did because there was a chance that the market would rally and that the calls would then trade above the cost of carry again. If the market continued to break, I could exercise my puts and be done with it. It bounced again three days later, and I sold the calls out at 12 ticks a second time. "KA-CHINGGGG!" Ring that cash register! This trade locked in another 6 ticks profit 700 times, less 3 more days of carry for roughly, \$60,000. I bought those calls back at 6 ticks again six days later. I was back to square one with about \$117,000 profit after carry costs and 65 days to go.

Sometimes you get to a point in a trade where your profits will still exceed your losses even if everything goes wrong from that point forward. In this case there were 65 days to go and I was borrowing about \$4.9 million (with the futures at 67.00). This type of loan decreases as the futures move toward profitability. A decrease in the loan amount decreases the interest expense and therefore increases the profit. If the futures had moved the other way, the loan could have gotten larger unless I had exercised the options to liquidate the loan. Assuming that I just let this ride and paid the carry charge for 65 days on the \$4,900,000, my profit of \$117,000 would have been reduced by \$84,643. I still would have had about \$32,357 in profits.

Some traders would say that I am "playing with their money" (they mean the market's money), and that if I made \$117,000 then lost \$15,000, that I made only \$102,000. I look at it another way. If I make \$117,000 from a trade, it is a profit from that trade. If subsequently I lose \$15,000.00 while maintaining my position, I would say that I lost \$15,000.00 on that new trade.

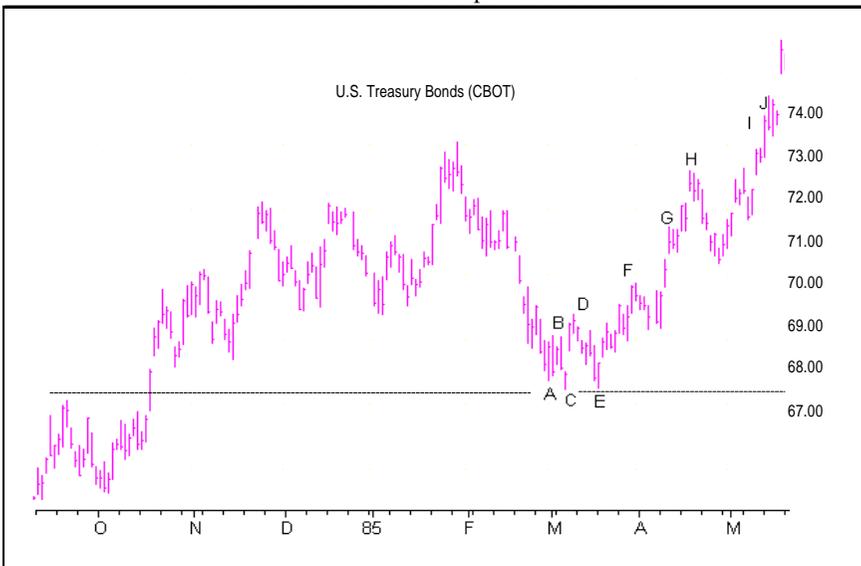
A friend of mine was on a diet. He proudly told me that he had lost 25 pounds from his all time high weight. One week later when I asked him how his diet was going he said with a smile that he was 20

pounds lighter than the highs. I asked him how low off the highs he had gotten. When he answered 27 pounds, I said that meant that he had gained 7 pounds. He stopped smiling, realized that he was now managing a loser and not a winner, and went back to the discipline that had lost him the weight in the first place. The same attitude has to apply to the preservation of capital.

Back to the position of (+700\*74p/+700f): There were 65 days to go. The last on the futures was about 67 and a half (67.16). The carry was \$1246.58 per day, which equals about 7.4 ticks per spread ( $\$6500.00 \times 65/365 / 15.625$ ) until expiration. The futures rallied again, as did the calls that I sold in a scaling-up fashion. At a price of 12, I sold only half of my calls this time (350). It seemed to me that the bonds had built a base, and so I decided to be a scale-up seller. Further up at 15 ticks, I sold half of what was left (175 contracts), at 19 ticks I sold 75. Up at 21, I let 50 more go, and at 24 ticks I sold 25 more. This brought my profits to well over \$170,000. Exhibit 3-5 shows a chart of the bonds and all the points where I made the trades.

**EXHIBIT 3 – 5**

Chart of the Bonds and the points of the trades.



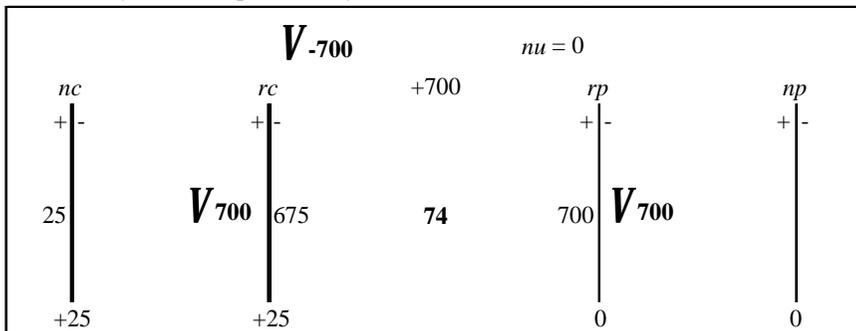
In trades A, B, C, D and E it looks as though I was playing the market perfectly, but in reality it just happened that at points A, C and E the calls were trading at less than carry. Points B, D and F were just where the calls doubled in price, tempting me to take profits.

### PIN RISK

As you can see from Exhibit 3–6, I was left with 25 long synthetic calls. In addition, the futures were at 73 and a half ( $72 \frac{16}{32}$ ), just 16 ticks out of the money. My concern now was pin risk. If the bonds were at 74 the next day, I would have a dilemma. Should I exercise my puts to liquidate my futures (leaving the calls to die worthless) or wait to be assigned on my calls to liquidate my futures (let the puts die worthless)?

### EXHIBIT 3 – 6

The Day Before Expiration, My Position Was:  $+700 \cdot 74p / +700f / -675 \cdot 74c$ .



The dilemma is that if I do not exercise my puts and my short calls are not assigned, I will come in on the following Monday with a position of long 700 futures. I hate it when that happens. If on the other hand I exercise the puts and then I am assigned on the calls as well, I will have a position of short 700 futures. I hate that too. What did I do? I found someone to trade the C/R at even money with me. I did the reversal with a guy named Frank, who did the conversion.

This left me with long 25\*74 real calls that were a half a point out of the money.

### **AFTER EXPIRATION NEWS EVENTS**

The expiring bond options stopped trading at noon on Friday, May 17, but we had until 8:00 A.M. the following Saturday to exercise. Bond futures continue to trade until the 2:00 P.M. close on Friday. If one exercises, one takes delivery of the futures, which still trade for a few more weeks. At 11:58 A.M. on Friday, the bonds were at 73.28 (73 28/32), making the 74 calls just 4 ticks (4/32) out-of-the-money. The calls which I was long were also trading at 4 ticks (4/64), \$62.50. I could have sold them and salvaged the remaining value of \$1,562.50, but I wanted to play for a cheap scalp. I had been waiting to play it ever since I had come down to the CBOT from the CBOE.

Below the strike my calls were just out-of-the-money. I wanted to play the market in a way similar to the way I did one month earlier, when I scalped the calls over and under the carry value of 6 ticks. I was hoping that the market would rally up so that I could sell up to 25 futures and turn my calls into puts. Once filled, I would then hope that the market would break, so that I could buy the futures back under the strike, taking a profit on the futures and turning the position back into plain naked long calls. This game differs from the usual scenario of buying and hoping for a rally or selling and hoping for a break. For example, if I had the chance to sell the 25 futures up at 74.05 (74 5/32), that would be synthetically selling my calls at 10 ticks (10/64) and buying puts for zero. If the market continued to move higher after the sale, I would just exercise my calls and the futures would disappear, leaving me totally flat.

It was a nice dream to buy at below the strike, sell above it, buy again at below it, sell again above, and then buy again below. However, the market just fizzled out and slowly drifted to 73.22 by 2:00 P.M. There was still life though. The cash market was open until 4:00 P.M. Brainstorm! I could play the free scalp with the cash

equivalent. I called a broker in New York to find out the basis and the conversion factor for cash bonds versus futures. It turned out that a \$1 million cash bond was equal at that time to 14 CBOT futures. The first price that I would have liked to sell at in the futures was 74.05, and, I was told by a basis trader, what the equivalent cash bond price would be. Although it was a beautiful warm spring Friday and there was a band playing at the Limit-Up bar near the CME, I decided to stay on the floor and watch the cash screens, hoping to see my price on the bond. I did my homework for Monday and printed out my theoretical value sheets as the custodial squad cleaned up all the papers from the day's trades. By 3:45 the floor was spotless and I was the only one in the room. All you could hear was the click tick clicks from the time stamp clocks. The cash market had thinned out as the dealers were shutting down their operations for the weekend. I was sorry that I missed the band, the beer, and the banter over at the Limit-Up as I walked toward the door. Passing the T-note pit, I looked up as the cash screens went blank. I took a last look at the news screen and all of a sudden the words came across the tape: FED CUTS THE DISCOUNT RATE.

The cash screens suddenly lit up and the bonds were trading almost 2 points higher than I wished to sell at. I have always been pretty conservative so I thought, do not look a gift horse in the mouth, take the money and run. This represented more than \$40,000 in additional profits. I was afraid that there might have been an overreaction and that there could be a sell-off. I called New York and sold \$1 million in bonds and \$1 million in 10-year Treasury notes. The T-note conversion factor was 12 futures for \$1 million of cash notes. The market stayed at that level until the extended trading session ended at 4:30. I exercised my calls to have a basis trade (futures vs. cash) in the bonds and a basis trade in the notes.

On Sunday night (Monday morning over the phone to London), I sold the one bond future left at 75.24. On Monday, it was a simple task to allocate the positions to four

separate arb<sup>12</sup> brokers for liquidation on a not held<sup>13</sup> basis. By the way, bonds opened up limit, but I was already out. No guts no glory.

### DO NOT FORGET TO EXERCISE

The story does not end there. On Monday morning, a trader came into the pit and walked up to Frank with whom I had traded the C/R. The trader said, "I forgot to exercise my 1000\*74 calls on Friday and I heard that your calls were not assigned. So can you have someone in your office please write a check payable to us in the amount of \$2 million?" Frank said, "Sorry, that trade is history." He turned around, made a trade, and never said another thing about it. There was nothing the other guy could do about it except go and close up his operation. He was obviously unaware of the discount rate cut and the cash market rally, so he just assumed that he would be assigned on his puts. Don't be a pinhead. Wait a minute, that \$2M could have been mine if I had not done the reversal with Frank. Easy come, easy go. The last time that I talked to Frank, he was building a 12,000 sq. ft. house. **End**

### RENTING STOCK OPTIONS

The rent-a-call strategy becomes available in stock options when an out-of-the-money call trades lower than the carry cost of the stock versus the same strike put. It is for this very reason that the Black-Scholes model is inappropriate for use in American-style options pricing and analysis.

After real options are sold against rented options, the result is a conversion in the case of rented calls (long stock and long puts) or a

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<sup>12</sup>Arb

Arbitrage

<sup>13</sup>Not Held

'Not held' means that the filling broker is not held responsible if he or she does not get the best price available. This kind of an order is placed when the customer knows and trusts the ability of the broker. Many times the broker can get a much better price than was available at the time of the order, because he or she has a good feel for the market. 'Best can' means best effort.

reversal in the case of rented puts (long calls and short stock). Subsequently, an opportunity may arise where the real option that has been sold declines in value lower again than the banking amount (carry for rented calls or dividend minus carry for rented puts). In that case there is a chance to cover that option for a scalped profit, and to hope to play the rented option again.

The length of time that one finances the position is the risk in rented options. The beautiful thing about the strategy is that if the market is volatile many scalps can be performed. If the market moves against one, one needs only to exercise the deep in-the-money option, thereby liquidating the stock, in order to stop the finance charges from accruing.

One other concern is, of course, pin risk if the position is a conversion, reversal, box or jelly roll. If the stock were at the money on Friday expiration, besides a possible automatic exercise<sup>14</sup>, one would have the pin-risk dilemma (explained earlier) if one's position were a reversal, for example. What can be done to avoid this dilemma? One can place an order to do the conversion, in order to completely liquidate one's position. This can be done for even money if you have a position that is opposite to that of the crowd. However, most often members of the crowd are carrying reversals, and you will have to pay a few cents or so to entice them into adding to their dilemma.

## COST OF DOING BUSINESS

As with any strategy, traders should factor the costs of doing business into their equations. Margin costs and commissions change all the time and are different for each trader based upon his or her brokerage relationship. The math is getting easier now that prices trade in decimals. For example, if the commission for 10 contracts is \$30 that works out to be about \$3.00 per contract for 100 shares. As a result of this calculation, the trader recognizes that an option purchased at \$3.20, effectively costs \$3.23  $[(\$3.20 \times 100 \text{ shares} + 30 \text{ commission})/10$

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### <sup>14</sup> Automatic Exercise

At-the-money stock options at expiration are automatically exercised for retail customers when \$0.75 in-the-money. They are automatically exercised for market makers they are \$0.25 in-the-money.

contracts]. The net proceeds of a sale at 7.40 will be 7.37 [(\$7.40 x 100 shares – \$30 commission)/10 contracts].

### **A FINAL WORD**

The Greeks of a position will help one to be prepared for situations before the fact, if one does just a little bit of analysis. A good time to do this is at or near the end of the trading day. If one is in a hurry, one can try to complete this work prior to the close. Sometimes the market can keep a trader busy up until the close though. In this case, the preparation for the next day could be done after the close, or before the opening on the following day. If one takes the time to prepare after the close, there will be more time to think about it and sleep on it. Adjustments to the position could then still be made before the market opens on the following day.

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C H A P T E R

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**4**

**STRANGLES AND STRADDLES**

When discussing the strangle, the straddle, and the ratioed straddle strategies, it is necessary to understand the buying and selling of premium. Sellers of premium want the market to sit still and buyers want it to move. It is important to understand the role that gamma and the other derivatives play in managing premium. Hence, there will be a presentation on gamma scalping, spread scalping and setting up break-even grids.

**REASONS FOR BUYING AND SELLING PREMIUM**

Why does someone buy strangles or straddles (i.e., premium)? The following are some responses I've had:

1. In anticipation of an implied volatility increase.
2. To have long gamma.
3. In the hope that either the put or the call, or both<sup>1</sup>, goes far enough in the money to make it intrinsically worth more than the call and the put originally cost.
4. To scalp gammas.
5. Traders buy at-the-money straddles because they usually have the lowest implied volatilities compared with the other strikes.

The simplest reason is that long strangles and straddles become long deltas if the underlying rallies, and short deltas if the underlying breaks. A trader loves to be long on the way up and short on the way down. This

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<sup>1</sup> Both call and put go in-the-money

In equities, this could happen in a partial cash tender.

happens automatically with long premium spreads. The opposite occurs with a short premium.

Selling premium is a way that many derivatives traders consistently make money. On average they win more often than they lose. However, when they lose, it is usually by a much greater amount than their average gain, owing to the high-risk nature of selling naked premium. There are, of course, safe ways and dangerous ways to be short premium and still manage it successfully.

The ideal situation for a premium seller is to go to sleep after initiating the trade and to wake up at expiration with the price of the underlying at the short strike price. It is of course not that easy because the market stretches out the trader's wallet from time to time, causing him to react for protection. Be careful when selling premium. If at the end of a trading day, the trader has a naked short premium, he or she is in the hands of fate. It is often too late to turn back especially when earnings warnings are announced and gaps in the market occur.

In some cases, after options prices have become inflated, traders who were not accustomed to selling premium have come in and sold, and made huge profits once price levels have returned to normal. Another example of such a situation turning out well for some is that those insolvent traders who were not forced to liquidate during the 1987 crash did get their money back when the market recovered. However, many who tried to top pick<sup>2</sup> the high in premium levels were unsuccessful. It is not easy to sell naked premium and then wait and see where the strike ends up at expiration, although many traders wish that they could. One just has to get lucky, and have a large amount of trading capital, or both, in order to be able to carry this type of risk.

## PROPERTIES OF STRANGLES AND STRADDLES

From a theoretical standpoint strangles and straddles have very similar properties with regard to gamma, vega, and theta.

Any disparity between the Greeks deviate further as time passes or the market moves away from the strikes involved. They will, however,

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<sup>2</sup> Top picking

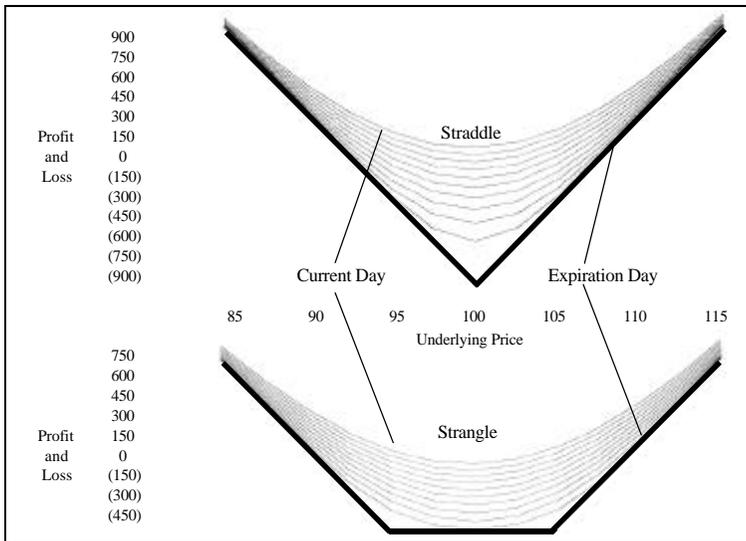
Top picking means to guess the top of a market while bottom pickers try to pick the bottom. Top and bottom pickers become cotton pickers!

come close together again as the underlying moves to a point where both spreads are deep in-the-money.

Curvature refers to gamma. A position is said to have positive curvature when it is long gamma. It is quite common to have analyzer software that shows the curvature over time in one graph. This means that you will often see a curve for the current day, a week from today, two weeks from today, and so forth, and none for the day of expiration where the lines are quite angular (creating a ‘hockey stick’ graph -- see Exhibit 4-1). The settings are usually flexible so that you can choose the time increments.

**EXHIBIT 4 – 1**

Comparing Straddle and Strangle



Sometimes I ask my classes, “What is the difference between a long straddle and a long strangle; for example, +100 straddle and the +95p / +105c strangle with the stock at 100?” Some of the responses are:

1. The straddle is at the money while the strangle is out of the money.
2. Gamma, vega, and theta are all larger for the straddle.
3. The implied volatility of the straddle options is usually lower because of the skew.

4. The straddle costs more.
5. The straddle will have some exercise value at expiration while the strangle is worthless if the stock is at, for example, 104.
6. The straddle is more readily quoted and therefore is more liquid for trading.

All of these are correct, but the answer that I am always looking for is simply “a butterfly.” The difference between these two spreads is the 95/100/105 butterfly. If you are long a straddle and buy a butterfly you end up with a long strangle. This can be either the call butterfly, the put butterfly, the iron butterfly, the “gut” iron butterfly, or any other butterfly configuration as long as it is buying the outside wing options and selling the inside body options.

Since the price sensitivity<sup>3</sup> of a butterfly with more than a month to go is rather stable, the price of a strangle changes at virtually the same rate as that of a straddle. Differences between the Greeks and price sensitivities of the straddle and strangle start to become very apparent during the last few weeks of expiration.

For a one percentage move in either direction from 100, the 100 straddles outperform the 100 strangles by almost nothing. For a fifteen percentage move in either direction, the 100 straddles outperform the 100 strangles quite a lot more.

Often when I ask, “What is the best position for a market maker to have?” (and I am looking for “a flat position”) students say, “Long gamma.” It is true that a long gamma position creates deltas in a direction consistent with the market direction, which is wonderful, but remember that there is a luxury tax attached to this position. That can be very costly. The exposure is negative theta, which means that your asset is wasting away and is also subject to potentially devastating decreases in implied volatility. Gamma scalping methods can be used to recapture some or all of the lost premium, but it is more of a defensive play (money saver) than a money maker.

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<sup>3</sup> Sensitivity

If implied volatility is extremely low, the price sensitivity becomes higher.

## GAMMA SCALPING

Gamma scalping is not for everyone, but the following discussion will surely tie up a lot of loose ends regarding options behaviour. The gamma scalping type of neutralization, also referred to as “delta hedging”, is performed on an as needed basis by market makers whether it be from the long side or short side. The following example, was actually a foreign currency trade involving options, but in the interest of keeping most of the examples in the book as stock options, I have changed some of the particulars so readers can better relate to the material.

**Story: Scalping Gammas in My Sleep:** One afternoon I left the exchange with a net exposure equivalent to 100 nearest to-the-money straddles in a certain underlying. Although I had a position consisting of thousands of contracts, after dissecting the position, I was net long the same amount of gamma as 100\*50 straddles would have been. I simply took the net gamma of my total position and divided it by the gamma for the 50 straddle which was 8.0. The product was my net at-the-money straddle equivalent, which is the amount to liquidate when you want to take a break from trading or want to flatten out your exposure. Since the at-the-money straddle options are usually the most liquid, it is generally easier to get a fair price (narrow bid/ask). In my case, I would have had to sell 200 of the 50 strike options against stock to neutralize the position with respect to most of the Greeks. The next day there was supposed to be an earnings report before the market opened, which I thought could really rock the market. I chose to speculate for a big move and an increase in implied volatility.

Each at-the-money straddle settled at (8.00) at the close for a total cost of \$80,000. I had no intention of risking more than even 10% of that figure. My maximum risk, in my mind, was going to be \$7,500 (\$75 per straddle). This meant that I would have to get out of the straddle when it was worth \$72,500 (7.25) to limit the loss. My only concern was my cost, \$800 per straddle. I hoped to reduce that cost by

making a small profit through gamma scalping opportunities in the after market on Instinet<sup>4</sup>.

Positive gamma scalping can take place when a position is long premium. Negative gamma scalping can be carried out when a position is short premium. My starting delta was zero (the call was .50 and the put was (.50). The total gamma was 800 at the stock price of 48.50, for each one-point move (for a while). If the market had rallied three points to 51.50, the position's delta would become long about 2400 deltas (or 2400 shares worth). About three points lower down at 45.50, I would have been short about that amount, as well.

The market had previously developed into a symmetrical triangle (for technical analysis enthusiasts). I thought that the stock would open either with a gap up, or a gap down, of five points or more (i.e. over 10%), causing implied volatility to explode, a continuation of its current rising trend. The longer dated (75 days until expiration) straddle seemed to be a good strategy. If I had been looking for a gamma play alone, a shorter dated straddle with 12 days to go would have been more appropriate because it had a higher gamma (1930 vs. 800) and was therefore capable of manufacturing more deltas in the same move in the stock.

There are several trade-offs to consider when buying a straddle. As it was, I had less than half the theta to worry about (\$530 per day vs. \$1300) and three times the vega (a double-edged sword), which was what I was playing for with the far month straddle versus the near month straddle (\$1800 per 1 percentage point change vs. \$600).

Since the stock was available to trade in the after market, I decided to put in limit orders to scalp some stock if the market gyrated between 43.50 and 53.50. The reason that I had picked those levels was that these points represented breakout levels, in my opinion. Outside of this range, I no longer had

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<sup>4</sup> Instinet

Instinet is "The eFinancial Marketplace." who provide a single source for a growing array of services, bringing buyers, sellers, and information together on a global basis, 24 hours a day. Instinet is a place where institutional and professional investors can trade with each other in 40 markets worldwide.

any desire to fade<sup>5</sup> the market. At 53.50 I would be fairly neutral (after the delta hedging fades), primed to take advantage of a move in either direction, because from my analysis that point would either continue to be resistance or change to become a new support level. At 43.50, again, I would be fairly neutral (after the fades) and ready for a bounce off from the support or a break through it. I intended to scalp gammas until the stock did break out.

Remember that my gamma was 800 for a one-point move. The most difficult aspect of gamma scalping is deciding how (stock, calls, puts or spreads) and at what stock price levels you are going to do your scalps. The how in this case was easy because I was doing it in the after market and only stock trades there. It was tougher to decide at what stock price levels to scalp at, because this is an individual matter. What stock level depends on how large of a trade is going to be made. What is too small or too early for one trader might be too big and/or too late for another. The answer varies directly with the size of the trader's eggs and you need an "eggometer" to measure this. Gamma scalping is basically fading the market as the position manufactures deltas.

My eggs were a size 1000 at the time, so I decided to fade with 1000 shares at 1.25 intervals (800 deltas for 1.00 is 1000 deltas every 1.25). Incidentally, trading 1000 every 1.25 assumes that gamma is linear, which it is not. It appears to be linear because these are longer-dated gammas, but regardless, I wanted to trade in round lots to keep the orders simple.

Note that if my position had the shorter term to expiration of 12 days, I would have had to trade a lot larger / more often. A gamma graph looks like a hump with the peak near to the strike price where gamma is the greatest. As we move further from the strike, the gamma gets smaller. The hump gets taller and narrower as time goes by. With 12 days to go the gamma is 1930. At this point, I would have chosen to scalp 1000 shares at half point intervals.

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<sup>5</sup> Fade

To fade means transacting counter to the market's direction. If the market is falling, fading means buying on the dips. If the market is rallying, it means selling on the way up.

The order that I placed with my broker was good until the next morning's open:

“Buy 1000 shares every 1.25 and/or sell 1000 shares every 1.25 starting at 48.50, where the call and put deltas were 50 and (50) respectively” (the closing futures price in New York).

“If you sell 1000 and it drops 1.25, buy them back.”

“If you buy 1000 and it rallies 1.25, sell them out.”

“If they get past 53.50 on the upside, stop selling and pray that the stock goes to the moon for me.”

“If they get past 43.50 on the downside, stop buying and pray that the shares plunge into the toilet for me.”

The broker could not understand how I could possibly wish for the market to continue in the same direction subsequent to either selling all the way up or buying all the way down. I asked him to leave that to me and to please give me a 6:00 A.M. wake-up call with any fills.

When the phone rang at 6:00, I hoped that the broker would tell me that the results of the pre-announcement speculation sent the stock over 55.00. He told me that the stock was at 48.50, exactly where it had closed the day before. After drying my tears, I was immediately getting geared up to sell out all of my premium and get short some on the opening bell at 8:30 because implied volatility would undoubtedly be annihilated if earnings were as expected. The broker then proceeded to tell me that I had had a nice night and that I was a genius because I had sold 3000 shares on the way up to the high of 53.00, and bought each 1000 shares back for a 1.25 profit, then bought another 3000 on the way down to the low of 44.00, and sold each 1000 shares for a 1.25 profit, totaling a \$7,500 profit. Exhibit 4–2 shows the transactions.

What seemed ingenious to the broker was simply going to cover the beating that I was about to take if the underlying opened unchanged. It was no surprise to earnings and it looked as though the stock would stay for a while longer in that symmetrical triangle so on the opening bell, I was able to

bang out my 100 straddles and a little bit more at 7.25 (a good sale because it closed later that afternoon at 6.75), three quarters of a point lower than where they settled the day before, for a \$7,500 loss, equal to the profit from the gamma scalping. Remember the luxury tax that I mentioned earlier?  
**End**

**E X H I B I T 4 – 2**

The Effect of the Gamma Scalp Trades

Stock Price	Call Δ	Put Δ	Delta of 100 Straddles	Flat Δ After Each 1000 Share Trade			Flat Δ After Each 3000 Share Trade		
53.50	70	(30)	4000						
52.25	65	(35)	3000		(C)			(A)	
51.00	60	(40)	2000		(B)	D			
49.75	55	(45)	1000	(A)		E			
48.50	50	(50)	0			F		(L)	B (D)
47.25	45	(55)	(1000)			G		(K)	
46.00	40	(60)	(2000)				H	(J)	
44.75	35	(65)	(3000)					I	
43.50	30	(70)	(4000)						C

Implied volatility is a calculated value that is backed out (a by-product) of the statistical model based on the premium level of the options. Through the processes of supply and demand, the market attempts to predict volatility in the future. Buying pressure caused by demand and selling pressure caused by supply meet where the market predicts what the actual volatility will be. Although this mechanism may often be incorrect, as time passes the actual movement of the underlying has an uncanny way of erasing option premium in an amount equivalent to the extent of the movement. It is frustrating to see gamma scalps earn only what was lost when the premium gets crushed, but it is a necessary defense.

Often when long premium, the erosion of value is far greater than the profits from gamma scalping. This suggests that having positions of short premium profit more often than positions of long premium. It is true that one wins more often when short premium, but losses can be severe if safe strategies are not employed. Outright naked short premium is not for everyone. One must be prepared for extreme market conditions, be disciplined and be quick to adjust the position when necessary.

In retrospect, it would have been better to have ridden my deltas further, and to have traded 3000 shares at \$3.75 intervals instead. This

would have yielded a profit of \$22,500 during the night minus \$7,500 the following morning for a net profit on the trade of \$15,000 instead of a scratch<sup>6</sup>. However, a problem occurs when the size and increment are too wide for any subsequent move. If my size, for example, had been 400 every \$5.00, then I would have missed out on any gamma scalping opportunities during the after market because the high was only 53.00 (versus a needed trade at 53.50) and the low was only 44.00 (versus a needed trade at 43.50). If it is carried out with a smaller size and narrower increments, the losses from the premium can exceed the profits from gamma scalping.

Examine Exhibit 4–2, again. For each stock price, observe the implied call and put deltas. The next column shows the total delta of 100 straddles. The fifth area shows where the scalps were traded to flatten out the delta. The last area depicts where the scalps could have been traded if I had bigger eggs and wanted to take more risk.

A trader can never know in advance the size and increment of his or her “pure” gamma scalps. I say pure because there is nothing from stopping anyone from overbuying or overselling the amount of deltas produced. Sometimes I will sell into a rally more deltas than are generated simply because, if I am right, I will make more money and if I am wrong or too early, any continued move will generate the contracts that I need to absorb the overtrades. For example, I may decide to trade 1200 shares instead of 1000 at each scalp point. In this case, I would also have ended up with a greater profit than in the example, merely because the stock was unchanged in the end. However, consider what would have happened if the stock had rallied to 55.00. At 55.00, I would have had a straddle delta of +5000 against minus 4800 deltas (4 trades at 1200 shares each) from my stock trades up to and including a sale at 53.50. (At 53.50 I would have stopped selling because of the breakout through technical resistance.) When the market arrived at 55.00, my position would have generated additional positive deltas, enough to absorb the 4800 short and even begin to get long again (+ 200).

Exhibit 4–3 shows another perspective where each sale of the 1000 shares is synthetically selling ten calls and buying ten puts. As you can see in the net call and net put columns, the ratio of the straddle changes

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<sup>6</sup> Scratch

A trade which yields no profit or loss. Most successful traders will say that many of their trades are scratched, and that they are happy if they can get out before the trade loses.

with each of the gamma scalps, A, B, and C from (+100c by +100p) to (+90c by +110p) to (+80c by +120p) and to (+70c by +130p), respectively.

If the market were to continue to rally so that short deltas were not being generated and you continued to sell, and sell, and sell, while never getting the chance to buy, it would not be possible to cover gamma scalping sales. Eventually, with the sale of 10000 shares of stock, the position would turn into long 200 puts, which would be significantly out of the money, perhaps even worthless. This would most certainly be a losing trade because the average sale of all of those shares would have had to be greater than 56.50 (48.50 + 8.00), that is, the strike plus the original straddle cost, to make a profit. Conversely, if the market moved in a slow grind downward, the average purchase price of the stock would have to be 40.50 (48.50 - 8.00, the strike minus the original straddle cost) to break even. The position would eventually be net long 200 calls, which would most likely be worthless.

**EXHIBIT 4 – 3**

Dissections of the Gamma Scalps

Before any Gamma Scalp				
<i>nc</i>	<i>rc</i>		<i>rp</i>	<i>np</i>
+   -	+   -		+   -	+   -
100	100	50	100	100
+100	+100		+100	+100
<b>Straddle 100 Times</b>				

After Gamma Scalp A				
$\sqrt{+10}$		<i>nu</i> = 0		
<i>nc</i>	<i>rc</i>	(1000)	<i>rp</i>	<i>np</i>
+   -	+   -		+   -	+   -
90	100   $\sqrt{10}$	50	$\sqrt{10}$	110
+90	+90		+110	+110
<b>Ratioed Straddle 90c by 110p</b>				

After Gamma Scalp B				
$\sqrt{+20}$		<i>nu</i> = 0		
<i>nc</i>	<i>rc</i>	(2000)	<i>rp</i>	<i>np</i>
+   -	+   -		+   -	+   -
80	100   $\sqrt{20}$	50	$\sqrt{20}$	120
+80	+80		+120	+120
<b>Ratioed Straddle 80c by 120p</b>				

After Gamma Scalp C				
$\sqrt{+30}$		<i>nu</i> = 0		
<i>nc</i>	<i>rc</i>	(3000)	<i>rp</i>	<i>np</i>
+   -	+   -		+   -	+   -
70	100   $\sqrt{30}$	50	$\sqrt{30}$	130
+70	+70		+130	+130
<b>Ratioed Straddle 70c by 130p</b>				

## Gamma Scalping Effect on Pricing

The straddle originally cost \$800 each. To calculate the net premium, multiply that by the quantity of 100 for a result of \$80,000. Each trade on the gamma scalp serves to reduce that net premium outlay. The stock, a synthetic combo, is basically generating a credit with each sale above the strike and each purchase below the strike. Selling 1000 shares at 51.00, for example, is like selling ten calls and buying ten puts for a total credit of 1.00, ten times (synthetically priced<sup>7</sup>). At 52.00 the credit would be 2.00 etc. If the stock is bought above the strike, the cost is obviously being added back and is increasing even though there is a profit on the isolated scalp. Buying the stock back below the strike reduces the cost because a synthetic combo (buying calls and selling puts for a greater amount) is being bought for a credit.

Suppose that I had been constantly hedging deltas, trading 400 shares of stock every half point instead of 1000 every 1.25. I do not have a chart of exactly what happened that night, but I am sure that there were opportunities to scalp many 400 share orders as the stock bounced around. It would, however, have taken a lot of bouncing for that profit to exceed the \$7,500 produced with the 1000 share trades every 1.25, let alone the \$22,500 produced with 3000 every 3.75. As I stated earlier, when long premium, trades are probably most profitable if you can wait for the widest possible increment on a larger size without missing the opportunity to scalp. Every situation is different so one can only find out after the fact.

Now consider what strategies traders could employ if they are short premium and their position is manufacturing deltas against the market direction. Their position manufactures long deltas with each downtick or becomes short deltas with each uptick. Suppose that Shorty was short 100 straddles the night of my trades. He may have handled the position in a number of ways:

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### <sup>7</sup> Synthetically Priced

The conversion/reversal price is needed to get the exact equivalency, but in this case, since I am using zero interest and no dividend, the pricing is accurate. This means that a sale at 51.00 in the stock is the same as a call/put combo sale at 1.00 (selling call, buying put).

1. He could have done nothing and reaped the reward of an unchanged market followed by a decline in implied volatility.
2. He could have placed orders exactly the opposite of me and lost \$7,500 on the negative scalps and profited a greater amount during the next day and beyond if he held out.
3. If he had been overly cautious, Shorty would have placed an order to buy 400 every half point on the upside and sell 400 every half point on the downside. The result would have been a loss of at least \$7,200 overnight (18 losing scalps of .50 on 400 shares each), assuming straight up to 53.00 (and buying 400 at that point), followed by straight down to 44.00 (and selling 400 at that point) and back up to 48.50. Of course he could have made a bit more than that in the morning if he had ridden it while the premium got crushed. I used to like to have coffee in the lounge on days when I was short premium. It can be an expensive coffee break though.
4. He could have placed a stop at, say, 55.00 for twice as much stock as his position had already generated short, thereby reversing the position. This is an aggressive play because the market could suddenly drop, but it would have enabled him to absorb the stock manufactured against his position on a continued move upwards. His stop order would not have been filled, and he would have profited from the unchanged opening price.

There are as many different techniques for scalping gammas as there are traders. Each method is based on the individual trader's experience or lack thereof, and the amount of risk that he or she is willing to take.

### **DYNAMIC GAMMA SCALPING**

As I demonstrated in my gamma scalping example, trading stock against long straddles can be very limiting. If on that overnight trade I had had more alternatives (i.e. if options had traded in the after market and were liquid), I could have altered my premium profile or avoided the dampening

effect on my net contracts. I could have sold calls when the market was moving up and sold puts when the market was moving down. In this way, some of the premium erosion that I suffered would have been reduced.

An alternative can be to buy premium with each adjustment. This strategy can work well if the stock moves in one direction. One buys the delta equivalent amount of puts on the way up and the delta equivalent amount of calls on the way down. However, if this strategy had been used instead of my trades, a larger loss would have been incurred owing to the premium decline on the opening. On days when implied volatility increases, traders profit very well from buying options to scalp their gamma because their hedges either do not lose as much as the stock trades would have lost, or they do not lose anything at all. On days when volatility is very high and the market goes up, the puts also can increase in value and the strategy will be extremely profitable.

A dampening effect occurs if only stock is being scalped and the market moves predominantly in one direction, causing a loss of net units in that direction. For example, if the market is in a bull trend, shares are sold into that rally in anticipation of buying them back lower. If they are not bought back because the rally continues, and more and more are sold, all net long call contracts (which one could use for an extended move up) will have been depleted.

There are other ways to neutralize deltas, which can be achieved without changing premium or losing any net contracts. One has the option of adding or removing premium at different strikes and/or for different months. Otherwise one could add to the net contracts, while removing premium using timespreads, diagonals, back spreads, and ratio spreads.

## SPREAD SCALPING

Most traders would rather go home with a flat position. Day traders, scalpers, position traders, options speculators, and market makers would all be delighted if the market were to do what they expected before the closing bell, so that they could get flat. They would rather not have to worry about it overnight and enjoy the fact that they had had a good day. The next section is devoted to the concept of getting “in” and “out” of spreads which do not have a transparent price level.

A transparent price is one that is displayed on the boards of the exchanges or on computer screens via price feeds. When something is nontransparent, an additional amount has to be factored in to derive its

true value. The biggest nontransparencies in the markets today have to do with embedded qualities, such as dividends, cost of carry, and features of delivery. Profits are made by those who can calculate nontransparent spread values faster than the competition.

Prices are certainly not displayed if the spread is some sort of ratio of different contracts. Any relationship can be made transparent today with the sophisticated software or market-linked spreadsheets that are available. The user can define relationships that update dynamically as individual contract prices change.

To be able to maintain a reference to cost levels while trading spreads, with or without these tools, one must have a system to monitor and evaluate price relationships between the instruments that are being traded.

The next few examples have little to do with options. They are provided to help promote certain conceptual ideas for spread tracking. It is useful to comprehend this because similar techniques can be used to scalp in and out of relatively liquid options that are traded against the underlying on a delta-neutral basis.

### BREAK-EVEN ANALYSIS

Break-even analysis is used to create and monitor break-even points. It is very similar to scalping a futures spread. For example, assume that a spread in the S&P 500 futures has a fair value<sup>8</sup> between the March and June contracts of \$2.00. The spreader tries to buy below \$2.00 or sell above it. Suppose, for example, that he or she legged it and paid \$1.85 [bought SPM (June) for 1358.85 and sold SPH (March) for 1357.00]. He or she may have a calculator or a little spreadsheet in a handheld computer, or may write some prices down on a card. The grid of numbers in Exhibit 4-4 is set up for a spread price of \$1.85.

This is merely a way to precalculate the break-even levels so that while trading, the trader can concentrate on other important matters, such as seeing what else is happening in the market while waiting for a potential trade at a critical moment. Exhibit 4-4 shows how the trader might exit the trade.

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<sup>8</sup> Fair value

Fair value is the cost of carry between the two time periods minus the present value of the dividend cash flow.

**EXHIBIT 4 – 4**

## Intermonth Spread Scalp: 1

SPH	SPM	
-1	+1	
1355.30	1357.15	The trader has established at what points he or she will break even on the SPH (March contract) vs. SPM (June contract). All prices in column 1 are 1.85 lower than the prices in column 2. This grid of numbers represents some break-even prices. If the trader sells SPM for a value in the right-hand column vertically higher than what he or she pays for the SPH in the left-hand column, the trader will profit. If the two prices are at the adjacent level, the trader will scratch the trade, that is, break even.
1355.25	1357.10	
1355.20	1357.05	
1355.15	1357.00	
1355.10	1356.95	
1355.05	1356.90	
1355.00	1356.85	
1354.95	1356.80	
1354.90	1356.75	
1354.85	1356.70	
1354.80	1356.65	

**EXHIBIT 4 – 5**

## Intermonth Spread Scalp: 2

SPH	SPM	
-1	+1	
1355.30	1357.15	The original price is 1.85 but a 2.00 could be easily calculated in your head (1356.95 minus 1354.95 = 2.00). If the trader gets out of the trade with the relationship shown, three prices higher, the trade will be profitable. The profit will be .15 or 3 ticks for each spread that he or she bought.
1355.25	1357.10	
1355.20	1357.05	
1355.15	1357.00	
1355.10	1356.95	
1355.05	1356.90	
1355.00	1356.85	
1354.95	1356.80	
1354.90	1356.75	
1354.85	1356.70	
1354.80	1356.65	

This is an easy example, but even this gets tough for many when the pressure is on. It gets even tougher when you are trading products in fractions like 32nds and 64ths, even when they are displayed in decimal form (e.g., OTCBB<sup>9</sup> stocks, U.S. Treasury bonds and notes).

For example, where traders do a spread with a tail or on a ratio, it becomes almost impossible to calculate break-even points in their heads.

<sup>9</sup> OTCBB

Over the Counter Bulletin Board.

A tool or a program is needed that tells the break-even price of one contract at each tick price of the other contract. Exhibit 4–6 shows a spread with a simple ratio of 2 to 1.

**EXHIBIT 4 – 6**

InterStock Spread Scalp

ORCL	MSFT	
2	1	A stock spread trader might trade 200 shares of ORCL for every 100 shares of MSFT. For example, a trader buys MSFT 50 and sells twice as many ORCL at 22 1/2. Each 2x1 spread was bought for 5.00 (50 minus (2*22 1/2)). A “5.00” grid is then setup. To do this, make a list of consecutive prices, such as every 1/4 in the first column. If ORCL is 22 1/2 put that price in the middle, add 1/4s going up and subtract 1/4s going down. To determine the relationship between ORCL and MSFT prices, multiply 22 1/2 times 2 and add 5.00 (the spread cost) to arrive at 50.00 (the break-even price with ORCL at 22 1/2). Now realize that if 200 ORCL each change by 1/4, 100 MSFT must change by 1/2 to keep up. So add 1/2s to 50 to the upside and subtract 1/2s to the downside. Once you complete this process, check for errors by seeing that the differences are 5.00 at the two extremes (53 1/2 minus (2*24 1/4)) and (46 1/2 minus (2*20 3/4)).
24 1/4	53 1/2	
24	53	
23 3/4	52 1/2	
23 1/2	52	
23 1/4	51 1/2	
23	51	
22 3/4	50 1/2	
22 1/2	50	
22 1/4	49 1/2	
22	49	
21 3/4	48 1/2	
21 1/2	48	
21 1/4	47 1/2	
21	47	
20 3/4	46 1/2	

**MISSING THE HEDGE**

Often traders get into the habit of squeezing their orders, especially when they miss their hedge or get caught between legs. Squeezing means that they avoid going to the market (paying up) on the underlying when hedging and sometimes let the stock or futures go far against them. Some traders get so addicted to this that they do it on every order. In a tight options market they may squeeze the futures for 2 and 3 ticks in order to make a half tick in the options.

**Story: Missing The Hedge:** On my birthday in 1986, a S&P option broker legged a combo spread to unwind an error which cost him \$450,000 because the futures were down 5%. To liquidate, he bought overpriced calls and sold the puts dirt cheap to a few of us. This trade (selling 100 combos) required that I buy 100 futures to lock in a profit. When I turned to my broker, I noticed that he had left for the day because he was fed up. To compound the problem, trading in the September futures had switched over to the back month area as December had become the front month. It seemed

that I was not really prepared to handle 100 S&Ps at that moment. It was the first futures trade of the day for me. Up until that point, every trade that I had made was on an options-to-options basis. I could not get anyone's attention, so I had to physically run around the S&P futures pit to the place where you can enter it. It seemed that the futures were faster than I. As I ran, I watched the SPUs rallying by whole points (1.00) as opposed to the usual .05 increment (which was about the first time that this had ever happened—today it seems to happen almost every day). Each point on 100 lots equals \$50,000—327, 328, 329, 330. Finally, I made it to the point where I was supposed to be (20 seconds and \$200,000.00 later) and asked Jimmy, a spread trader, for a market. He could see the anguish in my face, smiled and casually said, “331–332” (another \$100,000). TIME OUT!

What would you do in this situation? In a split second, I was reminded of the time when I went into the back months of the bonds to buy 100 contracts (also for a hedge). The market was “10–12” so I tried the middle it with an 11 bid but the spreaders stood their ground “at 12” and smiled that same smile. I made an obscene gesture and left the pit without buying any, only to find myself two seconds later running back in to pay 17 (that disgruntled moment of hesitation cost me over \$15,000)

TIME IN! “Buy 100 at 332” I said. He said, “Done,” and turned to buy December against it and watched as the SPZs rallied another six points (6.00) against him. I guess he thought that I knew something (yes, I knew that I hated myself when it cost me 15 grand in the bonds that other time). That was a trade from hell. When the smoke cleared I was lucky to be ahead \$70,000 from the great edge on the combo.  
**End**

### **The lessons from the above example are:**

If you ever catch yourself smiling after a trade, it might be already too late to get out.

Indecision and hesitation are luxuries that traders can ill-afford. Timing is everything.

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CHAPTER

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5

**VERTICALS (BULL AND BEAR SPREADS)**

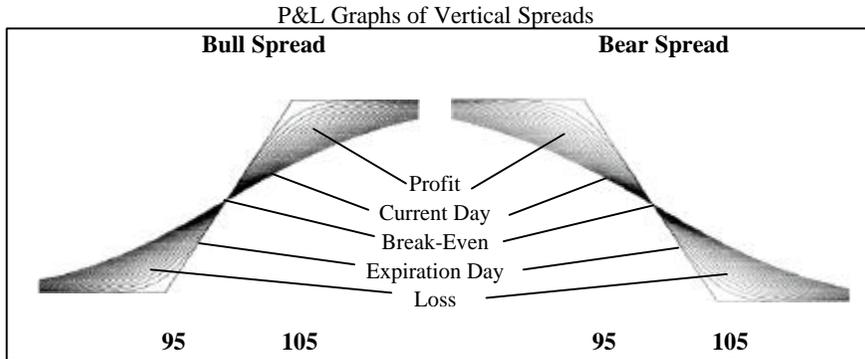
Verticals (Bull Spreads and Bear Spreads) are the trader's most versatile directional speculative tool. They are also instrumental in volatility trading. Retail investors can now expect to enjoy this versatility as well, since commissions have come down to level the playing field between retail customers and professional traders. Verticals are very popular owing to their limited risk nature. Although they have limited profit potential they can still reward a trader many times the risk taken. Since the crash of 1987 it has been too costly, from a margin standpoint, to sell naked options. In addition, the market's recent high volatility causes options' premium to be too expensive to buy. So where does that leave traders? Verticals are soon to be the bread and butter of the industry. When narrowly quoted, verticals offer investors a more economical way to enter and exit the market. Market makers are attracted to the type of inventory that is easier to manage as far as his or her whole position is concerned. It is certain that competition for this type of inventory will cause the bid/ask spreads to become even narrower in the future, bringing about better execution prices.

A vertical may be used for rolling risk and can be a useful weapon in avoiding an early assignment. Risk-averse investors and fund managers who want to participate in the upside (and even downside) of the market can put on a particular hedge that turns their stock investment into a synthetic vertical (fence) during periods of uncertainty. Although they can also be useful for complex trades such as gamma scalping, the most obvious use for verticals is that of speculating on direction. It can also be helpful to become familiar with how premium is affected as the underlying travels between and beyond the strikes of a vertical.

The following P&L graphs in Exhibit 5-1 are examples of at-the-money verticals. The 95/100 bull spread is a mirror image of the 95/100 bear spread. Remember from Chapter 1 that a vertical can be comprised

of a call spread, a put spread or a synthetic vertical, known as a fence (reverse fence). A fence spread consists of calls, puts and the underlying stock. The differences between the three types of verticals are minor because, as mentioned earlier, one spread is only a box or a conversion/reversal away from one of the others.

## E X H I B I T 5 – 1



### SPECULATIVE CONSIDERATIONS WHEN USING VERTICALS

It is not enough to know that a bull spread is used when one is bullish, and that a bear spread is used when one is bearish. Additional considerations are warranted before applying a strategy to a market prognosis, such as:

1. Should one be considering a spread in the money, (ITM), at the money, (ATM), or out of the money (OTM)?<sup>1</sup>
2. Does the trader have an opinion on direction, or does he or she want to exploit changes in implied volatility?
3. How soon does the trader expect the market to move? Direction, time and volatility levels must all be considered.

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<sup>1</sup> ITM, ATM or OTM

With respect to the stock's current level, a vertical might have one option ITM and one OTM, making it what this book will refer to as an ATM vertical. In addition, in this book an ITM vertical refers to one where both options are currently ITM, and an OTM vertical refers to one where both options are currently OTM.

**PREMIUM: TIME AND IMPLIED VOLATILITY EFFECTS**

It is helpful to understand how the bull spread and the bear spread relate to the box spread and to each other. Although retail customers do not usually consider trading into boxes for any particular purpose, more strategies become available if one understands the box structure. In addition, if the investor knows a little about butterfly prices, he or she can also compare vertical prices to the next vertical up or down, which creates a greater sense of where the prices belong. Compare the in-the-money, at-the-money and out-of-the-money 10–point verticals in Exhibit 5–2.

In Exhibit 5–2 there are two sets of valuations for each vertical with the stock at a price of 105.00 (illustrated in the middle column). Let us first become familiar with the structure of the Exhibit. The call spread values are lightly shaded ( ) representing their portion of each 10 point box. For put spread values, a darker shade is used ( ) representing their share of the remaining value of each box. Call spreads have an inverse correlation to put spread values due to relationships they both have to each individual box spread valuation. If you were to add together the shaded areas, for example, between the 100 and the 110 strikes, you would see that they make up almost the complete distance (*basic value*) between the strikes, i.e. 10 points (there are exceptions<sup>2</sup> to this). The remaining value, a thin area depicted with a brighter shade, is based on the cost of carrying<sup>3</sup> the box. The spread values ‘Today’ (left column) can then be compared with spread values at a ‘Later Date or Lower Implied Volatility’ (right column).

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<sup>2</sup> **Exceptions**

Boxes are normally valued at the present value of their basic value (difference between strikes). Early exercise opportunity premium causes boxes to trade regularly above the basic value.

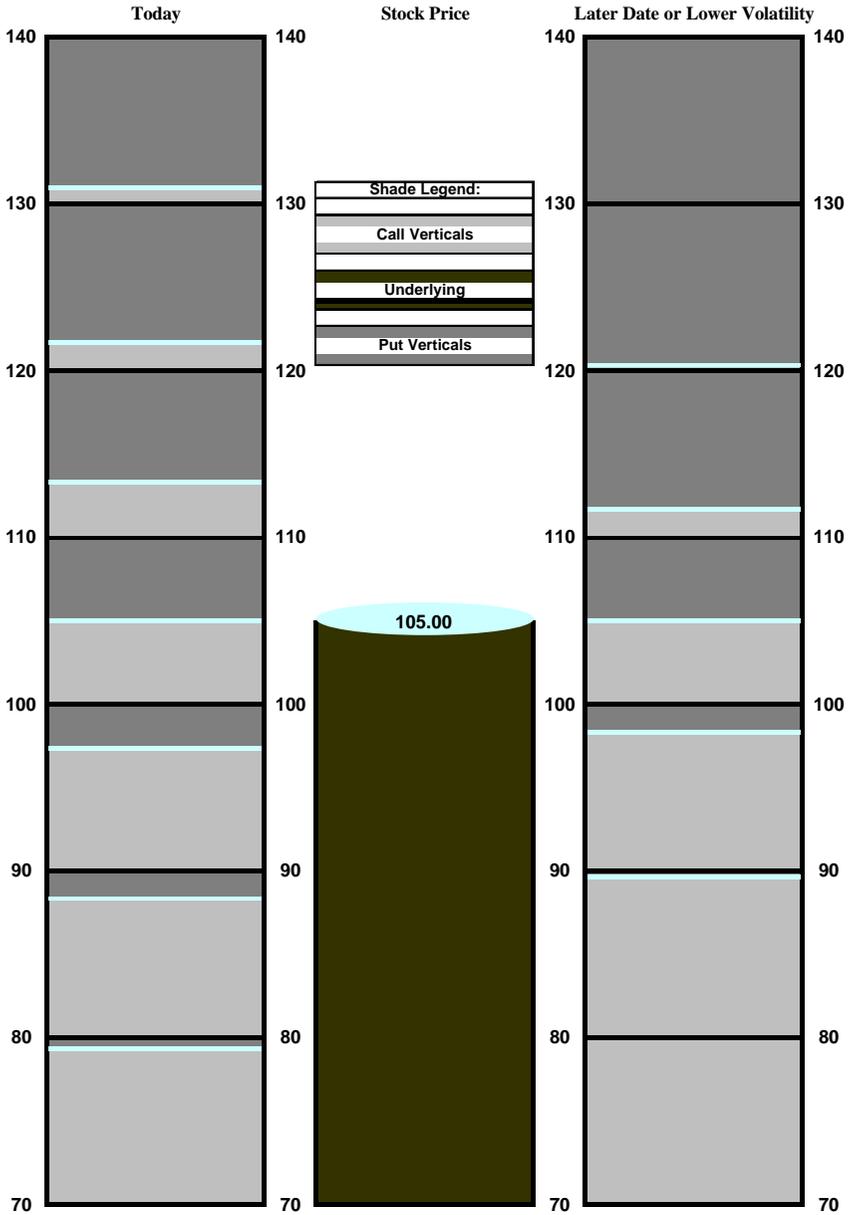
<sup>3</sup> **Cost of Carry**

Cost of carry is of huge importance to market makers because of their pricing practices. Every penny counts. For a retail investor, it usually does not matter so much if a \$10 box is valued at

\$9.70 or \$10.30.

# EXHIBIT 5 – 2

Vertical Bamboo



Notice that, in both groups, the ATM verticals have equal values, at about half<sup>4</sup> of their potential basic value of 10.00. Five points of the value is, again, shaded ( ) for the call spreads and five points of the value is shaded ( ) for the put spreads. This area has a special property in that it has no exposure to premium because each spread's options are equidistant from the stock price. Therefore the amount of time left and the overall implied volatility<sup>5</sup> do not influence their values. The market nuance called 'skew'<sup>6</sup> will cause values to deviate to some degree from what is portrayed in this example.

OTM vertical spreads (call verticals with strikes above the stock price and put verticals with strikes below the stock price) have more value 'today' (left column) than with 'less time or lower implied volatility' (right column). ITM verticals (call verticals with strikes below the stock price and put verticals with strikes above the stock price), on the other hand, go against initial logic and instead have greater values with 'less time or lower implied volatility' (right column) than today with more time to go (left column).

As a consequence, the lower strike box values are dominated by the call spreads, taking up more value the further they are ITM. The opposite holds true for the spreads in the upper half where the OTM call spread values are reflected with less area as they become further OTM.

The lost values in the call spreads move to the put verticals, which are increasingly ITM the higher their strike prices. This is simply a result of the box valuations, and it is also evidence that a long call vertical's

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**<sup>4</sup> Half the Box Basic Value**

Skewing of the volatilities plays a big role in vertical valuations. When the underlying is exactly between the strikes, using the same implied volatilities for all strikes produces a call spread that is cheaper than the put spread, owing to the fact that OTM calls have greater value than OTM puts with equal proximity to the money. Volatilities are set lower for the higher strike in this example, causing the two spreads to be of virtually equal value.

**<sup>5</sup> Overall Implied Volatility Level**

Since not all series of options trade at the same implied volatility, it is hard to say that one implied volatility represents a single month, but people do, and they usually refer to the at-the-money series or the average of the closest three series.

**<sup>6</sup> Skew**

Skew or smile, refers to the fact that implied volatilities can vary at different strikes. The risk is that the implied volatility for the strikes of long options can decrease while those for strikes of short options can increase. It is therefore necessary to monitor the option's sensitivity to the P&L and the Greeks as implied volatility changes at each strike.

P&L performs identically to a short put vertical's P&L. Keep in mind that a box can expand beyond its basic value in the case of early exercise.

Remember: time and implied volatility changes affect the ITM and OTM verticals much more than ATM spreads. Time passing has a similar effect as a decline in implied volatility; the OTM spreads lose value while the ITM spreads increase in value. Keep in mind that an ITM call vertical's price will change an equal amount to the corresponding OTM put spread (one up and the other down), owing to their relationship to the box spread. This is due to the fact that buying both the call spread (bull spread) and the put spread (bear spread) leaves the trader with a long box, while selling both results in a short box.

One obvious way to capitalize on this knowledge is when an investor is holding a spread that is deeply ITM. Since both options are trading with a high delta it follows that their bid/ask spreads are quoted wider than OTM options. Rather than liquidate a deep ITM spread, traders traditionally have transacted the low priced OTM corresponding spread that should ordinarily have a tighter (bid/ask spread is narrower) market. The result of this 'locking in' effect is, of course, a box that might require later transactions such as exercises/assignments, and at least one of the options will expire worthless. The commissions will most certainly cost more, but there can be a huge savings in market prices.

It is useful to think in terms of "extrinsic" premium because there is a natural tendency to judge intrinsic value spreads incorrectly. It may be more intuitive to think about an ITM call spread in terms of, or in relation to, an OTM put spread. When a put spread is out of the money, any increase in implied volatility should give that out-of-the-money spread more of a chance to go into the money. If a vertical has more of a chance of going in the money, it will be worth more.

## ISOLATING THE SPECULATION

Suppose that someone is bullish, the stock is trading at 105, and he or she decides to buy a 10-point vertical call spread. The pricing in the market across all the strikes allows for a choice of buying any ATM, in any month for about 5.00 or one of several OTM options that are priced at a lesser value, or one of the ITM options that is valued higher. Which bull spread should it be?

The investor also has to consider whether the option should be Long Premium (OTM), Short Premium (ITM) or Neutral Premium (ATM). As

the underlying market moves, not only will the price of the vertical fluctuate, but so too will the premium stance change.

**Long Premium (OTM)** (Time working against the spread)

It is natural to consider the simple risk reward tendencies of vertical spreads. For example, if the investor pays 0.50 for an OTM vertical that can eventually go to 10.00, he or she can earn a lot more than he or she can lose. Looking at the right column in Exhibit 5–2, this may be represented by the 120c/130c spread. Paying 0.50 for something that can go to 10 is a ‘risk 0.50 to make 9.50’ scenario. It seems as though there is not much time left for that to happen, but it is possible. In a recent expiration, with a week to go in the YHOO (Yahoo) July 2000 expiration there were options that were priced similarly. Within 3 days YHOO went from under 100 to over 135. That may be too much of a long shot for someone expecting a small rebound. A 10-point spread a bit closer to the money (right column’s 110c/120c) that is going for about 2.00 which would be a ‘risk 2 to make 8’ scenario may be better. Judging from Exhibit 5–2 again, a ‘risk 2 to make 8’ scenario may also be represented by the left column’s 120c/130c spread. In each of these speculations, the spreader would have to be aware of the fact that, until the bounce happens, time is working against the spread’s valuation. Also a decline of implied volatility would decrease all of the OTM spread values. That particular week Yahoo’s earnings were to be announced, and so playing against time may have seemed worthwhile.

**Short Premium (ITM)** (Time working for the spread)

Not many option neophytes would often consider paying 8.00 for a call vertical spread that could only go to 10.00. He would ‘risk 8 to make 2’. It would have similar pricing to the left column’s 80c/90c spread or the right column’s 90c/100c spread. If the stock rallies, we profit. If it sits still, we also win. If the stock declines but stays above the higher of the two strikes, we are still winners. Obviously we lose if the stock drops like a stone, but who is to say that we will not liquidate it on the way down and salvage a good portion of the cost? Suppose that we sell it at 6.00. The ‘8 to make 2’ scenario just changed into a ‘risk 2 to make 2’ scenario. Perhaps the key to all of this is to reverse one’s thinking and regard the long call spread for 8.00 debit as a short put spread at 2.00 credit. Of course we are risking 8 to make 2 here also, but somehow the credit of 2.00 seems more appealing. Now, it is more intuitive to hope

that the put spread goes worthless (the call spread maximizes), staying above the higher of the two strikes at expiration. Again, a rally, sitting still, or not dropping too much would all help in this scenario.

For stocks that seem to have a world of support at certain levels the long ITM or short OTM vertical strategy may make a lot of sense. In this case, one should avoid getting wrapped up in the idea that risk reward ratios need to be favorable. Having said that, in the last quarter of 2000 and early 2001, there did not seem to be much support even for stocks that appeared to have a world of support. Like everything else, timing is everything.

### **Neutral Premium (ATM)**

(Time has not much effect at current stock price)

Suppose, for example, that there were not any expected announcements on the horizon but that we were still involved in a volatile stock. We could buy any month's ATM 10-pointer for about 5.00 which would be a 'risk 5 to make 5' scenario. One might think at first that it may be better to buy the further dated spread because of more time. That is a reasonable assumption but more time left means that the bull spread will not maximize or, for that matter, minimize in price as fast as a nearer term spread. While the front month spread goes from 5.00 to 10.00 on the upside or to 0.00 on the downside the deferred month may have traveled only to 7.00 on the upside and 3.00 on the downside. We need to ask ourselves "what is the appropriate timeframe?"

## **HEDGING BY TURNING LONG UNDERLYING INTO A VERTICAL (FENCES, COLLARS OR TUNNELS)**

The most common strategy used by retail investors is the fence, which is a synthetic bull spread. A fence or collar or tunnel<sup>7</sup>—the name depends on the market where it's traded—is a combination of long underlying against an off-strike combo<sup>8</sup> (Short a call for each 100 underlying and long a lower strike put in the same quantity). Customers will apply the call and put trade against their long underlying if they believe it is necessary to

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<sup>7</sup> Collar

Collar in currency market, squash in Eurodollar market, barrier in OTC market.

<sup>8</sup> Off-Strike Combo

An off-strike combo is simply a combo using the call and put at different strike prices. Short a call for each 100 underlying and long a lower strike put in the same quantity.

have limited downside risk but do not want to pay the expensive premium for a protective put. They are deciding to give up some of the upside potential by financing the purchase of the put with the sale of a call. It may be worth mentioning that, for conceptual purposes, the customer can group the underlying with either a short call or with a long put. The short call and the long underlying create a synthetic short put. When the synthetic short put is coupled with a long put, the result is a bull put vertical. A bull call vertical, on the other hand, results from the synthetic long call (long put plus long underlying) coupled with the actual short call.

Exhibit 5–3 shows the choices investors have to fence their position. If the call strike is higher than the put strike, the resulting position is a bull spread. A reverse fence, on the other hand, is where the call strike is lower than the put strike, resulting in a synthetic bear spread. Remember that in both strategies the calls are sold and the puts are bought. Besides choosing the direction that one wants to be aiming, one should pay some attention to whether long premium, neutral premium, or short premium is also a preference as a result of the hedge.

Most investors like the idea of a zero-cost spread, where the premium collected on the option sold is equal to the premium paid for the option bought. Brokers have had much success with customers that they have convinced to do the spread for a credit<sup>9</sup> (selling a pricier call than the put bought). However, customers are synthetically taking on extra risk. It is a situation of give and take. If investors want more protection, this can be achieved by trading an off-strike combo, which although produces a debit, leaves them synthetically with a cheap out-of-the-money spread that may go on to profit at a higher reward. If they like the idea of a credit, that is fine, but they should realize they have changed their play into a long in-the-money vertical which, from that point on, could lose more than it can make. We have seen this in the earlier example where 8 was risked to make 2. Some investors are not aware of this, and others may not want to take the risk. The probability is that investors will win anyway, because time is working for them in this case.

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<sup>9</sup> Credit

Credit refers to the net amount received for the spread.



## ROLLING TO ADJUST SPECULATIVE TRADES USING VERTICALS

Rolling means that a strategy is shifted into a different month or to a different set of strikes. Verticals also provide traders with many rolling strategies. Take for example (from Chapter 2), a trader who had a position of long 10 Jan 50 calls at \$2.00. The stock went up far enough for the call to be trading at 5.00. Exhibit 5-4 uses this example to demonstrate three rolling strategies. In A, the trader adjusts the long calls into a 50/55 Bull Spread. In the middle example, B, a Bear Spread is used to roll out of the 50 calls and into the 55 calls. In C, the trader adjusts the calls into a 45/50 Bear Spread.

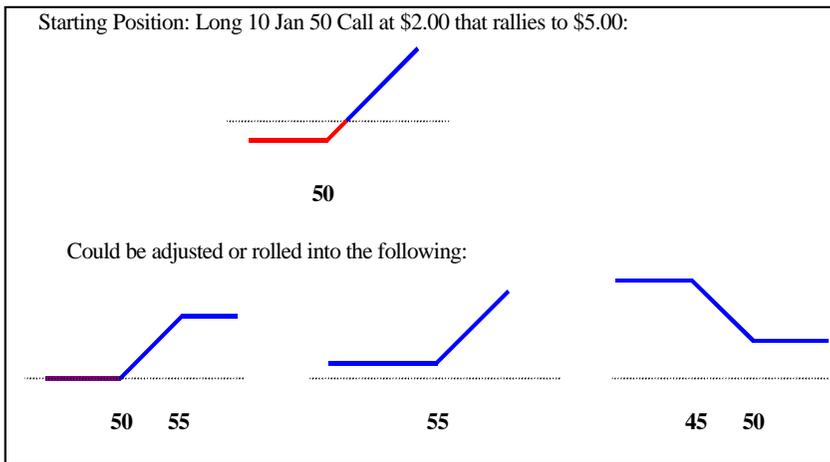
1. Sell 10 Oct 55 calls at 2.00. The result is **10\*50/55 bull call verticals**, each for even money (fair cost = 3.00 debit). The trader is still long, but not as aggressively so, and has limited the possible gain.
  
2. Sell 10 Oct 50 calls and buy 10 Oct 55 calls for a 3.00 credit (i.e. sell 50/55 call vertical or bear spread). The result is **long 10 Oct 55 calls**, each for a 1.00 credit (fair cost = 2.00 debit). The trader is still long, but for a price that is cheaper than free, and has limited risk.
  
3. Sell 10 Oct 45 calls at 9.25. The result is **10\*45/50 bear spreads**, each for a 7.25 credit (fair cost = 4.25 credit). The trader anticipates a downward move.

Continuing with the same position of long 10 Jan 50 calls at \$2.00, another strategy that I have not yet mentioned, is to trade 10\*45/50 bull spreads (i.e., buy 10\*45 calls and sell the 10\*50 calls). This trade rolls the long 10\*50 calls down to long 10\*45 calls when the 50 calls may have become considerably out-of-the-money. The strategy can be used to achieve two different purposes. The first motivation to do this is when anticipating higher prices, but after either the market has dropped or time has nearly run out, leaving the 50 calls with a remote chance of seeing daylight. Although this trade adds to the overall cost of the original trade,

it discounts the purchase price of 45 calls by capturing the salvage value on the dying 50 calls. An investor will often have the opportunity to roll closer for even money but into half of the amount of closer contracts, for example, buy one-half as many of the 45 strike while selling the 50s (ratio spread +1 by -2 for even money or a credit) in order to conserve capital.

### E X H I B I T 5 – 4

#### Rolling Into or Using Verticals



The second purpose of this trade is to bring the 50 calls closer to the underlying. Suppose that an investor is long 50 calls as part of any spread. He or she may find that the 50 calls become inadequate in the event of an upward move. In other words, certain elements (e.g. contracts in the spread) may require enhanced protection. For example, if the stock is 43.00, the trader could roll the 50 calls down to the 45 strike (closer-to-the-money) in order to bring potential fire power nearer to the underlying price.

At some point in the life of any position, it becomes prudent to roll some options closer in. On the other hand investors can decrease the cost of their position by rolling their protection a little farther away and collecting some premium to boot. Investors can use verticals to roll away options that have a higher chance of being assigned and roll closer options that they hope to exercise shortly.

The vertical is also an excellent vehicle to use for scalping positive gammas, much more dynamic than the examples outlined in Chapter 4,

chiefly because you will not deplete the net contracts that you need for any extended moves in the underlying. For example, consider long 10 of the 50 straddle at the price of 50.00. The stock rallies to 52.50, and one wants to adjust. An investor may roll the calls to the next strike by selling 10\*50/55 call spreads (see Exhibit 5–5) or buying 10\*50/55 put spreads and winding up with 10\*50p/55c strangles or 10\*50c/55p gut-strangles. This is ignoring deltas, but it is pretty intuitive that with the underlying at 52.50, the 50 calls have quite a bit more value and firepower than the 50 puts. To even things out, in order to take advantage of a move from the new price of 52.50, a more balanced approach would be to have the strangle on where both options are equidistant from the underlying. This is achieved synthetically with the bear spread adjustment, 10 times.

Suppose that the rally continued to 55 and the trader sold another 10 call spreads for a total of 20 bear spreads as an adjustment. The result of this dissection is in Exhibit 5–6. Exhibit 5–7 illustrates the results of the adjustment.

The strangle will be fairly neutral with the stock at 52.50 as will the new straddle at 55.00. The advantage of gamma scalping with verticals is that the long 10 net call contracts and the long 10 net put contracts are maintained after each trade.

**EXHIBIT 5 – 5**

Original Trade: 10\*50 Straddles (in bold)—No Synthesis  
 Adjustment: Sell 10\*50/55 Call Vertical Spreads (in italics)  
 Result: 10\*50/55 Strangles (in net columns)

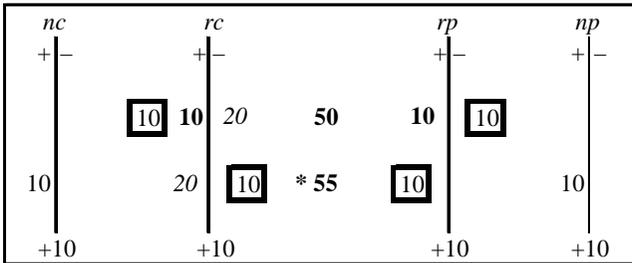
<i>nc</i>	<i>rc</i>	<i>rp</i>	<i>np</i>
+   -	+   -	+   -	+   -
10	<b>10</b> <i>10</i>	<b>10</b>	10
	<i>10</i>		
		<b>50</b>	
		*	
		<b>55</b>	
+10	+10	+10	+10

**Note:** At the crucial time of making adjustments, there might not be an opportunity to trade a vertical, so trading a stock equivalent first and replacing it later with a vertical based on a delta-neutral trade might be prudent. Do not miss the chance to make an adjustment because the stock

price spikes up and then falls back before you get a chance to trade anything. This often happens in opening rotation<sup>10</sup> or when a number comes out that shocks the market.

**EXHIBIT 5 – 6**

Original Trade: 10\*50 Straddles (in bold)—Synthesis: Buy 10\*50/55 Boxes  
 Adjustment: Sell another 10\*50/55 Call Vertical Spreads for a total of 20  
 Result: 10\*55 Straddles (in net columns)



Verticals, time spreads, certain back spreads and diagonals are dynamic ways to adjust gammas because they do not hinder the performance of the original strategy on extended moves as happens when gamma scalping is done with pure stock.

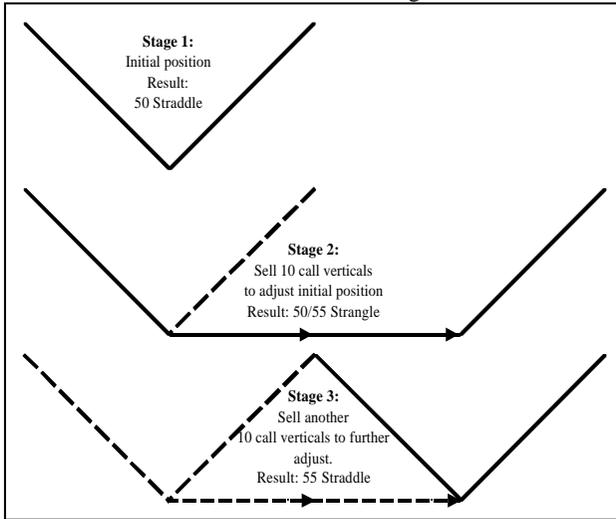
<sup>10</sup> Opening Rotation

On some exchanges, there is a procedure called *opening rotation* where one option is opened at a time instead of all of them at the same time. An option that has not officially been opened cannot be traded until after the opening. In the meantime, the underlying market is moving and could rebound, which may mean that the trader cannot trade out of the unopened options at favorable prices.

**EXHIBIT 5 – 7**

Using Verticals:

Shift the Initial 50 Straddle to the 50/55 Strangle then to the 55 Straddle.



**VOLATILITY TRADING**

Ratio spreading / back spreading in the traditional sense involves a vertical with extra contracts at the more distant strike. If the spread has more long contracts than short contracts, it is a back spread (LongMore). If there are more short contracts than long contracts, it is a ratio spread (ShortMore). Any ratio is possible, but to keep it simple most people start at first with 1 by 2 spreads. When naming either type of spread, the smaller quantity is usually mentioned first and the bigger quantity second, so +1 by -2 for ratio spreads and -1 by +2 for back spreads. In addition, the lower strike is generally stated first, whether it is long or short.

Most market makers these days do not quote or trade these spreads in the traditional manner. If they do make a market on the spreads and get the trade, they will hedge the excess deltas with underlying and merge the whole spread into the rest of their position. To most market makers, any spread that is long gamma is considered to be a back spread, and any spread that is short gamma is considered to be a ratio spread.

An older style of trader, who specializes in either ratio spreads or back spreads, is known as a ratio spreader or a back spreader. Other

traders will make markets on these spreads and will attempt to trade each neighboring strike cheaper, thereby molding the whole package into a butterfly of sorts. This adjustment is important because it may be the best and quickest trade that one can make when the market starts to heat up.

The object of the ratio spread game is to buy some options and finance their purchase with the sale of options that are out of the money. Many traders will only do a ratio spread if it is for a credit, but to do that it would mean in some instances that the ratio has to be quite steep (i.e., many more short options than long, which is not a safe position). Since the out-of-the-money options are cheaper (but not necessarily in terms of implied volatility), traders have to sell more to recoup most of, all of, or even a greater amount than the purchase cost of the long option. This strategy is almost like a butterfly except that it does not include the long options at the next strike out. The missing element - the long options at the next strike out - serves as an insurance policy by turning the package into a limited risk spread. Again, note that that little insurance policy is good to monitor as a potential failsafe measure.

The ratio spread strategy can treat a trader well if he or she gets the opportunity to neutralize and plays by very strict rules. **Be warned!** - Never get comfortable or complacent when naked short premium. Monitor ratio spreads daily and have a failsafe plan that can be enacted at a moment's notice. It should be like having a fire extinguisher nearby in case of a fire. Be prepared for the worst. The steeper the ratio, the more the risk grows exponentially.

Various strategies are more consistent with regard to the Greeks. For example a call is long delta and always remains long delta. A long call's gamma and vega are also always long and theta is always negative. We saw how a bull spread always stays long delta but the premium and Greeks can flip from positive to negative. It is different for ratio spreads and back spreads. As the underlying moves, positive Greeks can become negative and vice versa, including the delta. Butterfly spreads and time spreads also behave in this way, however, they have a limited gain and a limited loss potential, unlike the unlimited nature of spreads that are not one-to-one.

If a mirror was placed at the bottom of a P&L graph of a call back spread, it is as though one were looking at the analysis for the call ratio spread. When the mirror is on either side of the graph, an analysis of the call back spread will depict the properties of the put back spread. Two mirrors are needed to see the put ratio spread.

The purpose of positioning with a back spread is to profit on a quick extended move toward, through and beyond the long strike. The expiration P&L graph depicts a valley where losses will occur. The current day has no valley when neutral or long in the case of a call back spread, but over time a valley forms and gets deeper and deeper. The odds are against the back spreader but, when he or she finally wins, a huge profit can be taken. The graphs' ends are pointing to the sky because the sky is the limit with a back spread. The purchase of a quantity of long options is financed by the sale of a lesser quantity of short options. The danger is that since the short options are closer to or in-the-money, they might grow faster than the long out-of-the-money options. The out-of-the-money options may dwindle and die worthless. If the market moves in the other direction, the back spreader will make a small profit if the spread was executed for a credit, which is what a back spreader generally tries to do. The back spreader suffers most days from time decay while waiting for a large, profitable move.

Ratio spreads are the most infamous of all spreads because they are strategies that often ruin traders. Trading them is like playing hot potato with a time bomb. The object is to not be holding it when it explodes. Huge wealth has been created with these plays over the years, sometimes only to be donated back to the market all in one day, with bankruptcy proceedings to recoup any amount that exceeds the trader's capital, his or her family's capital, the investors' capital, and the trader's houses, computers, cars, yachts, airplanes, RV, motorcycle, and children. Most traders like to trade them for a credit, so that if both options go worthless they can keep the credit. That modus operandi is penny-wise and pound-foolish.

## PRICING OF RATIOS

Unfortunately at the time of writing this book, the options world does not have any standards with the regard to the quoting and pricing of ratios. That makes it difficult to trade them as a customer. It is necessary for the customer to hammer out a method for their order takers to get their orders filled. With the advent of online trading, we may see some change in this regard. In the meantime it will be helpful to examine what we are up against and be prepared to deal with different practices. Suppose that a trader has a put ratio spread on and wants to get a quote on it, or to determine where it is trading. Keep in mind that this person may wish to

unwind it or add more to it. He or she will undoubtedly want to monitor it as well, by checking its price as often as necessary using quotes posted either online or in the newspaper.

The strikes in this example will be the 95 puts worth about 2.20 and the 100 puts worth about 3.00. *Question:* What is the going price of the spread based on a position size of 10 by 15? Some beginners stumble here because they think that they need to know which option will be bought and which will be sold. However, it is better to get into the practice of calculating without knowing. One really does not want to let the market makers know which way the order is going to come in because they will price it accordingly. If, on the other hand, they are asked purely for a two-sided market they have little choice but to be fair. To emphasize this point without getting hung up on the concept of two-sided markets, suppose that something is worth 5.00. If a market maker does not know which way an order will come in, he or she may provide a .20 wide market, for example, of 4.90–5.10. If the market maker knows that order is be a buy order, he may quote 5.00–5.20 or 4.99–5.19. If the order is sell order, he may quote 4.80–5.00 or 4.81–5.01. (He can always use the extra cash.) It is always best to ask for a two-sided market and the size that that price is good for.

If asked to quote 10 by 15, most market makers will look at their values and perhaps quote 2.10–2.30 on the 95s and 2.85–3.15 on the 100s. The broker may ask, “But what is the spread?” They usually do not respond with a spread price, but only repeat their individual market quotes hoping that they get the *edge* on both sides (bid price on buy side and ask price on sell side). At best, they may say, “.70–.90 on the 20 verticals and provide a separate quote for the extra 10 of the 95s, 2.10–2.30.” This is done to save time thinking and avoid missing other market opportunities. Even most professional ratio spreaders keep their ratios to 1 by 2s and 2 by 3s because of the simplicity and ease of execution.

The basis of one method is a pricing method that has a chance of becoming more universal, and is preferred by many practitioners. This method allows any ratio to be priced quickly and easily. A novice investor may derive the going price using a calculation of the aggregate amount of the package: (10 x 3.00) versus (15 x 2.20) is a difference of 3.00 (30.00 versus 33.00). The calculation on a per spread basis, uses one as the least common denominator, i.e. for every one contract traded, 1.5 of the other contract will be traded against it. 30 divided by 20 equals 1.5, and 1.5 multiplied by 2.20 (the price of the option with the lower value) is 3.30.

Compare 3.30 to the price of the option with the higher value, 3.00 to get .30 1 by 1.5 spread. A reasonably tight spread market quote would be something like .20-.40. The market maker is saying that he will do the back spread and pay .20 but wants to receive .40 to do the ratio spread.

There are at least three ways to price the spread using 2.20 and 3.00:

10 by 15—1 spread = \$3.00 (10 x 3.00 versus 15 x 2.20)

2 by 3—10 spreads = .60 (2 x 3.00 versus 3 x 2.20)

1 by 1.5—20 spreads = .30 (3.00 versus 1.5 x 2.20)

Which way to price the spread is best? Well, if a broker is splitting the order up between several traders, the first way is no good because it is based upon the aggregate amount. 2 by 3 in this instance might be considered the best way since a broker cannot split the order amongst 10 traders (a trade cannot consist of 1.5 contracts).

This method becomes more obvious when a ratio is bizarre, something like 20 by 34. The spread can be quickly calculated on a 1 by 1.7 basis for 20 spreads. That's 1 by 1.7—20 spreads = .74 (3.00 versus 1.7 x 2.20). The trader can quickly compare many of the other the put spreads with the same ratio to see what the price that his or her spread might go to in order to help assess risk. For example, he or she might look at a couple of the spreads a little bit closer (the 100/105, 105/110 or 110/115) to hint at what his or her spread might be priced at in the event of a big move down. He or she could check the values of the spreads further out-of-the-money (the 90/95, 85/90 or 80/85) as an indication of how his or her spread might be priced on a huge rally.

The other advantage to this method is that traders can quickly determine profitable levels of the individual legs. If, for example, someone else offers to sell some 95s at 2.50, and the trader wants to leg out of the spread, he or she can see whether 2.50 is a good price by multiplying it by 1.7 (= 4.25). The trader would then subtract the .74, the credit that he or she would have received (if initiated using 2.20 and 3.00 on the spread), and can then offer the 100s at 3.52 or better to get out for a profit (4.25-.74 = 3.51 the equivalent cost based on the current 2.50 offer on the 95s).

## DEFENSIVE FLATTENING OF RATIO SPREADS

The beginning position in Exhibit 5–8 is long 10\*85 puts and short 30\*80 puts for a ratio of +1 by –3. There are 2 adjustments that the trader makes, in this example, as the market grinds its way lower. The first time a bear spread is traded on a +1 to –1 basis for 10 contracts. After the ‘first adjustment’ the ratio is flattened to +1 by –2. The second adjustment is for 20 bear spreads flattening it down to +1 by –1.5. This sort of management assumes that the market is orderly as opposed to a crash or stock take over. In the event that one is able to get a trade off in a wild market, it may be wise to stop the bleeding on the excess shorts by covering them or purchasing an equal quantity at a different strike.

A Ratio (ShortMore) Spread is one of the most dangerous options plays on the street. This type of approach for defense may not be good enough to ward off severe damage to one’s trading capital. It may be wise never to employ such a strategy in the first place. Some longer term investors can afford to and are comfortable taking such risks with put ratio spreads.

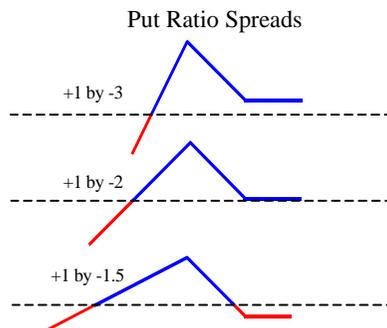
### EXHIBIT 5 – 8

Flattening a Ratio Spread with a Vertical

Option	Beginning	First	After 1st	Second	After 2nd
Strikes	Position	Adjustment	Adjustment	Adjustment	Adjustment
80p	(30)	(10)	(40)	(20)	(80)
85p	10	10	20	20	40
Ratios	+1 by -3	+1 by -1	+1 by -2	+1 by -1	+1 by -1.5

Exhibit 5–9 graphically displays what the hockey stick P&L risk profiles might look like as adjustments are made.

### EXHIBIT 5 – 9



## ASSESSING RISK IN RATIO SPREADS AND BACKSPREADS THROUGH RATIO ANALYSIS

Here are a few guidelines for assessing risk that traders may want to use to enhance their creative approach:

1. Use as shallow a ratio as possible. Consistently successful ratio spreaders, when initiating or adjusting, try to keep the steepness of the spread to a ratio less than 1 by 2, and often use a ratio of less than 1 to 1.4.
2. Be sure that a 20% move in the underlying can be withstood without losing very much money. This should be of greater concern than doing the spread for a credit. (The author's tolerance level is 20% for stocks, and 6% for an index or futures contract. This is based on his trading style and experience, but levels vary from 10% to 50% for stocks, and 1% to 10% for an index or futures contract, depending on the trader.)
3. Stress test<sup>11</sup> the spread, assuming that a move will occur immediately.
4. When trying to assess how a spread may perform, look at the spreads of deeper in-the-money options for an indication of relative prices. Should a what-if analysis reveal that traders could lose an uncomfortable amount of money, they should either flatten out their ratio, wait for another opportunity in the cycle, or look for a spread in another stock. This must be monitored daily, always checking the prices of the relationships a few strikes deeper. The ratio should be adjusted as necessary, always testing for the chosen tolerance level.
5. If the spread has earned a significant profit and is currently valued at an expensive debit (a large credit if liquidated), one should consider taking profits. Look at the cheaper options of the strikes further away from the money for an indication of the value of the spread in case the market turns around. At such a point, it may be

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<sup>11</sup> **Stress Test**

To stress test is to run an options analysis, including what-if scenarios.

tempting to steepen the ratio of the spread to improve proceeds (either by increasing the initial credit or reducing the initial debit), but sometimes it is better to take the profits and to trade another day instead of adding more exposure to the position.

6. When steepening the ratio, consider doing it with a vertical instead of with naked options, so that in case of a devastating move, you will not be faced with exponentially increased exposure.

Anyone trading during the last year has seen tremendous moves in stocks. Often the pricing in the options reflects an even bigger move than was experienced, because volatility exploded. The options can easily act as though the stock has moved 30% when in fact the stock has only moved 20%. It is necessary to adjust to the market concerned, but the short options (aggregated) that are farther away from the money are more sensitive to implied volatility changes than options that are almost at-the-money (aggregated).

Taking a closer look at several spreads gives the trader a sense of where the market believes that these ratios belong over time and with a movement in the underlying. The same exercise can be performed with butterflies to start building a mental database of price relationships.

Using historical implied volatility levels and skew shapes for pricing can be inaccurate because it is nearly impossible to maintain a frame of reference. Suppose that with two weeks to go on the XYZ options, the implied volatility is 60% for out-of-the-money puts. It is important to consider how far out of the money they are, what the volatilities of the other strikes are, and what the market is doing at that particular time (rallying, breaking, or choppy?). Do not forget that implied volatility levels are not absolute values. They represent different absolute values over each time period. The use of implied volatility serves as a relative pricing mechanism.

Volatility is not money. There is a different frame of reference for it every day, and strikes have different proximities to the underlying stock price. Spreads, on the other hand, are easier to keep track of. The frame of reference is all of the other spreads. This kind of analysis gives us a different perspective on price relationships and an insight into what back spreaders and ratio spreaders can do.

One more reminder about the steepness of the ratio: many out-of-the-money put ratio spreads perform in a similar fashion when the market takes a nosedive, making it seem as though no adjustments should be made to the ratio. It won't take long before the options start to emulate those with higher strike prices so don't just sit around waiting. One can easily stress test, that a ratio of 1 by 1.333 (quite shallow) profits more on a decline and loses a lot less than a 1 by 2 in a nosedive. Is it not better to pay a little extra to have the bigger cushion of protection?

In an emergency, the safest thing to do is to buy an amount equal to the quantity of net short options at a far out strike (but close enough to be of any help) to control the open-ended risk. Often traders dislike this idea because those options trade at higher and higher implied volatilities. Realize that this is the most inexpensive insurance that can be bought, although it could be a waste of money.

The best-case scenario would be to have very deep pockets, so that one can ride out the storms and not have to pay crazy prices for protection or liquidation. Most people do not have large amounts of cash available, so they need a plan if the market turns against them. Keep in mind that having excess capital can give some an artificial sense of security. Even large institutions go under with derivatives debacles.

## UNBLEIVABLE MOVES

**Story: Crashes, Takeovers, Shortages, and Flight to Quality:** A ratio spreader's worst fears are crashes, takeovers, shortages, and flight to quality. What can one do if one has a call ratio spread in a stock that is suddenly the candidate for a company takeover? Unfortunately, there is no answer to this. It would have been better not to have had net short call contracts in the first place. Some of the scariest horror stories to come out of the industry have come from the pits where stock options are traded. Someday I would like to document the stories of the markets of 2000 and 2001.

One of the first most famous stories comes from the late 1970s where out-of-the-money Kennecott Copper options were expected to go out worthless on the day before expiration. Instead, they went from a "teeny" 1/16 or \$.0625 (\$6.25) to over \$30 (\$3,000). Being net short only 100 extra contracts meant a loss of \$300,000. If the Kennecott options

had gone out worthless, the gain would have been \$625. This is obviously not a good risk-reward ratio.

There was a huge flight to quality on the Tuesday following the stock market crash of 1987. The Eurodollars, for example, blew through 12 strikes in a single print, because investors were willing to take 3% less on their 90-day money than they could lock in the day before. When the bonds were rallying out of control, I was lucky to get a 500 lot of 90 calls at 15 ticks (.15 or 15/64), when one second later someone paid me the same price for a 500 lot of the 92 calls. I bought the call spread for free at a time when it was going for about 10 ticks (\$156.25 each). That was a 5,000-tick (\$78,125) savings, because I was in the middle of flattening a huge ratio spread that I had inherited from a former partner. The ratio warranted going from 1 by 1.8 down to 1 by 1.65, based on the spreads that were 6 percent deeper.

Before the trade, my position was +2200 by -3960. After I had bought the vertical 500 times, the ratio was 1 by 1.652 (+2700 by -4460), right where I wanted it to be because the price of the last trades of the 84 calls divided by the last price in the 86 calls was 1.65, which meant that 1.65 times the price of the 86 calls equaled the price of the 84 calls. This also meant that that spread was trading at even money on a ratio of 1 to 1.65.

I like to buy verticals to flatten a ratio because it is the cheapest way to do this, and therefore is the easiest way for me to justify paying for the cost of protection. Out-of-the-money options tend to be astronomically priced during a panic. When I buy verticals cheap, I consider it to be adding to a winner. If the market moves higher, the original trade will win and so will this extra bull spread. If it starts to fall, I simply sell the extra calls out to reduce the cost of the adjustment, which means that the spread regains the necessary steepness of the ratio. Verticals are great vehicles for compromise. You can reach into your tool chest at any time to see which vertical application can provide you with what you need at that particular moment.

The above method would have not worked on the put side during the stock market crash of 1987. There was plenty of time on the Friday to liquidate when the Dow was down 100 points. You just have to decide beforehand that if you are in a dangerous spread and the market begins to do something extraordinary, you are not going to be cute and outthink the market, but bite the bullet and get flat before you get flattened. It is a terrible and unnecessary shame when disasters occur such as those that buried Barings Bank and once bankrupted Orange County.

In the S&P 500 Index, I liquidate when there is a 3 percent move irrespective of a win/loss or break-even situation. If there is not much liquidity, I will not hesitate to take the chance to liquidate. I immediately buy enough naked options to cover all net short contracts. You can do this without undoing all of your deltas if the puts are far enough out of the money. In that case, should the market rebound, you will not miss out on recuperating some of the losses. It is important to free yourself from anxiety, so that you can take advantage of the free money when the market is acting crazily.

There were such pickings on my birthday, September 12, one year. I slept in, but called into the market and found that the S&Ps were down 2%. My position was a put ratio spread +1 by -1.7 \* 300 times (+300 by -510). I had Jimmy, my broker, buy 50 put spreads to flatten the ratio down to +1 by -1.6 (+350 by -560). I had to get to work fast. I called from the car and the S&Ps were down over 3%. I had Jimmy buy another 50 put spreads so that my ratio would be +1 by -1.525 (400 by 610). By the time I got into the pit, we were down over 4%. I calculated that at this point I was breaking even from the previous close. I had Jimmy buy 210 strangles to make me fairly neutral before I physically stepped into the pit. As far as I was concerned, I was flat enough to make markets without a nagging agenda. It is like picking *money* off trees when everyone else is panicking and there is nothing that you *need* to do. By the time the market was down almost 6%, I was one of three people making two-sided markets (i.e., providing a bid and an ask).

When brokers' eyes are bulging out of their heads, you can tell that they have to fill an order to save their lives. On the day when investors took flight to quality in the bond market, a broker named Bill had to sell a lot of 78 puts at 11 ticks (.11 or about \$172). At the same moment, another broker, Pat, was bidding 9 ticks (.09 or about \$141) for the 76 puts. That meant that I could do the ratio spread 1 by 2 for a huge 7-tick credit (buy 1\*78p at 11 / sell 2\*76p at 9). I said "done" to Bill and he dumped 1100\*78 puts on me. I could not say "no" because I had made the mistake of not putting a size on it. I turned to hit Pat on the .09 bid for 2200 but he only had 100 to buy. I looked over to the bond futures pit and, during the next 10 seconds, watched the bonds rally a whole point. By the way, that is bad when you are long an extra 1,050 puts (50 went against the 100\*76 puts). Before I could decide what to do, another broker, John, was grabbing me by both lapels (his eyes were bulging out of his head slightly) shouting, "78 puts... .17 bid for a thousand!" Talk about being saved. "SOLD!" KA-CHINGGGG! 6,000-tick (\$93,750) profit in 30 seconds. You read correctly that the bonds went up, but that did not diminish the demand for those puts, fortunately for me.

Brokers needed to fill customer orders and most traders were, at that moment, looking at their sheet values (the numbers on the page just looked like dots), which told them nothing. When the markets are moving so fast, locals often cannot establish where the underlying is to lock in a value. The option markets are nonexistent at such times because nobody likes to stick his or her neck out while swords are slashing. When trades are made and hedged in the market, prices often come back that are surprisingly worse than the traders anticipated—that is, if they can even get a report from the filling broker. Half of the crowd is paralyzed because they do not know where they stand. Most of us are clueless concerning whether we are long or short, what strikes we need to buy and sell, whether we are up or down, and whether we are coming or going. The only way to operate in a sea of panic like that is to trade option to option, to think ratio spreads and back spreads, and trade accordingly. **End**

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C H A P T E R

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6

**WINGSPREADS**

This chapter covers butterfly spreads and other wingspreads such as the condor, albatross, and pterodactyl. Condors, albatrosses, and pterodactyls are nothing more than stretched-out butterflies and all have similar risk/reward characteristics and sensitivities. In addition, there are pregnant (multi-strike), butterflies that have many single-strike butterflies inside them. Wingspreads are strategies that traders employ when they believe that the market will land within a specified range and within a specified time frame. In addition to discussing the Greeks and the P&L profiles of each spread, we will see how they can overlap and create what looks like hills or mountains for long configurations and ravines or valleys for short configurations. I will then relate a story about how greed let a butterfly fly off with \$300,000.

**BUTTERFLY STRUCTURE**

A butterfly is a wingspread that has options at three equidistant strikes. A long butterfly is long 1 low strike option, short 2 middle strike options and long 1 high strike option, and a short butterfly is short 1 low strike option, long 2 middle strike options and short 1 high strike option. A condor or other wingspread has options at four strikes, with the same distance between the options at each end. Condors look like butterflies whose bodies have been stretched wider apart.

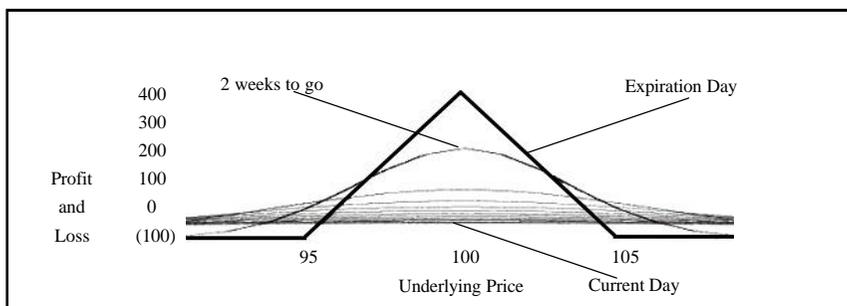
The P&L profile for a long 95/100/105 butterfly in Exhibit 6-1 depicts what happens to the price of a butterfly as time passes (or implied volatility decreases – which is like time passing), or as the underlying stock moves. Obviously, a short butterfly graph will be the mirror image of the hill or mountain depicted in the graph shown in Exhibit 1. The numbers on the x-axis at the bottom of the graph are stock prices. As can be seen, the butterfly has its highest value when the stock price is at the

middle strike of \$100. The butterfly has its minimum value when the stock is either below the low strike of the butterfly (\$95) or above the high strike (\$105).

Butterflies, condors and “wingspreads” are so-called because their expiration date risk profiles look like something that could fly. When talking about butterflies et al., you will hear about options as “body” and “wings”. The body refers to options with strikes in between the two outermost strikes. The wings refer to options at the outermost strikes.

## E X H I B I T 6 – 1

Butterfly P&L Profile of a Long 95/100/105 Butterfly



Butterfly and wingspread risks and potential rewards are limited. If one buys a butterfly, the most he or she can lose is the amount he or she paid for it. The most value it can go to is the difference between the body strike and a wing strike. Therefore the greatest value is at the middle strike, 100. Incidentally, to reinforce the point made in Chapter 5, a 95/100 +1 by -2 ratio spread shares the point of greatest value, 100. Again, the addition of the 105 call serves as an insurance policy, creating the butterfly. If one shorts a butterfly, the loss and profit are the inverse of if one buys a butterfly.

Wingspreads' sensitivity to movement in the stock price is related to the time to expiration. For example, the closer a butterfly is to expiration, the more sensitive its price is to a change in the price of the stock. What this means is that butterflies and wingspreads that are far from expiration don't change in value that much when the stock moves.

This means that wingspreads are not the best tool for exploiting changes in the stock price. They can be bullish or bearish spreads, or they can benefit from an unchanged market.

Wingspreads reach their maximum value when the stock price is at (in the case of butterflies) or between (for other wingspreads) the middle or body strike(s) at expiration. They are at their minimum value when the stock price is either above the higher wing strike or below the lower wing strike at expiration. Therefore, wingspreads can be effective when you believe that a stock's price will land within a specified range and within a specified time frame. When you believe that a stock will stay at a single price, long butterflies might be a good choice. When you think a stock will stay in between two prices, a long condor with body strikes at the low and high prices of the stock's range might work best. In this sense, long butterflies and wingspreads are like short straddles and strangles, but without the unlimited risk. Look at a graph of the value of a long butterfly at expiration. The middle of the butterfly looks like a short straddle. This will be discussed below in the "Structure" section.

Conversely, if you think the price of a stock is going to move away from a specific point or outside a specific range of prices, short butterflies and wingspreads might be a good choice. They work a bit like long straddles or strangles, but without the unlimited profit potential.

Note that the price of the butterfly can become very sensitive to changes in the stock price with less than two weeks to go. The Greeks of the butterfly can also change very dramatically as the stock price moves up and down. This discussion will concentrate on butterflies, but the same principles can be applied to all wingspreads.

The delta of a long butterfly is interesting because the delta is positive when the stock price is below the middle strike of the butterfly, neutral when the stock price is at the middle strike, and negative when it is above the middle strike. The idea behind this is that the butterfly maximizes its value when the price of the stock is at the middle strike. Therefore, if the price of the stock is below the middle strike, it has to rise for the butterfly to make money – hence the long deltas. If the price of the stock is above the middle strike, it has to fall for the butterfly to make money – hence the short deltas.

What is causing the delta to flip from positive to neutral to negative? Gamma. The gamma of a long butterfly can flip from positive to negative or vice versa. At the outer strikes of the butterfly, gamma is positive, indicating that the butterfly wants the stock price to move back to the strike price, because further away from the strike price it becomes worthless. This corresponds exactly to the way that the delta of the long butterfly works as described above. The gamma of the long butterfly is

negative when the stock is at the middle strike. This indicates that the butterfly will manufacture negative deltas if the stock price rises, and positive deltas if the stock price falls. This is precisely what you do not want to happen. Therefore the long butterfly wants the price of the stock to stay right where it is when it is at the middle strike.

The theta of the long butterfly is the mirror image of the gamma. Along with the negative gamma comes positive theta, and vice versa. Theta is positive when the price of the stock is at the middle strike, indicating that time passing helps the long butterfly reach toward its maximum value. At the outer strikes theta is negative, indicating that the butterfly is losing value as time passes.

A Wingspread can be a good choice to exploit changes in implied volatility in a limited risk fashion. Like the other Greeks, the vega of a butterfly changes depending on where the price of the stock is relative to the strike prices of the butterfly. When the stock price is at the middle strike, the vega of the long butterfly is negative. That means that any increased implied volatility in the stock will decrease the value of the butterfly. This makes sense, because as will be discussed later, a butterfly's value depends on the likelihood that the stock price will be at the middle strike of the butterfly at expiration. A higher implied volatility implies a decrease in the likelihood that the stock will sit still. Therefore the value of the butterfly would decrease with an increase in implied volatility. Vega is positive for the long butterfly at the outer strikes. Therefore, an increase in implied volatility of the stock increases the value of the butterfly because of the greater likelihood that the stock will move toward the middle strike by expiration.

Butterflies and other wingspreads are interesting positions to test in the analyzer because their Greeks, although somewhat complex, make intuitive sense if you know how and when a butterfly increases and decreases in value. The Greeks can then confirm analytically what you know about butterflies intuitively.

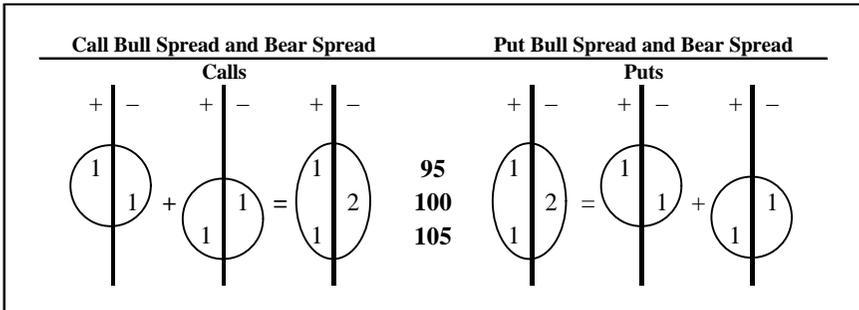
It is sometimes useful to think of a butterfly (or any wingspread) in terms of two vertical spreads: one bullish and the other bearish. This will enable you to calculate wingspread prices faster. It will also help you to understand how to make adjustments to positions like ratio or back spreads and, where necessary, turn them into butterflies.

It makes sense that a combination of the two P&L graphs of a bull spread at one strike and a bear spread at the next higher strike will form a butterfly spread (see Exhibits 6-2 and 6-3). Remember that a bull

spread can be either long a call vertical or short a put vertical (see “Verticals”). A bear spread can be either short a call vertical or long a put vertical. Therefore, any combination of bull spread at the lower strikes and bear spread at the higher strikes results in a long butterfly. A bear spread at the lower strikes and a bull spread at the higher strikes results in a short butterfly.

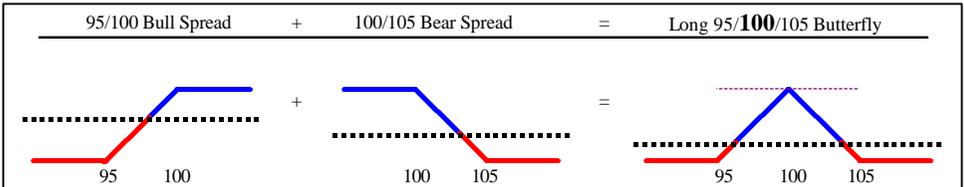
**E X H I B I T 6 – 2**

Combination of Call or Put Bull Spreads and Bear Spreads Create Butterflies



**E X H I B I T 6 – 3**

Formation of a Butterfly Spread



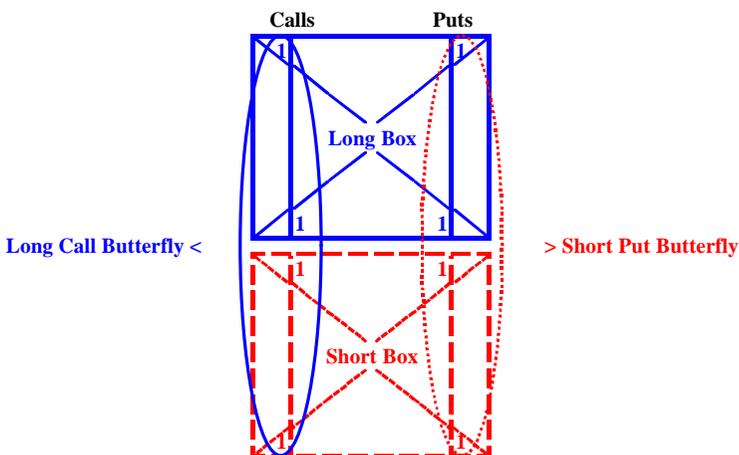
Given three equidistant strikes, a long butterfly can be a call butterfly, a put butterfly, an iron butterfly, or a “gut” iron butterfly, and they all have expiration P&L graphs that look the same. No matter what kind of butterfly it is, its maximum value will be reached if the stock price lands at the middle strike price at expiration. At that point, the lower strike bull spread will maximize in price (the difference between the strikes), and the higher strike bear spread will be theoretically worthless.

To prove the basic equivalency of call and put butterflies, let’s look at the resulting position if you buy a call butterfly and sell a put

butterfly at the same three strikes. The position will be more or less neutral (see Exhibit 6–4) because the result is a long box and a short box. With American-style options, boxes often have slightly different values. It follows that if the two boxes have different values so will the two butterflies. If the 100/105 box is worth .05 more than the 95/100 box because of an exercise aspect, then the put butterfly will be worth .05 than the call butterfly.

### E X H I B I T 6 – 4

100 Call Butterfly Versus 100 Put Butterfly is the 95/100 Box Versus the 100/105 Box

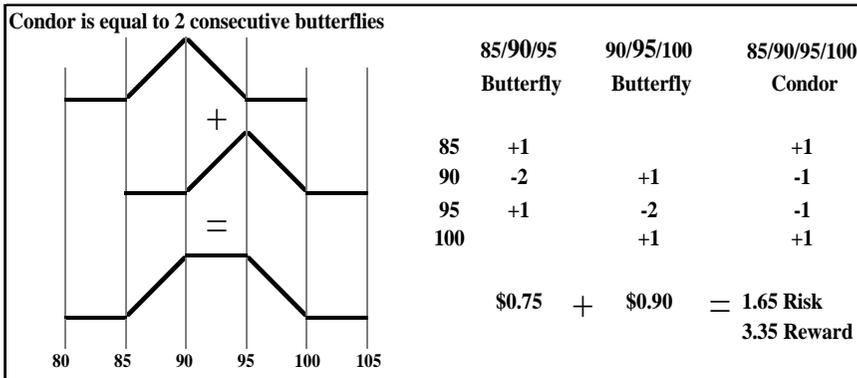


### CONDORS AND STRETCHED OUT BUTTERFLIES

Condors and other wingspreads can be understood in exactly the same way as butterflies. They are combinations of bull spreads and bear spreads, and a long call condor and a long put condor at the same strikes equals two boxes. But condors can also be seen as being made up of a row of butterflies. The more butterflies that one has in a row, the wider the wingspread is and the more the profit zone is stretched out. See Exhibit 6–5 to see how 2 butterflies create a condor, and 6–6 to see how 3 consecutive butterflies create an Albatross.

**EXHIBIT 6 – 5**

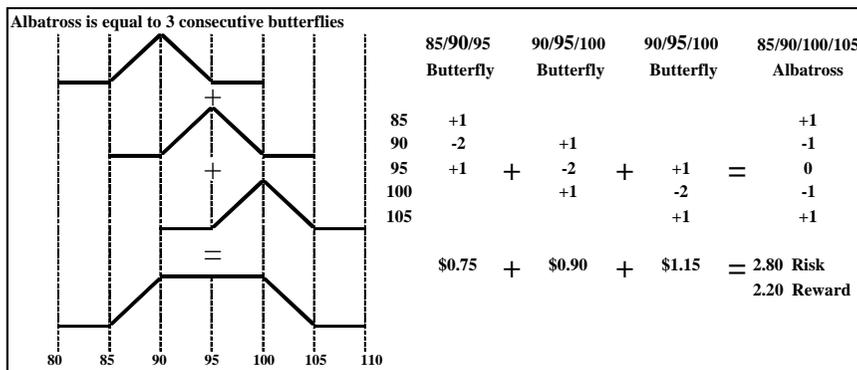
Adding 2 Butterfly Spreads to Stretch the Profit Range to Create a Condor



Every time a butterfly is added the vertical is pushed farther away and the profit range is stretched out.

**EXHIBIT 6 – 6**

Adding 3 Butterfly Spreads to Stretch the Profit Range by an Additional 5.00 to Create an Albatross with 2.80 Risk and 2.20 Reward

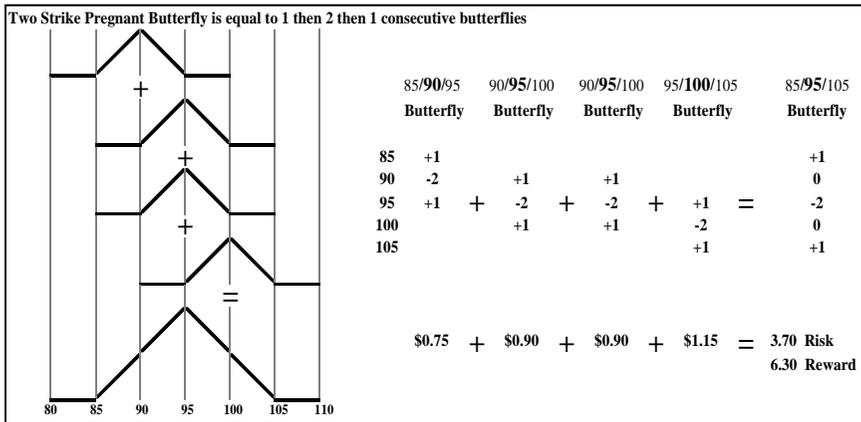


Butterflies that skip strikes are used to cover a bigger range of prices. An interesting aspect of this type of butterfly is that it has smaller (1-strike) butterflies embedded into it, hence the name ‘pregnant butterfly’. If one takes the distance between the wing and the body and squares that number of strikes one will identify the quantity of smaller butterflies imbedded in the larger one. In other words, a two-strike

butterfly will have 4 butterflies (two at the center strikes, and two more, one at each end). A 3-strike butterfly will have 9 babies (three in the center, two adjacent ones in each direction away from the body and one more set (one in each direction) further toward each wing. A 4-strike butterfly will have 16 babies, and so on. They stack up on top of each other, forming a mountain, with most of them being at the body and the least amount being near the wings. Exhibit 6–7 shows a 2-strike butterfly with a cumulative risk of 3.70 for a possible reward of 6.30. One can use this knowledge to help decide whether to unload one or more of the babies whenever the price is attractive or the adjustment is warranted because of market conditions.

**EXHIBIT 6 – 7**

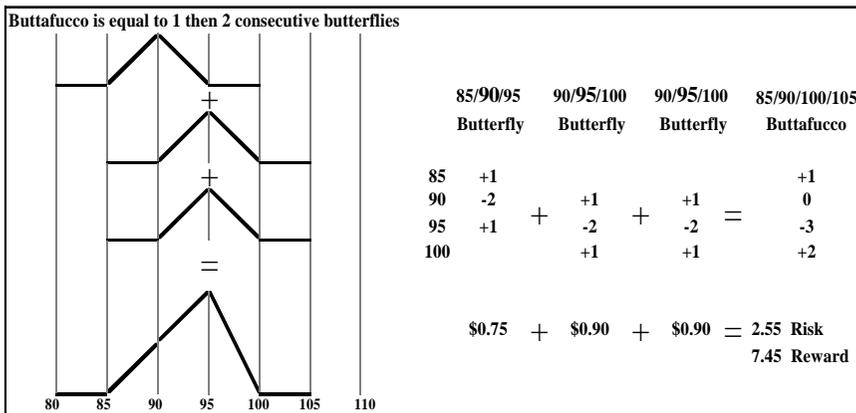
Pregnant Butterfly (Two-Strike Butterfly) Contains 4 baby Butterflies with 3.70 Risk and 6.30 Reward.



Quite a popular spread in the OEX is the Buttoufoucco (the *messed up* butterfly) spread. Before it got its new name, people referred to it as a 1 by 3 by 2 skip strike butterfly (see Exhibit 6–8). It is merely a way to extend the profit range from 5 to 10 points and save a little bit of money by, in effect, leaving out the last baby butterfly (the difference between Exhibits 6–7 and 6–8 is the 95/100/105 butterfly for 1.15).

**EXHIBIT 6 – 8**

Adding 3 Butterfly Spreads, 1 at a First Set of Strikes and Two at an Adjacent Set of Strikes to Form a Buttafucco with 2.55 Risk and 7.45 Reward



**IRON WINGSPREADS**

A note about “iron butterflies”, “iron condors”, “iron albatross” and “iron pterodactyl”: despite the name, they are nothing special. Iron butterflies and iron condors and wingspreads are a seeming contradiction: you receive a credit to be long them. A long iron butterfly has the same risk/reward profile as a long call or long put butterfly, both of which cost money to be long. How is the credit for the long iron butterfly achieved? An iron butterfly is simply a long butterfly and a short box. An iron butterfly can be seen as either a long call butterfly plus a short box, whose strikes are at the lowest and middle strikes of the butterfly, or a long put butterfly plus a short box, whose strikes are at the middle and highest strikes of the butterfly. The bull spread consists of a put vertical (at a credit) and the bear spread consists of a call vertical (also at a credit). Whichever way one looks at it, the two spreads make up an iron butterfly.

An iron butterfly is therefore a regular butterfly plus a short market-neutral box spread. Adding a short box to a butterfly does not necessarily change its risk/reward profile. It simply adds a cash loan from the market (which is what a short box is).

An iron butterfly can also be identified as a short straddle at the middle or body strike and a long strangle at the wing strikes. This

corresponds exactly with the middle part of a price graph of a long butterfly at expiration, which looks like a short straddle. The straddle strike (100) is located right between the strangle strikes (95 and 105). Looking back at Exhibit 6–1, the short straddle can be discerned in the area of the graph just above and below the middle strike price (100). The credit of the iron butterfly or iron condor is not significant and confers no real advantage. Iron condors work in the same way. A long iron condor would be a long condor plus a short box, or a short strangle surrounded (protected) by a long strangle at the outer wing strikes.

## PRICING

Prior to expiration, wingspread values depend largely on the likelihood of the stock being at a certain price (in the case of butterflies) or between two prices (in the case of other wingspreads) at expiration. The more time there is to expiration, the less certain you can be of where the stock price will be at expiration. The less time there is to expiration, the more certain you can be of where the stock price will be at expiration. This means that if you were to graph the prices of all the consecutive butterflies in each expiration month, the graph would look rather flat in the months far from expiration. The reason for this is that when there is more time to expiration, there is more uncertainty about what the price of the stock will be at expiration. This results in uncertainty over which butterfly will have the maximum value at expiration.

Remember that a butterfly reaches its maximum value when the stock price is at the middle or body strike of the butterfly at expiration. This means that butterflies far from expiration have roughly the same value as each other because any one of them could be the big “winner” or “loser” at expiration.

When there is less time to expiration, there is somewhat more certainty where the price of the stock is going to be at expiration. For months close to expiration, the graph would begin to develop a “hump” at or near the current stock price. In fact, the closer you get to expiration, the graph of all the consecutive butterfly prices begins to look like the P&L graph of a butterfly itself. The “hump” on the graph is the price of the most expensive butterfly. The at-the-money butterfly is the most expensive because it is the one most likely to be closest to the stock price at expiration.

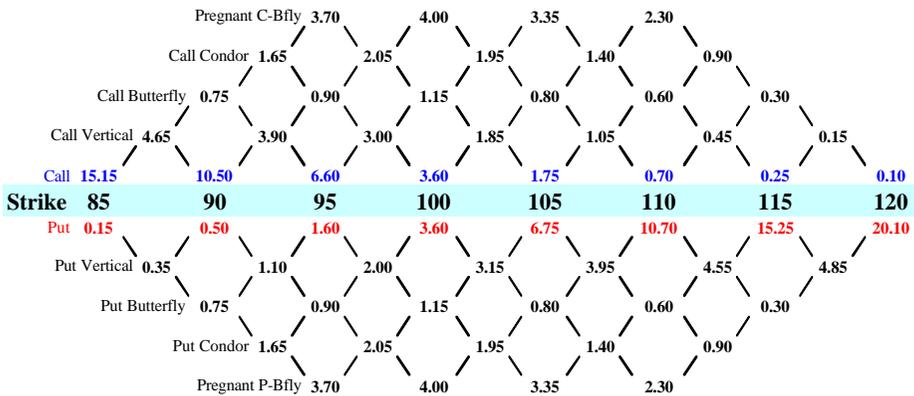
Wingspreads are more expensive than butterflies, but they have a much larger profit range. Whereas a butterfly maximizes its value if the stock price is exactly at the middle strike price of the butterfly, a wingspread maximizes its value over a range of stock prices. Because a wingspread has a greater likelihood of maximizing its value, it costs more than a butterfly.

Sometimes a picture can paint a thousand words, so let us take a look at how Exhibit 6–9, the ‘Options Matrix’, helps to put everything into perspective. The strikes are labeled in the center horizontal line. Call and call spread prices are in the upper half of the exhibit. Put and put spread prices are displayed in the lower half of the exhibit.

The first rows away from the center row show each of the individual call prices (above) and put prices (below). The next two rows out have the vertical values, i.e. the difference between the two adjacent call prices (above) and the two adjacent put prices (below). The butterfly prices are in the third set of rows further out from the center. The fourth rows out have the condor prices, which are simply the sums of the two adjacent butterfly prices from one row closer to the center. The top and bottom rows show values of the pregnant or two-strike butterflies. In this example, there are 4 baby butterflies in each two-strike butterfly.

**EXHIBIT 6 – 9**

Options Matrix



Note that when you add the call verticals to the put verticals they all add up to 5.00, the box value. Also note that the call wingspreads equal the value of the put wingspreads.

## USING BUTTERFLIES TO SPECULATE DIRECTIONALLY CAN BE A CHALLENGE.

The reason that one may want to speculate with a butterfly is that it is usually very cheap (a long vertical (bull call spread) can be partly funded with the sale of another vertical (bear call spread) further out). If a trader insists on going this route he or she should learn from this blunder. First of all, anticipate the need to adjust using additional capital, and secondly, realize that as expiration approaches it may be difficult to find an appropriate hedge. Here is an ugly tale.

**Story: The Ugly Butterfly:** By mid 1985 the T-Bonds had completed the right shoulder of a reverse head and shoulders pattern in the monthly bar chart (Exhibit 6–10). In a classic reverse head and shoulders pattern after breaking through the neckline, the market will retrace to the neckline and then bounce upwards. By November the market broke out of its continuation pattern.

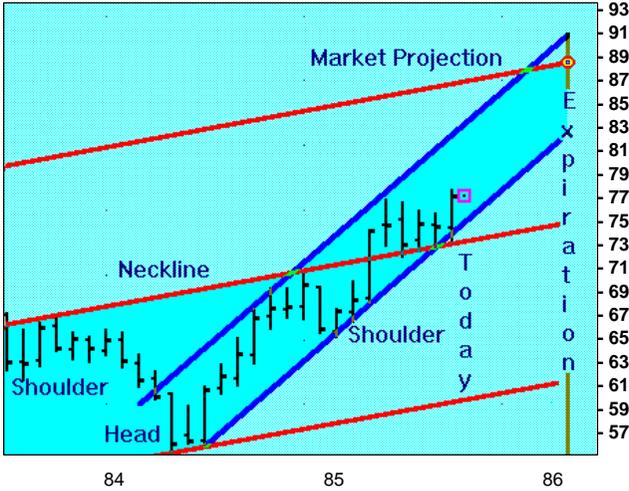
Buying premium outright seemed to be out of the question because my projections, based on the distance from the head to the neckline, were that by the time the June contract expired the bonds would be at 88.00. An 86/88 ratio spread would be too dangerous with so many days to go, but the June 86/88/90 butterfly was fairly cheap (5 ticks or .05 or \$78.125), so I bought that instead. 5 ticks x 15.625 per tick seemed reasonable to me because if bonds reached 88 at expiration, each spread could be worth \$2000.00 and my total profit would be over \$3,000,000.00 for the quantity I planned to buy. I reached into my right pocket and pulled out a crisp \$125,000.00 bill (a real collectors item), slapped it on the table and said "1600 please" (I was a cocky kid).

Within four and one-half weeks the bonds had rallied five points to 83. I went back to the pit and bought another 800 spreads at 10 ticks, pyramiding my investment while increasing my size by 50%.

One month later, bonds had rallied another five points and were trading at 88. This was too soon for the butterfly to maximize in value because the options still had almost four months to go (see Exhibit 6–11).

**EXHIBIT 6 - 10**

U.S. T-Bonds Monthly Chart: Reverse Head and Shoulders Pattern with Price Projection to 88



**EXHIBIT 6 - 11**

Bonds Met the Projection a Few Months too Soon.



I thought that I may as well take my profits because a lot can happen in four months, and so I went to the bond options pit where the deferred months trade, and asked for a market on the "6,8,0 butterfly". I was waiting to hear

something like 16–20. The traders seemed to be waiting for me and responded with a smile, "10–12" (10 ticks bid, at 12 ticks) all that you want at 12". I thought they were joking because they knew my position, so I said "12 for 400". When they climbed all over themselves to sell them to me, my first thought was to buy even more, but it dawned on me that I already had 2800 at-the-money butterflies.

### Time Out for a Quick Lesson

Why were these guys selling the butterfly so cheap? They were quoting their bids and offers surrounding fair value. Volatility had exploded from about 9% to over 13%<sup>1</sup> during the last eight weeks. When volatility increases it is like adding time to the clock, which theoretically implies that the market level could visit many strikes. If the market perceives a wide price distribution, it makes sense that an at-the-money butterfly will be of less value, because who will want to buy it if the market is not going to stay there?

### Time In:

Quickly I determined that the 2800 butterflies' gamma was (straddle) equivalent<sup>2</sup> to being short about 466 at-the-money straddles, and that I should buy at least 200 straddles in order to protect my butterfly. This would create a position with net long contracts but maintain a positive theta. I talked to my partner Joe, who said that the straddle which had been trading at 5.00 this morning was now (at noon) trading at 5.06. He thought that I should wait until the afternoon to buy straddles because implied volatility would probably bring the price down to 5.00 again. I agreed that volatility was a little

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#### <sup>1</sup> Bond Volatility shift from 9% to 13%

Bond Volatility shifting from 9% to 13% is pretty big for bonds but small compared to when implied volatility screamed to 36%. One-tenth of 1% equals close to a tick (\$15.625) per option so each ATM straddle increased about 80 ticks or \$1250 on implied volatility alone.

#### <sup>2</sup> Straddle Equivalent

The outside strikes had gammas of about .05 while the body strike was about .06 so each butterfly had a negative gamma of .02  $(.05 - (2 \times .06) + .05)$  totaling  $-56.00$  "gramma" (limited risk gamma). Divide the straddle gamma of .12 (2 of the 88s) and you arrive at the equivalent of 466 straddles

too high and decided to wait a little while since it was a Friday and traders usually take out the premium before the weekend. Wrong! OOPS! Not only was I stubborn about not buying the 200 straddles, but I also failed to look at the big picture over a longer period of time. There happened to be an even larger head and shoulders pattern (Exhibit 6-12) that I had not noticed until it was too late.

The arrow points to where we should have bought the 200 straddles.

Over the next two months the 88 straddle went from 5.00 to 16.00 and the bonds sailed over 104. \$2.2 million (11 point profit on 200 straddles) down the toilet, not to mention the \$325,000.00 of worthless butterflies that I had. I hate it when that happens. **End**

**E X H I B I T 6 - 1 2**

The Bonds Never Looked Back.

The arrow points to where the 200 Straddles should have been bought.



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CHAPTER

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7

**TIME SPREADS**

Spreads involving two or more expirations come under the category of multiple expiration spreads. They include jelly rolls, time spreads, calendar spreads, diagonals, and spreads involving one or more OTC<sup>1</sup> (over-the-counter) or flex<sup>2</sup> option. A time spread consists of two calls or two puts of the same strike but with different expirations where one is long and the other is short. They must be assignable to the same underlying instrument (i.e., the same equity or the same futures contract). Time spreads should not be confused with calendar spreads, which are spreads in which the options represent two different index months<sup>3</sup>, futures or forward contracts. Margin requirements are quite small compared to most of the other strategies.

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**<sup>1</sup> OTC**

Over the counter options refer to privately guaranteed deals made by and between financial institutions and those customers who apparently have sufficient credit. Counter-party risk is the major consideration, especially for the holder of the option, because he or she must rely on the financial strength of the writer to pay for the in-the-money amount should the option be exercised.

**<sup>2</sup> Flex**

Flex options are exchange-regulated options contracts with flexible expirations. They are similar to OTC options in nature, but different in that they are guaranteed by the exchange and are backed by the financial integrity of the exchange's membership.

**<sup>3</sup> Index Months**

Although it appears that options on an index are for the same underlying, they are actually not. The options in a given month are priced off a non-transparent synthetic futures contract in the way of the same strike combos (strike plus call minus put). Combos are synthetic futures and are theoretically valued based upon the interest to carry the basket of stocks minus the dividend stream for the cycle, which is different for each expiration month.

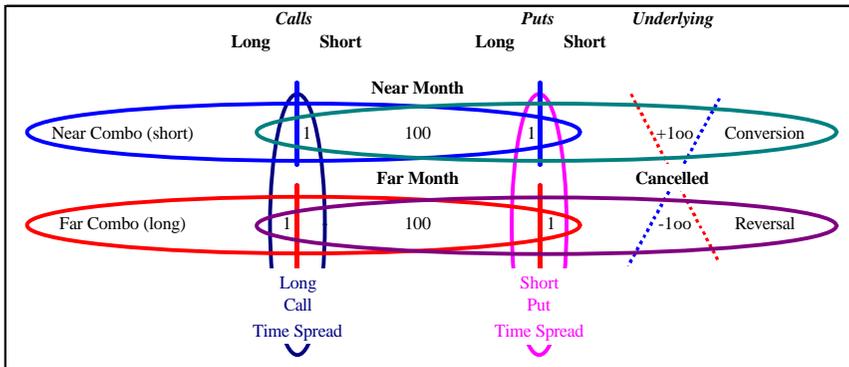
### JELLY ROLLS

The concepts of jelly rolls and jelly-roll structure should be understood because they are directly involved in the structure of time spreads. The interrelationships of the structures of jelly rolls and time spreads are shown in Exhibit 7–1. The structure of this short jelly roll consists of a long 100 strike call time spread against a short 100 strike put time spread, which is also equivalent to a far month long combo (synthetic underlying) versus the near month short combo. A call time spread is synthetically a put time spread when a jelly roll is dissected out.

The key to understanding whether a time spread or jelly roll is long or short lies in whether the long option (for time spreads) or combo (for jelly roll) is in the near month or the far month. For one of the spreads to be short, the further term option or spread (in the case of a combo as part of a jelly roll) has to be short. Remember that when we refer to time spreads, *short* denotes that the further month is the short month, and the near-term month is the long month, because when the further month is short and the closer term is long, the position is known to be short time.

### EXHIBIT 7 – 1

Structure of Long Jelly Roll as it Relates to the Structure of Call and Put Time Spread



Jelly rolls in equities are interesting because the early exercise feature causes put spreads to collapse when cheap calls approach a value that is less than the cost of carry. See the prices in Exhibit 7–2 and the graph in Exhibit 7–3, which use the binomial model with 60 and 151 days to go and a flat implied volatility of 20%. The differences between the call and put time spread prices become larger as the strikes increase, and then they start to collapse.

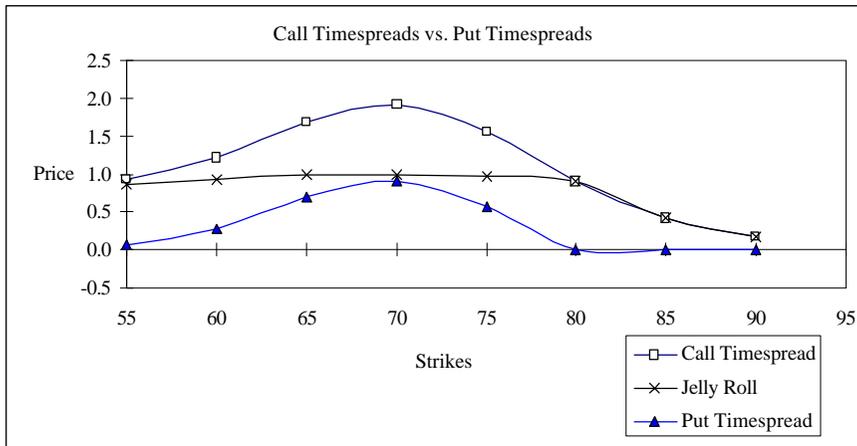
**EXHIBIT 7 – 2**

Values Using a Binomial Model with a Flat Implied Volatility of 20 Percent

Strike	55	60	65	70	75	80	85	90
60 Day Calls	15.59	10.68	6.11	2.64	0.81	0.17	0.03	0.00
151 Day Calls	16.51	11.89	7.78	4.55	2.36	1.08	0.44	0.16
<b>Call Timespread</b>	<b>0.93</b>	<b>1.21</b>	<b>1.67</b>	<b>1.90</b>	<b>1.55</b>	<b>0.91</b>	<b>0.42</b>	<b>0.16</b>
Jelly Roll	0.87	0.93	0.98	0.99	0.98	0.90	0.42	0.16
<b>Put Timespread</b>	<b>0.06</b>	<b>0.28</b>	<b>0.69</b>	<b>0.91</b>	<b>0.57</b>	<b>0.01</b>	<b>0.00</b>	<b>0</b>
60 Day Puts	0.00	0.04	0.43	1.96	5.24	10.00	15.00	20.00
151 Day Puts	0.06	0.32	1.12	2.87	5.81	10.01	15.00	20.00
60 Day Combo	15.58	10.63	5.68	0.68	-4.43	-9.83	-14.97	-20.00
151 Day Combo	16.45	11.57	6.66	1.68	-3.46	-8.93	-14.56	-19.84

**EXHIBIT 7 – 3**

Plot of Values from Exhibit 7–2



**JELLY ROLLER**

The jelly roller “J” is a dissection tool for rolling combos from one month to another (synthesizing out a jelly roll). Starting with the original position on the left side in Exhibit 7–4, a jelly roller is used to demonstrate how to synthesize a short December 70 combo into a short September combo. Of course, one would have to account for a short jelly roll in the position after synthetically purchasing it in the dissection on the right because afterwards the net position is the September combo.

**EXHIBIT 7 – 4**

Dissection Using Jelly Roller to Roll Combos Between Months

<p style="text-align: center;"><b>Original Position: Short Dec</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Sep</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Dec</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> </table>	<i>nc</i>	<i>rc</i>	Sep	<i>rp</i>	<i>np</i>			70			<i>nc</i>	<i>rc</i>	Dec	<i>rp</i>	<i>np</i>			70			<p style="text-align: center;"><b>Dissection: Jelly Roll to Sep</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Sep</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1 J</td> <td></td> <td style="text-align: center;">1 J</td> <td style="text-align: center;">1</td> </tr> </table> <p style="text-align: center;"><b>Result: Short Sep</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Dec</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">1 J</td> <td></td> <td style="text-align: center;">1 J</td> <td></td> </tr> </table>	<i>nc</i>	<i>rc</i>	Sep	<i>rp</i>	<i>np</i>			70			1	1 J		1 J	1	<i>nc</i>	<i>rc</i>	Dec	<i>rp</i>	<i>np</i>			70				1 J		1 J	
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Another obvious purpose for a jelly rolling synthesis is to turn a call time spread into a put time spread or vice versa when moving inventory around to accommodate liquidity in the market (Exhibit 7-5).

**EXHIBIT 7 – 5**

Dissecting a Long Call Time Spread into a Long Put Time Spread Using the Jelly Roller

<p style="text-align: center;"><b>Original Position: Long Call Time</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Sep</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">1</td> <td></td> <td></td> <td></td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Dec</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">1</td> <td></td> <td></td> <td></td> </tr> </table>	<i>nc</i>	<i>rc</i>	Sep	<i>rp</i>	<i>np</i>			70				1				<i>nc</i>	<i>rc</i>	Dec	<i>rp</i>	<i>np</i>			70				1				<p style="text-align: center;"><b>Dissection: Jelly Roll One</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Sep</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">1 J</td> <td></td> <td style="text-align: center;">1 J</td> <td style="text-align: center;">1</td> </tr> </table> <p style="text-align: center;"><b>Result: Long Put Time</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><i>nc</i></td> <td style="text-align: center;"><i>rc</i></td> <td style="text-align: center;">Dec</td> <td style="text-align: center;"><i>rp</i></td> <td style="text-align: center;"><i>np</i></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;">70</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">1 J</td> <td></td> <td style="text-align: center;">1 J</td> <td style="text-align: center;">1</td> </tr> </table>	<i>nc</i>	<i>rc</i>	Sep	<i>rp</i>	<i>np</i>			70				1 J		1 J	1	<i>nc</i>	<i>rc</i>	Dec	<i>rp</i>	<i>np</i>			70				1 J		1 J	1
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There are other practical uses and some fascinating discoveries that this tool could help to uncover. For example, a jelly roller proves that two long call time spreads is synthetically the same as a straddle long in December against a short straddle in September, as shown in Exhibit 7-6.

**EXHIBIT 7 – 6**

Dissecting 2 Long Call Time spreads into a Long Dec Straddle vs. Short Sep Straddle

Original Position: Long 2 Call Time					Dissection: Jelly Roll One				
<i>nc</i>	<i>rc</i>	Sep	<i>rp</i>	<i>np</i>	<i>nc</i>	<i>rc</i>	Sep	<i>rp</i>	<i>np</i>
		2	70			1 ]	2	70	1 ]
<hr/>					<b>Result: Long Dec Straddle vs. Short Sep</b>				
<i>nc</i>	<i>rc</i>	Dec	<i>rp</i>	<i>np</i>	<i>nc</i>	<i>rc</i>	Dec	<i>rp</i>	<i>np</i>
		2	70			2	1 ]	70	1 ]

**CALENDAR SPREADS: BRIEFLY**

A calendar spread involves options that represent different futures contracts and therefore contain calendar risk otherwise known as inter-month spread risk. This type of risk can be huge. A group of neutral spreaders in Eurodollar options in 1989 suffered a \$12 million loss when their short premium month's futures were moving more than their long premium month's futures. Although they knew what they were doing, and had made money for years doing just this, the group had to be bailed out by another firm.

I do not have much to say about calendar spreads, except that they are a considerable gamble because their price fluctuations are heavily influenced by large players in the market. That is not to say, "don't use them but K.I.S.S. Keep it simple sweetheart. Trade apples to apples and oranges to oranges. Calendar spreads are mostly an implied volatility game, and they require a lot of delta adjustments to keep it that way. One more thing, although OEX and other index options are quoted as time spreads, they are priced off synthetic futures and have calendar risk.

## TIME SPREAD VALUE

Time spreads are very much like butterflies in many respects and that is why, when considering either one as a strategy, it is also appropriate to consider the other. This applies to time spreads in equities as well as the serial<sup>4</sup> months in futures.

Keep in mind that a time spread is different from a calendar spread in that the underlying is the same in both months for the time spread, unlike a calendar spread. Once again, "long" a time spread refers to time spreads where the deferred month is long while the closer month is short, so that the trader is long more time.

The P&L graph looks similar to the butterfly spread. A major difference, however, is the aspect of premium. Note that long any time spread will always have a positive vega, but depending on whether it is in-the-money, at-the-money, or out-of-the money, the gamma can be positive or negative. Recall that a butterfly's gamma and vega are both short for a long ATM butterfly, but may become long when the butterfly has gone ITM or OTM. The opportunities, as seen by time spreaders, are threefold. They can either play directionally (delta), for implied volatility changes (vega), or for time decay (theta). Gamma come along for the ride in most cases, except for diagonal, and diagonal back spread plays.

The profit and loss for a time spread and calendar spread is presented in Exhibit 7-7 (using a 0% interest rate for illustrative purposes). Each look the same when the underlying is at the same level, because they do not reflect the movement of each futures contract at different rates and sometimes in different directions. Including interest, deep ITM call time spreads will always have a value equal to the differences in the costs of carry between months. Also, put time spreads will go to zero faster the higher the interest rate is, because both puts will go to parity sooner owing to the early exercise nuance.

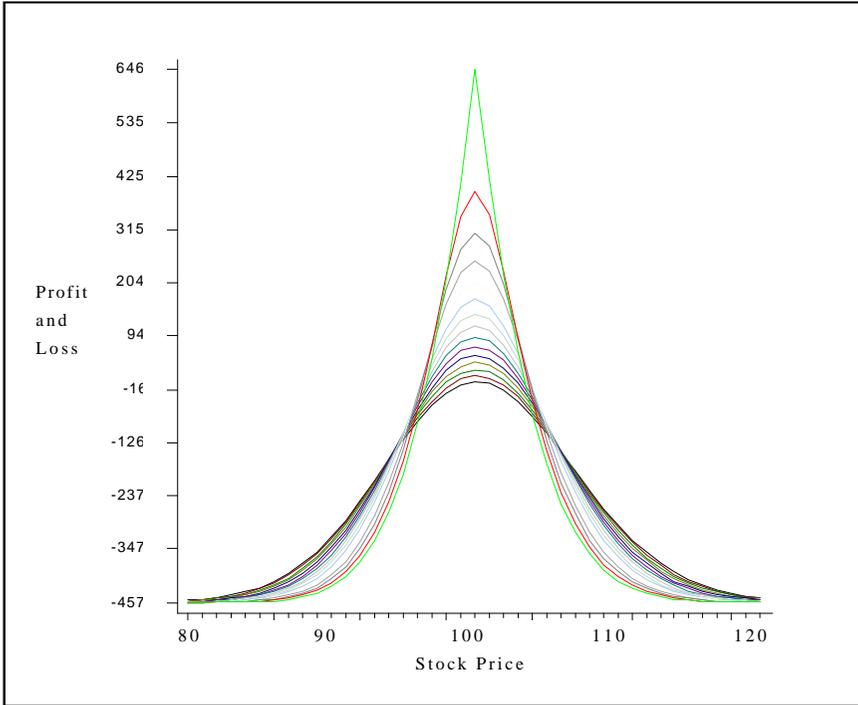
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<sup>4</sup> **Serial**

A *serial month option* delivers into a quarterly futures contract, that is, the January, February, and March options receive a March futures contract when exercised, while the April, May, and June options deliver into the June futures contract.

**EXHIBIT 7 – 7**

Theoretical Risk Profile of a Long 100 Strike Time Spread  
View over Price Movement Using 0% Interest



**TIME SPREAD PRICE ARC AS A PRICING TOOL**

Time spread prices (Exhibit 7–8) are useful in determining value and risk. Prices for time butterflies are also provided to give you an idea of how they may behave as the underlying moves. A time butterfly is a spread consisting of three expirations. The first—and third-month expirations are either both long or both short, while twice as many of the second-month expirations are the inverse (e.g., +1 Jan (14 days left) 95c / -2 Apr (105 days left) 95c / +1 Jul (196 days left) 95c). One could say that this is a near term time spread (+1 Jan 95c / -1 Apr 95c) spread against a far term time spread (-1 Apr 95c / +1 Jul 95c). Each spread shares a common expiration (Feb) and the "wing" (outside) expiration options are either both long or (as in this case) both short.

**EXHIBIT 7 – 8**

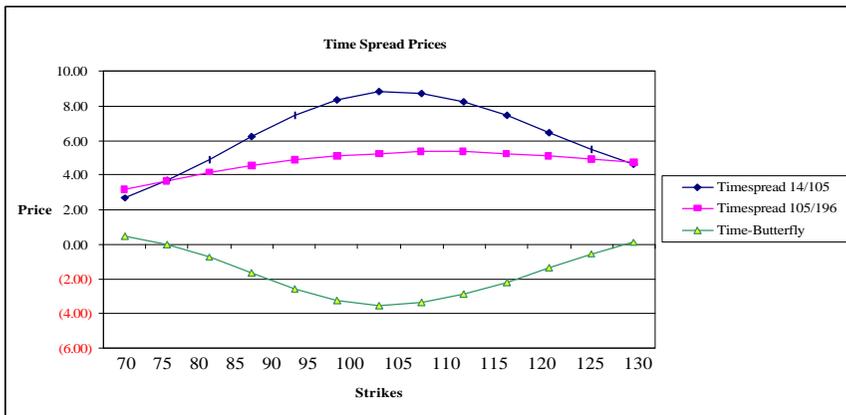
Call Prices and Deltas, Call Time Spread Prices and Time Butterfly Prices  
 Implied Volatility: 60% Interest Rate: 7%.

Strike	70	75	80	85	90	95	100	105	110	115	120	125	130
Call Premium 14 Days	30.20	25.23	20.32	15.63	11.33	7.68	4.82	2.80	1.50	0.75	0.34	0.14	0.06
<b>Timespread 14/105</b>	<b>2.69</b>	<b>3.68</b>	<b>4.87</b>	<b>6.19</b>	<b>7.45</b>	<b>8.37</b>	<b>8.82</b>	<b>8.74</b>	<b>8.23</b>	<b>7.41</b>	<b>6.48</b>	<b>5.50</b>	<b>4.63</b>
Call Premium 105 Days	32.89	28.91	25.19	21.82	18.78	16.05	13.64	11.54	9.73	8.16	6.82	5.64	4.69
<b>Timespread 105/196</b>	<b>3.14</b>	<b>3.65</b>	<b>4.12</b>	<b>4.54</b>	<b>4.89</b>	<b>5.14</b>	<b>5.25</b>	<b>5.36</b>	<b>5.33</b>	<b>5.22</b>	<b>5.11</b>	<b>4.92</b>	<b>4.74</b>
Call Premium 196 Days	36.03	32.56	29.31	26.36	23.67	21.19	18.89	16.90	15.06	13.38	11.93	10.56	9.43
<b>Time-Butterfly</b>	<b>0.45</b>	<b>(0.03)</b>	<b>(0.75)</b>	<b>(1.65)</b>	<b>(2.56)</b>	<b>(3.23)</b>	<b>(3.57)</b>	<b>(3.38)</b>	<b>(2.90)</b>	<b>(2.19)</b>	<b>(1.37)</b>	<b>(0.58)</b>	<b>0.11</b>

The prices plotted in Exhibit 7–9 form an arc just as butterflies do, with the most expensive spreads at-the-money (if there is no implied volatility skew). The time butterfly is simply the sum of differences between each respective time spread.

**EXHIBIT 7 – 9**

Plot of Time Spread and Time Butterflies



**DIAGONALS**

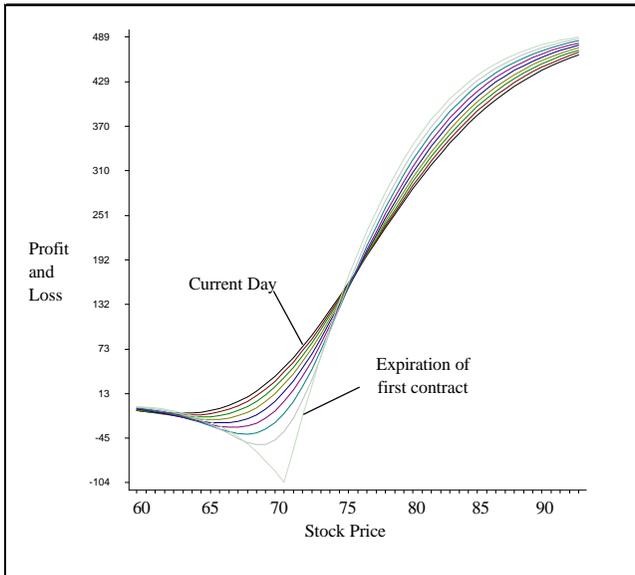
A diagonal can be confusing. It may be helpful to think of it in terms of a vertical and a time spread. Perceiving diagonals in this way will help the reader to understand how a trader can control gamma, theta, and vega attributes. Using a diagonal spread is a way to control how time will affect the spread. To put it more simply, it is another way for a trader to optimize his or her market objectives based on an analysis of implied volatility levels. In the spread in Exhibit 7–10, the Sep 70 calls and the Dec 75 calls, each share the same underlying (i.e., there is no intermonth

spread risk on the underlying but there can be a big shift in either interest rates or dividends between the expirations).

It can be useful to use time spread dissection to look at a diagonal in many different ways. It may provide the trader with alternative, less costly, and even creative ways to lock in value or eliminate risk.

**EXHIBIT 7 – 10**

Long a Call Diagonal Spreads—Long 1\*70 Calls (56 Days)/Short 1\*75 Calls (147 Days)



**EXERCISE / ASSIGNMENT**

At expiration, if the front month option expires worthless, one will be left with only the deferred month’s position. Exhibit 7-11 shows results from the front month’s Exercise / Assignment. It may be counter-intuitive to some people but when the underlying is delivered the resulting position is the opposite type of option.

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**EXHIBIT 7 – 11**

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Result from Exercise / Assignment of Front Month Option

<b>Original Position</b>	<b>Option Exercised</b>
Long Call Time Spread	Long Synthetic Put
Short Time Spread	Short Synthetic Put
Long Put Time Spread	Long Synthetic Call
Short Put Time Spread	Short Synthetic Call

**CONCLUSION**

Time spreads offer the trader a gamut of configurations from which to choose, and the margin requirements for them are quite small in comparison to other strategies. It is recommended to stress test ratioed time spreads and ratioed diagonal time spreads in an options analyzer in order to become familiar with their properties. It is these options relationships that are generally overlooked and therefore have a tendency to become attractive for speculative strategies owing to the fact that inter-month volatilities can diverge quite a bit.

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CHAPTER

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# 8

## MARKET MAKER INSIGHTS

This chapter will let the reader into the world of the market maker and how he or she sees and uses customer order flow. This should shed a great amount of light on certain trades or spreads that are easy or impossible to get filled. I remember thinking at the beginning of my career, in 1981, that there must be something magical about options, because profits could be squeezed out with little or no risk. I came to discover that by understanding relationships better than my market maker competitors, I could pick their pockets on sizable trades. Those opportunities are now few and far between but the concepts remain.

The reader should build a foundation of knowledge about locks. A lock, as mentioned earlier, describes a position that has a locked-in profit or loss and theoretically cannot lose any money from that point forward. Spreads that are commonly referred to as locks are conversions/reversals, jelly rolls, and boxes and can and do lose money although they seem to be neutral. In the grand scheme of things, a lock does not make or lose much money by itself but market makers tend to have them on in huge sizes, turning molehills into mountains or cracks into canyons. Understanding the similarities and differences between the European-style options, American-style options, and options with futures-style margining help traders to make trading decisions even though they may only be trading one product. There will be a discussion about exercise features of the OEX and nuances that are caused when a stock is in a partial tender offer. This chapter does not place much emphasis on models except to explain some of the differences between them and to suggest how to enhance their usefulness. Does that mean that the models are useless for retail customers? No. The models are great. The problem is not the models, though some are better than others. For certain applications, a model is not the Holy Grail, but merely a tool. One can use a shoe to pound a nail into the wall just like this book will

try to pound important concepts into its readers' heads. One can also dig a hole with a hammer easier than a trader can dig his way out of the hole that he got himself into because he tried to pay for a Mercedes with the anticipated profits that his options model projected.

## THE EDGE

The most profitable players in the options game over time are traders who turn themselves into machines and churn out the money day in and day out simply by getting the "edge." Edge is the trader's markup or added premium when selling and markdown or discount when buying. This gives the trader an advantage. The simplest way to explain what edge is and to convey how it translates into profits is to use the analogy of changing money at the airport.

**Story: The Edge as Defined by Airport Banks:** A tourist lands at Frankfurt airport in Germany and needs to buy the local currency, Deutsche Marks (DM). The currency exchange banks provide buy and sell prices. They also charge a commission for the transaction (adding insult to injury). For example, the price to buy one DM is \$.40 and \$.50 to sell one. Therefore, you could say that one DM is fair valued<sup>1</sup> at about 45 cents, which is the average between the buy and sell prices. As travelers exchange their money back and forth, the bank is buying on the bid and selling on the ask all day long and is making as much as \$.05 (edge) on each transaction. If they develop a sizable position one way or another, they pass the position on to the currency traders who then hedge it by getting a price in the foreign exchange market, which is much tighter.

The buy-sell pricing mechanism for banks is the same as the bid-ask spread for options market makers. This is how traders hope to make their profit. Every market maker

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<sup>1</sup> Fair Value

If the price were in terms of DM then the buy, sell and fair prices would be 2.50, 2.22 and 2.00 which is what you get when you divide 1/.40, 1/.50 and 1/.45, respectively.

in the world would be ecstatic to get a trade with that much profit (\$.05), because by the time the banks lay their risk off on the floor of the exchange in the futures pit on the Chicago Mercantile Exchange (CME), the bid-ask<sup>2</sup> has narrowed to .4499 bid, ask .4500 where the edge has been cut down to (\$.0001). **End**

With this understanding, it is easy to see why some stock trading brokerage houses have commission-free trading. They provide free trades to customers who are willing to use market orders (i.e., trading at the market, which is taking the ask price or hitting the bid price)<sup>3</sup>. There is no guarantee that the market maker will make a profit on the trade but he does have a head start in either spreading<sup>4</sup> it off, or scalping out of the trade. It is a lot easier for banks and other traders who do have a wide client base to take advantage of a wide bid-ask spread differential. Generally, it is made wide so that the trader can lay off the risk for an automatic profit. Normally the bid-ask spreads widen out when markets are illiquid and the trader has fewer routes to go in spreading it off. This also occurs when the market gets choppy:

**Story: Liquidity and the Bid/Ask Spread:** In 1985, I wandered over to the CME from the CBOT. In the Treasury bond futures market at the CBOT, if the market was 20 bid /

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<sup>2</sup> **Bid-Ask**

The CME contract size is for 125,000 DM compared with a transaction at a bank for a few hundred dollars worth of DM at a time.

Keep in mind that one futures contract represents DM125,000 and that the average airport transaction is probably around a few hundred Deutsch Marks. This more or less equalizes the edge on a per transaction basis. However, it depends on the total volume traded to determine which entity receives the greater profit.

<sup>3</sup> **Taking / Hitting**

Buying at the ask price is synonymous with “taking” and selling at the bid price is synonymous with “hitting.”

<sup>4</sup> **Spreading**

Spreading occurs when a trader makes some sort of an offsetting trade. Ostensibly, in the event that the market moves adversely to the original trade, there is a simialr gain on the other side.

*Scalping* refers to the style of trade whereby the trader attempts to make a profit by getting in and out of the market very quickly; that is, either buying a contract low and selling it higher or short selling a contract high and buying it back lower.

asking 21 (verbally: 20–21, complete price: 104.20–104.21)) I would be satisfied to get filled at 20 if I put in a market order to sell. If DM futures were 20–21 (33.20–33.21 at the time), I had to learn to be satisfied with a fill at 17 (33.17) on a sell at the market order. This can happen in any market on any exchange when moments of illiquidity create a vacuum. Take Eurodollars, also at the CME, a very thick market where at almost every price there are thousands of contracts to buy and to sell. Many times, if you try to sell at the market while it is 20–21 (94.20–94.21), the broker can get the edge and give you the fill at 21 because the market hardly moves. Do not hang your hat on that last sentence because for about a week in April 1989, while trading in Euro options, there were serious vacuums when certain numbers were announced. Before 7:30 A.M., for example, the market would be something like 90.50–90.51, and then in an instant, as the number was being announced, the market would widen to 90.40–90.60, then 90.80 bid. There were options traders in my pit waving orders to sell hundreds at the market when it was up there and getting filled at 90.20. Those who were trying to buy down there at the market hoping to get something close to 90.20, were getting filled at 91.00 (not 90.00). Eighty ticks (\$25 per tick ) on 100 Eurodollar futures is \$200,000. Ouch! **End**

Fewer traders and customer orders create less liquidity, hence more risk. Market makers try to make wider markets but still close enough to compete with other exchanges and for customers to be attracted to the market. Customers hate the feeling of being ripped off. It is, however, unfair to state that customers think market makers are crooks just because they make wide markets. This is almost always a function of liquidity, often simply because it is lunchtime or a hot summer day when traders are not around to make markets. Fewer traders left to accommodate paper flow means added risk on the bigger orders when few are around to take down a sizable trade because they have fewer avenues on which to layoff the risk. The wide markets are a direct result of the fact that the trader expects a horrible fill price on his or her hedge. In effect, the trader is merely passing that hedge cost plus the negative-edge on to the customer.

It will soon become evident that options are a relationship game. If the relationships get stretched out far enough, they will eventually attract the attention of some great big force that will push them back into line. That force is the market as a whole, and it will do whatever it wants to do.

**FAIR VALUE EQUATIONS INCLUDING BANKING<sup>5</sup>**

As stated in Chapter 1, the conversion/reversal is a forward value because it represents interest or interest less dividend flows until expiration. Though there are different considerations for equities and futures and also between models, only equities (stocks or shares) have dividends, and indexes have stocks that are part of their valuation.

The Black-Scholes fair value equations are as follows:

$$\text{For equity options: } k + c = u + p + i - d$$

where

- |                         |                    |
|-------------------------|--------------------|
| k – the strike          | p – the put        |
| c – the call            | u – the underlying |
| i – the interest amount | d – the dividend.  |

$$i = \text{cash flow} \times \frac{\text{days left}}{365} \times \text{interest rate}$$

Notice the difference of no *d* (dividends) in the futures options, and that the interest component is a positive or negative value on either side of the equal sign (=). The ‘*i*’ and the ‘*d*’ are nontransparent<sup>7</sup> variables that are accounted for differently depending on which model is used.

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<sup>5</sup> **Banking**

Banking is a term that describes the flows of cash from interest and dividends.

<sup>6</sup> **365 Days in a Year**

Some entities prefer to use 360 days in their calculations.

<sup>7</sup> **Non-Transparency**

A nontransparent value is one that has other income or expenses associated with it and is not currently visible (e.g., if you buy stock today and hold it for one year the cost is greater than the purchase price today because you are either forgoing the interest—implicit interest—on the money you paid, or you have to borrow money to buy it with and pay interest on that. Of course, if you receive dividends, your cost is reduced to some extent).

## INTEREST RATE EXPOSURE

Interest rate exposure should not be ignored. Past increases in interest rates have significantly affected the profits and losses of equity option traders around the world, especially where they have held long-term options.

A group of my students in Scandinavia back during one of Sweden's first Euro votes made over \$1 million of unanticipated profits when their short-term interest rates went from 15% to 75% overnight and then to 500% over the weekend (by collecting short stock rebate from a reversal). They were lucky because they could have had conversions on requiring them to borrow at 500% for the weekend. What about those on the other side who had conversions on? They had a bad weekend.

When working, be cognizant of both the interest rate aspects and the fact that each option trade either borrows money from or lends money to the marketplace. Each trader also has a relationship with a brokerage firm with which he or she does financing and investing. The properties that are inherent to all of these types of spreads will be presented before examining the particulars of each.

## BANKING: THE CONCEPTS OF BORROWING AND LENDING

The concept of borrowing and lending should be of some interest to customers who may become quite large option traders. For example, traders who are carrying a lot of long stock, may have to borrow funds from their brokerage firm. When selling boxes, the sale raises cash thereby reducing the borrowing needs for the long stock or it creates the opportunity to invest the cash with the brokerage firm if not needed to reduce a debit balance. By selling boxes, traders are borrowing money from the marketplace. The actual transaction of buying boxes is actually lending money to the marketplace. In this respect, traders are much like banks that seek to borrow at low rates and lend at high rates. It is important to see that any cash debit or credit contains exposure to rho risk.

It is interesting to know the implied interest rate for each locked trade that one makes. We will see how the tick income or expense (trading gain or loss) is in effect interest income or expense (but not for tax purposes) when applied to the cash flow of the lock for the number of days left until expiration. For a box, the tick income or expense refers to

the discount on the box from the box basic value (the difference between the two strikes). For a conversion/reversal, the tick income or expense refers to the conversion/reversal price. The cash flow is simply the amount of cash credit or debit generated by the trade.

Generally, traders will regard a cash credit to have only positive implications, because they earn interest income on the cash credit balance. This is a false assumption. A cash credit can come from several different potential sources, some of which are straightforward and others that which are not. Some interest rate positions traders can hedge and others they cannot. If one intends to hedge, he or she first needs to be able to discern the source of the cash. Traders can still make huge profits by not paying attention to small details. However, small details sometimes have a way of destroying you with an innocent smile. A certain portion of a cash credit—for example, short deep in-the-money options, which should have already been assigned—is undeniably good. It is not, however, possible to hedge or lock this type of option in any way, because it may be assigned any day. In this case, one cannot assume a defensive posture.

Cash credits can be caused by short premium (vega and gamma). Because the big P&L fluctuations will be caused by that premium posture, interest rate sensitivity is not a material factor.

All the other cash credits produced by positions, such as short stock, conversions/reversals, jelly rolls, and boxes, are of no benefit unless the interest rate earned is greater than the interest expense implied by the trades. One is invisibly incurring the expense as the present value of the position grows to maturity. Although one receives an interest payment for that cash credit, it is being expensed in the way of “ticks” lost on the position.

Each option’s intrinsic value and extrinsic value is sensitive to interest rates, but only the extrinsic value is subject to theta and the other Greeks, which cause it to erode in value. At the same time that the option value is eroding, there is an increase in value by a lesser amount due to the interest effect. If you put that option into a package that neutralizes the effects of the other Greeks, the interest aspects will remain. Therefore, for market makers who do not have an opinion on interest rates, it makes no sense to carry this additional exposure if they can neutralize it at fair value. They could spend the excess cash credit by purchasing the appropriate quantity of boxes or other Greek neutral packages at fair value instead of being subject to changes in overnight

interest rates. It probably wouldn't pay for a retail customer to go to all the trouble but if the position size warrants it, it could be a definite consideration.

In the normal course of market making, it is of no material importance whether traders have a debit or a credit because if they have a debit it is likely that their subsequent trades will offset it. If by the nature of the trade or the effects of futures margin variation a sizable cash balance ensues, it becomes time to neutralize this element unless they intend to play the direction of interest rates. The longer the term of the contracts, the more the exposure, and if there are many expirations involved in one's position, there is yield curve risk.

## **SHORT STOCK INVENTORY PROBLEMS AND SQUEEZES**

When rumors circulate that a certain company is about to be taken over, it may become difficult to find anyone who is willing to loan stock for shorting. Those who do manage to find stock to borrow may take advantage of the attractive prices created by the market, such as once for a friend with March 1994 reversals, which could be transacted for large credits. Normally (based on fair value), it is worth paying (a debit) just a little less than what you would receive in interest payments. At this time, however, it was difficult to borrow any stock, and so stock was loaned only if the borrower agreed to forfeit his or her short stock rebate. Doing a reversal for .40 (\$40) debit, would normally earn a half (\$50) in interest as a short stock rebate, and yield a net profit of .10 (\$10.00). When the rebate was removed, the .40 debit became a loss of \$40 per spread. My friend just bailed out at even, but because of this strange occurrence fair value subsequently went the other way to .50 debit (\$50) for the conversion, creating .50 credit for the reversal. That represented an amount of a \$1.00 (\$100.00) per conversion away from theoretical value. For traders with small capital, this can be a real problem in the interim because they may be forced out of their positions. Such a situation arises when the terms of the buyout have not yet been determined. The stock was finally taken over near the end of that year, nine months after the rumor started. Short squeezes happen a lot in highly speculative NASDAQ stocks that have a large short interest<sup>8</sup>.

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<sup>8</sup> Short Interest

Amount of stock that is being held short.

Lenders put a squeeze on the shorts by requesting their stock back.

### **EQUITY (STOCK) REVERSAL (WITHOUT DIVIDEND)**

An equity reversal is valued by the difference between the strike and the present value of the strike. The present value of the dividend (if there is one) is added to the present value of the stock. An American-style reversal has P&L characteristics similar to those of a miniature bull vertical spread when there is no dividend. The following example will be for a 70 strike spread with 60 days to go at 6.5% interest. The short stock rebate<sup>9</sup> is \$.75 ( $\$ .74870 \times 60/365 \times 6.5\%$ ), which makes this a \$.75 vertical. It can be materially inaccurate to use the strike price as the amount to finance because the real amount that the trader will have to finance<sup>10</sup> is the cash flow amount, which may be significantly different from the strike price (i.e., the stock price minus the combo price). In this case, it does not matter because the difference is insignificant. It would have been more accurate to use the cash flow, which is about \$69.25, and get an interest rebate of \$.74.

When looking at the Black-Scholes values for the 70 reversal in Exhibit 8–1, observe that the horizontal line starting at a stock price of \$66 begins to level off at a \$.75 debit, which is the short stock rebate for the reversal and also the difference between the strike and the present value of the strike. Assuming that there is no early exercise, the present value (using 6.5 percent) of the strike (70) is about \$69.25 (at fair value).

To trade the reversal, the real stock can be sold at \$70 and the combo (synthetic stock) bought for .75. The equation works at other stock prices as well: at \$71.00 the combo's fair value is \$1.75. The fastest way to calculate where a combo should be is to take the differential between the stock and the strike and add it to the interest amount. The in-the-money amount is \$1.00 (at \$71) plus \$.75 (the value

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<sup>9</sup> **Short Stock Rebate**

The interest received on credit balances generated by being short stock. It is usually an amount close to the T-Bill rate less an amount in the way of a fee to the stock lender. The fee is competitive and if stock to borrow is hard to find and in short supply (no punn intended), the fee goes up high enough sometimes to completely wipe out the rebate.

<sup>10</sup> **Options Finance**

The rate of interest for options financing is usually at a different rate than that of the rate for short stock rebate.

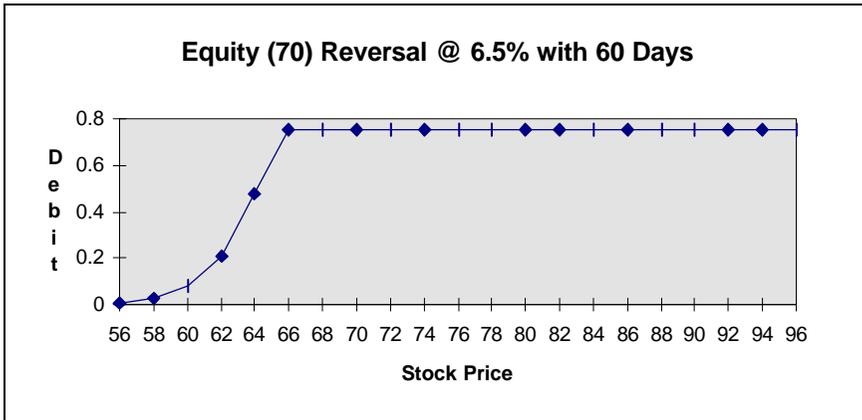
of the reversal) gives a total of \$1.75. This is how much the call should be greater than the put at fair value.

Exceptions to the above valuation will occur when the call price approaches a value less than the carry cost of the stock plus the put. In this case, the graph of an American-style reversal looks like it is falling off a cliff, losing money on the downside as the call gets further out of the money and becomes less than the rebate amount of \$.75. At a stock price of \$62, the calls decline to \$.25 putting downward pressure on the price of the reversal. Having owned it at a value of \$.75, it becomes theoretically worth a \$.25 debit to the market place:

$$\begin{array}{r} \text{Buy Call and Strike} \quad \text{vs.} \quad \text{Sell Put and Stock} \\ + \$.25 + \$70 \quad \quad \quad - \$8.00 - \$62.00 = \$.25 \text{ debit} \end{array}$$

**E X H I B I T 8 – 1**

Reversal Using Modified Black-Scholes Model



The trader carries a loss of \$.50 per spread. This is not a lot for a small investor, but a huge amount for an arbitrageur who has 400,000 shares worth on (i.e., 4,000 reversals x .50 loss per reversal x 100 shares per option = \$200,000). C/Rs are not dangerous because their prices change all at once or as drastically as in the last chart. The danger results from the fact that they are traded into and accumulated in a huge size, thereby making a small loss per spread really add up.

**Story: Reversal’s Revenge:** Some traders in the German market had 4,000 reversals (200,000 shares worth) on in a 700 DM stock with carry costs of 20 DM per reversal. The market on the stock collapsed, as did the calls to 5 DM (15 DM below the carry), making it beneficial for the holders of the puts to exercise. When they were assigned, this group stopped receiving the interest that they paid to receive in the way of a 20 D-Mark debit on the reversals (i.e., 4,000 reversals x 15 DM loss per reversal x 50 shares per option<sup>11</sup> x \$.67 per DM = about \$2,000,000). Ouch! They thought they were flat. More like flattened, I would say. **End**

Some models reflect “pumped up” theoretical values in pricing and position analysis. A more desirable model than the previous one is the binomial model. It is slower than other models because the number of iterations in the calculations. Some traders prefer to calculate their put values using the binomial model and use the modified Black-Scholes model for call values to cut down the calculation time, because the call values and deltas that these two models generate are very close. The binomial model attempts to smooth out the price fluctuations of conversions / reversals and alter the deltas so that one automatically trades more shares against each combo to hedge against an adverse move. Suppose that the delta of each combo is 1.02. A retail customer would not pay much attention to the extra .02 deltas per spread and would certainly not sell 2 extra shares per 100 for protection, because of the size involved. The maximum possible valuation of the reversal will be the interest rebate at each given time interval and the least amount would be zero.

### **IMPLIED INTEREST RATE ON AN EQUITY CONVERSION / REVERSAL (NO DIVIDEND)**

The implied interest rate of a trade is the value derived from the transacted price of the spread. To determine the implied rate, take the price of the conversion/reversal and divide it by the total cash flow, then

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<sup>11</sup> Shares per Option

Most DTB stock options each represent 50 shares.

multiply the result by 365 days per year divided by the amount of days left until expiration.

$$\frac{(C/R)}{\text{Cash flow}} \times \frac{365}{\text{Days left}} = \text{Implied interest rate}$$

Suppose that at an interest rate setting of 6 percent, the analyzer<sup>12</sup> has generated a value for the 100 conversion/reversal equal to \$2.00 with 96 days to go. Prove this value using the above formula.

$$\frac{2.00 \text{ (C/R price)}}{98.00 \text{ (stock-combo)}} \times \frac{365}{96 \text{ (days left)}} = 7.75\% \text{ (implied interest rate)}$$

If the conversion/reversal is worth 2.00, a market maker's market might be \$1.90 – \$2.10. The implied interest rates of those potential prices are calculated below.

Bid: Reversal: $\frac{1.90}{98.10} \times \frac{365}{96} =$	Ask: Conversion: $\frac{2.10}{97.90} \times \frac{365}{96} =$
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Borrowing from the market place:  
7.36%

Lending to the market place:  
8.16%

## INTEREST RATE SETTING IN YOUR OPTIONS PRICING TOOL

Having a proper interest setting for generating theoretical values is essential for market makers, but again, purely because of the size involved, retail customers would be over doing it a bit if they were to worry about it. Many market makers use inappropriate rate settings. There are three, possibly four, different settings for the same underlying contract that traders could use; the borrowing rate, the lending rate, the average rate, or the short stock rebate rate.

How do traders know which rate to use? I have visited traders at some of the largest banks in the world and have seen that they do not understand this concept. Some were using two columns of values, one

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<sup>12</sup> Analyzer

Software designed to calculate options theoretical values and Greeks. Options analyzers can only estimate what would happen given the inputs. If the input assumptions are not good, neither will be the output.

for conversion and one for reversals. At that time, the spread between their borrowing rate and short stock rebate rate was about 1.5 %.

Take a stock that is trading at \$100 with 96 days to go (average rate = 7.75%, borrowing rate = 8.5% and lending rate = 7%). The bid and ask spread of the conversion/reversal with its rates 1.5% apart is equal to about \$.40 ( $\$100 \times 1.5\% \times 96/365$ ). The break-even market would be about \$1.80–\$2.20. That would mean that the spread width has to be \$.60 wide (\$1.70–\$2.30) to lock in a profit of \$.10 per trade. Anyone working with a market that wide is not working. All that they can do is stare at the screen because the live markets are too tight to compete for a conversion/reversal. Everyone else has a market that is no wider than \$.25.

How can other traders be profitable if their markets are so tight that they cannot be profitable based upon their financing? One answer is that with a narrower market of \$1.85–\$2.10, if they could get out right after they have gotten in, they would have a \$.25 profit. Another possibility is to get in for a \$2.10 credit on Monday, hold it overnight, and then get out on Tuesday for a \$1.85 debit with a profit of almost \$.23 (the cost of financing is \$.023 for one night i.e.,  $100 \times 8.5\% / 365$ ). If they are unable to liquidate it within a day, even within a week, they could still scratch<sup>13</sup> after 11 days because the financing cost would be about \$.25.

The most important point to be conveyed here is that traders should use the interest rate that is most appropriate to them at the time. They are either borrowing a lot, lending a lot, or have no significant cash balance one way or another until they have initiated a position.

### **Scenario 1. The Trader Is Already Borrowing Heavily at 8.5%**

If she has a large number of conversions, has net long options value, or has a futures margin variation debit, then she has a huge total equity debit balance and needs to borrow money. She will probably borrow until the futures generate cash, until she sells some stock, or until her trades accumulate a total equity credit balance. In this scenario, she should set her interest rate to the borrowing rate (8.5%). When she collects cash by selling on subsequent trades at fair value, she will be reducing the balance of her 8.5% loan at the bank and will be borrowing in the marketplace at 8.5%. This reduction in the loan balance also

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<sup>13</sup> Scratch

A break-even trade.

reduces her exposure to interest rates. If those sales are made above fair value, she would in effect be borrowing money from the marketplace at less than 8.5% to pay down the balance of her loan. Conversely, she would be adding to her borrowing needs if her trade purchase amounts cost more than she received from the sales. If her purchases are below fair value, she is in effect lending to the marketplace at a rate better (higher) than her rate of 8.5%.

### **Scenario 2. The Trader Is Already Investing Heavily at 7%**

If a trader has a large number of reversals, is net short options value, or has a futures margin variation credit, then he has a huge total equity credit balance and needs to invest (loan) money. Until such time as the futures move against him, generating a draw-down of cash, he buy stocks back, or his trades accumulate a total equity debit balance, he should set his interest rate to the lending rate (7%). When he spends money by buying something on subsequent trades at fair value, he will be reducing the balance of his investment at the bank, and will instead be lending to the market place at 7%. This reduction in the investment balance also reduces his exposure to interest rates. If the buys are better than (below) fair value, he will in effect be lending money to the marketplace at more than 7% and reducing the credit balance at his bank. He may be adding to his credit by selling more items, but if his sales are made above fair value he is in effect borrowing more from the marketplace at a rate better (lower) than his bank is paying (7%).

### **Scenario 3. The Trader Currently Has a Neutral Cash Position**

A trader sets his or her interest rate to the average between 7% and 8.5%, namely 7.75%, until he or she generates a sizable debit or credit. If he or she then trades beating the sheets (buying below and/or selling above), and maintains a neutral total equity balance, it is synonymous to borrowing below and lending above 7.75%.

## **EQUITY CONVERSION/ REVERSAL (WITH DIVIDEND)**

The fair value equation is as follows:

$$k + c = u + p + i - d$$

where  $i$  = (cash flow x days left x interest rate)/365,  
and  $d$  = dividend

The only new twist for traders with a reversal (or any position that is short stock on the date of record) is that in addition to receiving interest, they are also subject to paying a dividend. Remember when someone shorts shares,<sup>14</sup> although he or she is borrowing from someone who is long them, new shares are created for the new buyer. Where does the dividend payment come from? The corporation pays that new shareholder but the stock loaner gets reimbursed through the stock lending and clearing function with funds charged to the short seller. The converter, on the other hand, pays the interest expense, and receives the dividend. Just after the dividend is paid, the whole value of the conversion/reversal shifts, no longer including the dividend.

### JELLY ROLL: EQUITIES

A jelly roll is merely a conversion in one expiration and a reversal in another, where the stock is eliminated by canceling out the short and long stock. If the strikes are different, it is sometimes called a time box. The safest way to handle this inventory is to remember that each part of it must be treated separately, as if they were a conversion and a reversal.

The more dynamic a position is, the more dynamic the hedge it requires. Take, for example, an options position that has long-dated options and short-dated options. The overall cash position may be flat, but there is considerable interest rate exposure (rho risk).

If a trader has a jelly roll with short combos on a stock expiring in two years compared with long combos in the current expiration, he or she would have a total equity balance of close to zero. Dissecting the position to view it as conversions in the far term and reversals in the near term would enable the trader to identify the rho exposure along the yield curve. The ideal way to hedge \$1 million is almost impossible, but it is possible to get close. A reasonable hedge would be a strip of Eurodollar futures—\$1 million every 90 days for eight quarters (\$8 million). The ideal hedge would be to sell a strip instrument starting with one day, two days, and three days up to 730 days. This is preferable because the synthetic long stock is based on overnight financing, one day at a time.

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<sup>14</sup> **Shorting Stock**

Shorting stock is difficult in most cases and impossible in others, owing to restrictions in some countries. The restrictions can include forfeiture of the carry rebate or mandatory buyback provisions within certain time frames.

If two-year money rates were to increase by 2%, it would cost roughly \$40,000 for the period. A 2% fall in rates would send the Eurodollars up 2.00; at \$2,500 per contract per point, eight contracts would be needed [ $\$40,000 / (\$2,500 \times 2 \text{ points})$ ] for the complete hedge.

### **OEX CONVERSION/REVERSAL**

The OEX conversion/reversal uses one CBOE S&P 100 option combo against one CME E-Mini S&P 500 future. Although it is called a conversion/reversal, it is not a true conversion/reversal. The “cash spread”, as it is called, has many different variables that affect its value, such as dividend streams, interest rates, multiplier changes between the two underlying indexes, exercise, and supply and demand nuances. Before one considers dabbling in the cash spread one should be comfortable and experienced with its price history. It has fluctuated considerably in recent times, much greater than that of other common intermarket spreads—such as Swiss Francs versus Deutsche Marks, T-Notes versus T-Bonds (The NOB), T-Bills versus EuroDollars (TED Spread) or GM versus Ford. Traders use some pricing nuances of the cash spread and the C/R to signal a good buy or sell, but these still do not guarantee a profit. A trade may be good when executed, but favorable prices do not ensure that the price relationship will not go against the trader, causing a severe loss.

### **OEX SYNTHETIC FUTURES AND THEORETICAL VALUES**

One thing worth mentioning about trying to price OEX options is that the underlying instrument is a basket of 100 stocks that is usually traded only by heavily capitalized traders doing the arb. There is no OEX future that can be used to lock in the trade prices, as there is with most of the other options traded on exchanges. This is why many traders base OEX options prices on the combos at each strike rather than on the S&P 500 future. Combos are essentially OEX synthetic futures. The S&P 500 consists of the same 100 stocks and another 400.

It is surprising that professional OEX traders use the cash price of the index as the underlying price from which to generate theoretical values of options. The bid-ask spread on the underlying index should prohibit this because it is so wide (about \$1.50 wide) for the whole

basket of stocks. The combo is usually one-eighth (\$0.125) wide except in volatile markets, where it can easily widen to 1.00.

Although sophisticated models have been built to account for the probability of the OEX options being exercised, it is easy to get a close estimation provided that one makes a few mental adjustments. A futures model with the interest rate set to zero could be used. This is not a very scientific method but it is effective in preventing boxes and combos from being valued at their present values. It will price boxes at their nominal value and combos to the intrinsic value of the in-the-money amount (\$5.00 boxes are worth at least \$5.00, and combos are worth at least parity with the synthetic futures). The in-the-money amount is based on the forward value, which is the cash price of the index plus a premium or discount based on dividends versus interest and supply and demand pressures. Pricing in this fashion is particularly desirable because most boxes trade between .03 and .25 over their basic value. The absolute value of each combo also trades at a surplus to its forward value. This nuance exists because of the benefits from controlling the exercise by being long the deeper in-the-money options.

The combo (synthetic future) price at each underlying price increment should be used in place of an underlying price. The three closest-to-the-money options should be displayed to provide other possibilities in case of liquidity problems. Most people use a futures model but fail to account for the forward value of the index. The forward value is simply the interest less the dividends. Suppose that the value implies that an at-the-money combo, when added to the strike, should trade at a premium of \$4.00 over the cash (e.g., OEX cash at 580.00 would make the 580 combo equal to \$4.00 plus combo). This is the synthetic underlying futures price. At least one could then say that the OEX synthetic future is trading at 584.00 (the strike combo is liquid most of the time) and can act as a substitute for the underlying futures contract when the trader needs to generate the theoretical values of other options for relative pricing purposes. By using this pricing method, one avoids the distortion of calls being overvalued and puts being cheap, as would be perceived if you tried to calculate implied volatilities using the cash price, which in this case is \$4.00 lower. Traders will also benefit from seeing an accurate skew with which to do their analyses. When setting the interest rate to zero for OEX options, one must realize that with certain programs the global setting will change and will therefore

affect the other contract and basket valuations. *Note that this zero setting should be used only for American-style cash settled index options.*

### THE OEX EARLY EXERCISE

An exercise usually takes place from just after the cash market closes (3:00 P.M. Chicago time) until the futures and options close (3:15 P.M. Chicago time) when the OEX combos or the S&P futures at the CME make a significant move in either direction. If there is a large move in the market, traders take the opportunity to buy/sell the S&Ps and exercise the OEX calls/puts that are far enough in the money. Traders have until 3:20pm, or five minutes after the options market close to exercise, and public customers have a little bit more time. “Far enough in the money” means that they could either buy the same strike puts, for example in the case of a break (market decline), for significantly less than the combo’s discount to cash (dividends on the basket minus the implied carry) and still be in the conversion (inter-market spread), or buy the same strike puts a lot cheaper than they have recently been trading for. Conversely, if there is an after-cash-market rally, traders will sell the S&Ps and exercise their puts. Of course, the corresponding calls must be trading cheaper than the premium to cash (implied interest minus dividends) and still put the trader into the reversal at a favorable price.

An experienced OEX options trader, Shelly, recalls a story that helps to identify an exercise nuance in the OEX and the additional risks inherent in being short cash settled American-style options.

**Story: Uh-OEX:** In the days before the Iraqi invasion of Kuwait in August 1990, a customer of a major New York investment firm entered the OEX options market as a size (i.e. huge) buyer of out-of-the-money puts. Over the course of several hours, the customer accumulated several thousand put options. The customer single-handedly inflated the value of that particular put from approximately  $2 \frac{5}{8}$  to nearly  $3 \frac{1}{2}$ , with little movement in the underlying price. In the process, due to his demand pressures, he forced OEX implied volatility a lot higher. Within a week, Iraq initiated its invasion of Kuwait, sending tremors through the international oil, gold, and equity markets. The U.S. markets

fell in response to both higher oil prices and the uncertainty of turmoil in the Middle East.

Within days, the market suffered a decline in excess of 10 percent. The puts purchased for around 2 5/8 to 3 1/2 were now trading over 14. The intrinsic value of these puts was just over 13, thus they still had about a dollar in time premium. Then the customer did the unthinkable; he exercised his puts early. To the OEX crowd, it appeared to be a gigantic blunder. Why would someone exercise these puts while they had time value remaining? With hindsight, it wasn't such a bad ploy. By exercising, the customer liquidated his position immediately by effectively selling his puts at parity. In view of his purchase price and exercise price, he realized an incredible profit on his investment. He may have been able to get better prices. However, by entering the markets during the trading day, his actions would certainly have affected the underlying price of the market, effectively diminishing the value of his put position. (By selling a large quantity of in-the-money puts, traders on the other side of the order, that are buying them, are forced to hedge by buying S&P futures or stocks, which forces the market higher and causes put values to fall).

Those traders and individuals who were assigned on their short put positions, initially believed that a mistake had been made. However, it was soon evident that the quantity assigned was significant. By the time the markets opened the following morning, the crowd as a whole had a large short delta position in the OEX market (by being assigned on short puts, one is effectively forced to buy them back at parity). Assuming that the customer bought and then exercised over 10,000 contracts, the assignments represented nearly 2,000 short S&P 500 futures contracts (one S&P future is usually offset by five OEX combos). On the opening, the value of the puts that had been assigned decreased by about \$4.00 (the market makers were no longer short them) because the short market positions were covered. Over the long term, the impact of this sort of position on the markets is negligible. The short-term impact on the neutral trader is quite dramatic (traders lost \$8,000,000 collectively).  
**End**

The important lesson to be learned from this example is that with cash-settled products, deltas disappear upon exercise (the holder has the control) and assignment (the trader who is short may find that he or she has more or less deltas than anticipated). Each party is subject to the payment and receipt of the cash value as opposed to the delivery of an instrument (stock or futures contract) that replaces the lost deltas. In the OEX, the assigned loses approximately 1.00 for each assigned short put, or  $-1.00$  for each assigned call. As I mentioned earlier, when exercising an option one must buy the corresponding same strike OTM option in order to maintain one's exposure.

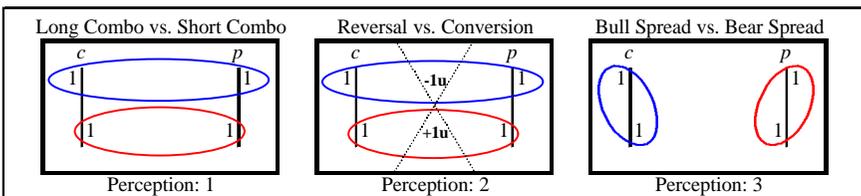
As of July 23<sup>rd</sup> 2001, the CBOE launched a new S&P 100 index with European-style exercise, XEO. XEO options are cash settled and may only be exercised at expiration.

## BOXES

The box is also considered a flat position and a way to get flat for a market maker who trades many strikes. It involves two strikes and can be perceived as a long combo at one strike and a short combo at another. It can be perceived as conversion at one strike and a reversal at another, with the underlying canceling out. It can also be perceived as a bull spread in the calls against a bear spread in the puts, or vice versa. Exhibit 8–2 shows three perceptions of a long box. Each pair of ovals represents a different perception.

### EXHIBIT 8 – 2

Compositions of a Box



As shown in Chapter 2, a box is a useful tool in dissection for perceiving a position in different ways. Boxes help traders to uncover aspects of their risk of which they may be unaware. Normally a box is an interest rate sensitive strategy used for financing positions and

hedging interest rate exposure. Long boxes can be used to capitalize on early exercise situations.

**EUROPEAN-STYLE BOXES**

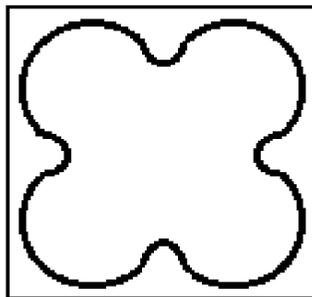
European-style options, such as in the SPX (S&P 500 options on the CBOE) cannot be assigned, so locks will be priced with regard to interest rates, using the Black-Scholes model. These boxes are priced around the present value of the difference between the strikes. For example, the present value of 5.00 is equal to 5.00 minus the cost of carry for 5.00. At 5% for 146 days, the cost of carry is .10, making each box worth 4.90.

To illustrate the concept of present value, observe Exhibit 8–3. The curved shape represents the present value, while the square represents the expiration maturity value (or expiration). As time goes by, the curved area will expand to completely fill in the square. The .10 represents the P&L from trading exchange-traded products (this is how it is registered on traders’ 1099 forms for the purpose of filing income tax returns).

The box market will most likely be 4.85–4.95. If the crowd has predominately total equity credit balances, they need to invest them by making the box 4.90–5.00. This is, in effect, advertising their need to invest and eliminate their rho risk at fair value. Conversely, if the crowd is borrowing funds, they would be more aggressive on the offer and be 4.80–4.90. This would promote an opportunity to raise funds at fair value and remove rho exposure.

**EXHIBIT 8 – 3**

Box at Present Value and Maturity Value (Expiration)



Present value = 4.90

Interest = .10

Maturity value = 5.00

## IMPLIED INTEREST RATE ON A BOX TRADE

The implied interest rate calculation on a box trade is very similar to that of the conversion/reversal. Take the discount on the box and divide it by the cost of the box, multiply the result times 365 days a year, and divide it by the numbers of days left to go.

$$\frac{\text{Box Discount}}{\text{Box Price}} \times \frac{365}{\text{Days left}} = \text{Implied interest rate}$$

If the box in the last example had had a market of 4.85–4.95 the trades would yield the implied interest rates as shown below.

<p>Long Box:</p> $\frac{0.15}{4.85} \times \frac{365}{146} =$ <p>Lending to the market place:</p> <p style="text-align: center;">7.73%</p>	<p>Short Box:</p> $\frac{0.05}{4.95} \times \frac{365}{146} =$ <p>Borrowing from the market place:</p> <p style="text-align: center;">2.53%</p>
--	---

Obviously, this is a very wide market relative to the risk. The markets on boxes at the CBOE on the SPX (S&P 500) contract are very tight. A market on the \$5.00 box with 30 days to go could be 4.97–4.99. See the effective rates below.

<p>Long Box:</p> $\frac{0.03}{4.97} \times \frac{365}{30} =$ <p>Lending to the market place:</p> <p style="text-align: center;">7.34%</p>	<p>Short Box:</p> $\frac{0.01}{4.99} \times \frac{365}{30} =$ <p>Borrowing from the market place:</p> <p style="text-align: center;">2.44%</p>
---	--

Implied interest rates are posted along with market quotes on the boxes. It is done this way because the SPX is a European-style exercise, which makes it attractive to use for financing the rest of the products traded on the CBOE without the fear of or benefit of the early exercise.

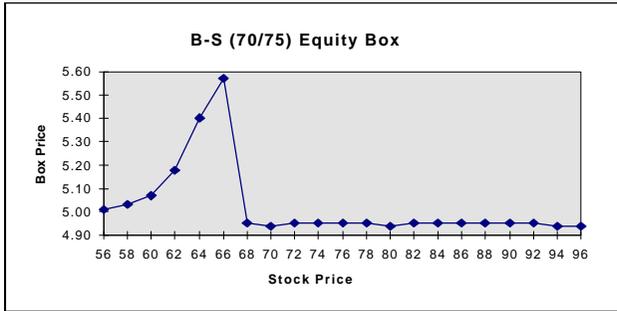
## THE EQUITY BOX

Equity boxes that do not have dividends expand when the underlying market trades lower and there is an opportunity to save or collect interest by exercising. A box in an equity will expand to the upside because a trader can receive or avoid paying a dividend. Again, the Black-Scholes model is very useful if there is no exercise. However the valuation skyrockets (see Exhibit 8–4) at a stock price of about 67.00 because the

upper strike conversion will collapse when the out-of-the-money call trades less than the cost of carry. It is better to use the binomial model as discussed in the conversion/reversal section of this chapter, because it smoothes out the prices more gradually. Although it is less accurate, if there is no exercise opportunity, it does price in the possibility of an early exercise by discounting the conversion/reversal.

**E X H I B I T 8 – 4**

Equity Box Priced with the Black-Scholes Model (without dividend)



**EXERCISING AND THE MONEY**

**Story: Profit by Exercising:** My friend Joe once went into the soybean pit and asked for the market on a 50-cent box (each cent is worth \$50). He was given a quote of 49.25–49.50. He bought a bunch at 49.50, and asked, “Now where?” He got a market of 49.25–49.75, and bought some more at 49.75, then some more at 50 cents, then 50.25, then 50.50, then 50.75, then 51 cents. He exercised his long calls and covered his short puts, which left him with a conversion with a \$250,000 edge. **End**

To explain where the potential profit comes from, let us use some stock options prices in Exhibit 8-5 so that we can relate to the concept. Although the box is worth 10.24, some traders still price a box using their calculators and determine that if there are 74 days to go, at 7.25% the box is worth 9.86 ( $10 - (10.00 \times 7.25\% \times 74/365)$ ). The crowd then quotes something like 9.80–9.92.

## EXHIBIT 8 – 5

### Option and Spread Values

Calls	@ 100.00	Puts	Carry	Box	
2.13	125	26.11	1.84	125/135	10.24
1.09	135	35.31	0.78	Binomial Model	

Joe may buy some at 9.90, 9.95, 10.00, and 10.05, then finally at 10.10. Say Joe's average cost is 10.05, the stock is trading at 100, and his position is carded up along with the transaction price averages as shown in Exhibit 8–6.

### Summary of this example

Joe has bought 2000\*125/135 boxes for an average price of 10.05. The number 1.05 on the far left in Exhibit 8–6 is the call vertical spread at fair value. That leaves 9.05 for the put vertical spread price (on the far right), showing the box trade at 10.10. When traders trade a spread such as a box in the pit or over the phone they must establish the prices of the individual “legs.” They can use any prices as long as the prices were within the daily range<sup>15</sup>.

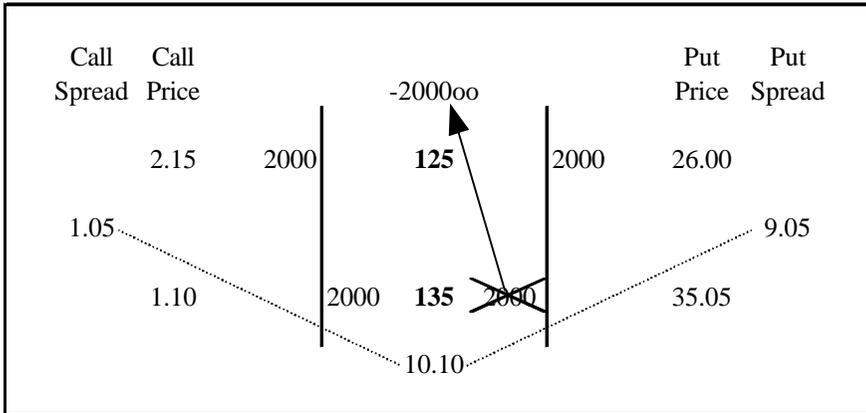
If Joe were to do nothing and wait until expiration, they would lose \$10,000 (.05 x 2000 x \$100). Suppose that Joe buys back the 135 calls for 1.10, then exercises the 135 puts. This leaves him with the 125 reversal at a 1.20 debit (see explanation of price below) when it is worth 1.84 (cost of carry from Exhibit 8–5). On 2000 spreads, that is a potential profit of \$128,000 (2000 x .64 x 100) and is the reason Joe would be willing to pay more than 10.00 for the 10-point box.

<sup>15</sup> **Within Daily Range**

Some exchanges have relaxed this rule and allow traders to simply report the spread price and not the individual legs of it. The trade has to be labeled as a spread for clearing purposes; otherwise the computer used for settlements would reject the trade as being outside the daily range.

**EXHIBIT 8 – 6**

Prices Used In Spread



**Explanation of residual price**

When Joe exercises the 135 puts, he has the right to sell the stock at 135, but he loses the 35.00 premium, which means that the stock was in effect executed at 100 for the reversal calculation. The 135 calls were a scratch (breakeven), which leaves him with the 125 reversal, with prices of 2.15 for the 125 calls, 26.00 for the 125 puts, and 100 for the stock. Plug these prices into the equation  $(k + c) - (u + p)$  to see where he transacted the resulted reversal:

$$\begin{matrix} \text{Buy} & \text{Sell} \\ (2.15+125.00) - (100+26.00) - .05^* = 1.20 \text{ debit.} \end{matrix}$$

\*Factor in loss of premium over parity of 135 put (35.05–35.00)

When Joe bought back the 135 calls, he could have used the opportunity to scalp before exercising, as conveyed in the ‘rent a call’ example earlier in this chapter.

## STOCKS INVOLVED IN TENDER OFFERS

Normally a short put and a buy-write<sup>16</sup> (in a reversal) will offset each other to a large degree if absolutely nothing unusual happens to the stock. However, during stock takeover rumors and tender offers, instruments take on different characteristics. Even locks (reversals, conversions, boxes and jelly rolls) act differently and can cause profits and losses to fluctuate as if the position were naked.

If a takeover is being attempted, a tender offer will be made by the management, of the bidding company, to the stockholders of the target firm for their shares. A partial tender offer is an offer to buy a fixed amount of the company's outstanding shares (usually in an attempt to get 51% ownership). The Chiron deal was for 49% for cash and shares. Options become very difficult to price when a stock is involved in a partial tender offer. Even the most sophisticated players take it on the chin occasionally and are confounded until after the all of the smoke has cleared. Traditionally, when stockholders tender their shares to the buyer they receive a certain amount in cash for each share and will be issued new shares of the same company and / or another company. There are a few unknown factors that cause the options to trade very far from their theoretical value.

The traditional models cannot value options properly when unknown factors exist. These include (1) when the deal will take place, (2) the pro rata factor and (3) the difficulty of borrowing stock to short before and after the deal date. Until these factors are actually known there is considerable speculation and the risks are enormous. Even when the details are announced, they are understood only by an elite group. This elite group, though well capitalized, is constrained by position limit problems, which means that the price relationships stretch beyond their ability to put them back into line. Other traders avoid the situation due to a lack of understanding, fear of risk, or both. When price relationships stretch, there is still opportunity to utilize certain nuances and trade at more favorable prices. When it seems like free money, traders will hesitate; experienced traders may be too disciplined to jump in for more at better prices when the prices of their earlier trades were not as good.

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<sup>16</sup> Buy-Write

A buy-write is the opposite of a covered write; that is, long call/short stock.

"Never add to a loser" and "never try to be bigger than the market" are common adages.

Examine the unknown factors mentioned above:

**1. Deal Date**

It is possible to guess when the deal will actually happen. Under the Hart-Scott-Rodino Act, any deal that brings a shareholder to above a 5% stake in the company must be approved by the Federal Trade Commission. Once approved, the tender date will be set for 20 days later. This may affect the options if the expiration date happens to be after the deal date. If it is known that expiration will occur before the deal date, the options should behave as they do in a normal market although the stock price may fluctuate wildly. When there is uncertainty, the options will trade at compromised values somewhere between the values based on today's break-even price and normal expiration values. Each order that comes into the market will be scrutinized by the crowd for a hint of where the price of the deal might be done.

**2. The Pro Rata Factor**

The pro rata factor is the percentage division of each shareholder's stock that will be exchanged for either cash or new shares. The amount that this factor changes during the period of uncertainty is not as significant to investors as it is to arbitrageurs. The pro rata factor is an estimate used in determining where the stock should trade. Professional arbitrageurs try to guess what percentage of shares outstanding will in fact be tendered to the company. Shareholders sometimes forget to tender their shares or prefer not to do so for tax purposes. This can be a big mistake, especially where the cash per share is much higher than the price at which the stock is likely to be trading after the deal is struck. Since the buyer is getting a fixed number of shares, for every share not tendered there is an increase in the percentage of each shareholder's stock that is eligible for the cash portion.

Suppose for example, that LIL Corp. had 100 million shares outstanding of which a trader is long 1,000 shares. LIL was trading at \$50 when it was announced that BIG Corp. was approved to buy 40 million shares at \$120 per share. The remaining shares of LIL will be exchanged for new shares of LIL each valued at the going \$50 value that they were trading at before the announcement of the deal.

This would never happen, but if only 40 million shares are tendered (the trader's 1000 along with them) then those lucky few (the trader included) would receive a full \$120 while the remaining shareholders would receive new shares valued at \$50.

This never happens either, but if 100 percent are tendered, then the trader will get to sell 400 shares at \$120. The remaining shares will be valued at \$50, so the break-even value for the stock would be priced at \$78 [(400 shares x \$120) + (600 shares x \$50)] / 1,000 total number of shares]. If he paid less than \$78 then he would have been a winner because his break-even cost is \$78.

Suppose that 3 million shares of the stock were held by an absentminded waiter who forgot where he put his stock certificates, and when he finally found them, he forgot to mail them to the company. In this case, only 97% of the shares would have been tendered, which means that when the trader tendered his shares he would have received \$120 for 412.3711 shares (40 million bought / 97 million tendered = 41.24%) and 587.6289 new shares valued at \$50. The break-even value per share for the stock is \$78.87.

$$[(412.3711 \times \$120) + (587.6289 \times \$50)] / 1000.$$

The .87 difference between the two previous calculations is a result of the pro-rata factor going from 40% to 41.24%. Certain arbitrageurs play for this, anticipating an increase in the pro rata factor. 0.87 seems like nothing to an investor with 100 to 1000, shares but to the professional who has the equivalent of hundreds of thousands of shares this it is a huge amount.

### 3. Borrowing Shares

The difficulty or impossibility of borrowing shares to sell short is another minor issue but one that can become a big problem for the arbitrageurs following the tender. This is dangerous for the trader who is short the stock and is called upon to return the shares to the party lending them. When borrowed stock is threatened with being called in, or is actually being called in, the shorts have to go out and buy the stock in the open market. This creates upward demand pressure on the stock versus the options. Combos (synthetic stock) trade well below the stock causing the reversal to trade at huge credits when theoretically they are worth debits. Traders have to be careful to find out whether or not there is old stock

and when-issued<sup>17</sup> stock to trade. The when-issued shares can be borrowed, but it may not be possible to borrow the old shares and can explain why the when-issued stock is trading for \$1.00 less. This does not mean that one should short the old shares just because they are trading for \$1.00 higher.

### THE CHIRON TENDER OFFER

**Story: The Chiron Deal:** On November 21, 1994 Ciba Geigy announced that it wanted to buy 11.9 million shares (37%) of Chiron's 32 million outstanding shares for \$127.00 per share. This would bring their 12% ownership stake to 49% (they liked how the company was being run and so did not opt for a 51% controlling interest). A friend of mine, Scotty, decided to get involved on December 2<sup>nd</sup>, when the news wire reported that the FTC waiting period for The Hart-Scott-Rodino Act for the Ciba Geigy/Chiron deal would expire on December 28. Chiron's stock price rose from \$60 per share (\$60 was also where it was expected to trade after the tender) to the low \$80s by mid December. On December 20 Ciba Geigy extended the tender date to January 3<sup>rd</sup>, 1995, at Chiron's request. (The shareholders probably wanted to realize their gains in 1995 because they believed that capital gains taxes would decrease.) Let us take a look at the approximate prices that Scotty was faced with on the day he got involved (see Exhibit 8-7).

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<sup>17</sup> **When-Issued Stock**

When issued shares are the newly issued stock of the company in question. The new and old shares have to be differentiated between, because the old shares have to be re-registered.

## EXHIBIT 8 – 7

12/2/94 Chiron Stock Option Prices following Ciba Geigy Tender

12/02/1994 Conversion	Chiron Reversal	Call Butterfly	Call	80.00 Strike	Put	Box	Put Butterfly
2.00	-2.00		25.00	55	2.00		
						55/60	6.00
3.00	-3.00	0.00	20.00	60	3.00	60/65	6.25
						65/70	6.75
4.25	-4.25	0.00	15.00	65	4.25	70/75	7.50
						75/80	7.50
6.00	-6.00	0.00	10.00	70	6.00	80/85	5.25
8.50	-8.50	1.00	5.00	75	8.50		
11.00	-11.00	3.25	1.00	80	12.00		
11.25	-11.25		0.25	85	16.50		

Notice the conversions / reversals, boxes, and even the butterflies are very much out of line with normal model valuations. This happens because the back-end of the deal<sup>18</sup> at this point assumes that the stock will trade back down to \$60. Though the stock is at \$80, the 80 puts are trading at \$12 because it is believed that the stock will trade at a back-end price of around \$60. The options pricing is based on the future stock price being between those prices.

On December 29th the FTC stated that Ciba was free to buy the stock and that the tender period would definitely expire on January 3rd. The puts exploded in value. Exhibit 8–8 is a snapshot of the prices after this news came out.

<sup>18</sup> **Back End Deal**

Back end of the deal refers to the price at which the stock will be trading after the payout.

**EXHIBIT 8 – 8**

12/29/94 Chiron Stock Option Prices after News Release

12/29/1994	Chiron	Call		80.00				Put
Conversion	Reversal	Butterfly	Call	Strike	Put		Box	Butterfly
2.00	-2.00		25.00	55	2.00			
						55/60	7.00	
4.00	-4.00	0.00	20.00	60	4.00	60/65	9.00	2
8.00	-8.00	0.00	15.00	65	8.00	65/70	10.00	1
13.00	-13.00	0.00	10.00	70	13.00	70/75	10.00	0
18.00	-18.00	0.00	5.00	75	18.00	75/80	10.00	0
23.00	-23.00	5.00	0.00	80	23.00	80/85	5.00	0
23.00	-23.00		0.00	85	28.00			

Scotty overlooked the distinction between the old shares and the when-issued shares, and shorted 40,000 shares of the old before his clearing firm told him to stop. He was lucky that the shares were not called, because he would have had to buy them at potentially astronomical prices.

On January 4th Ciba took 38.25% of the 31,005,871 Chiron shares tendered. That was 1.25% more than the original 37% bid, which means that for every 1,000 shares, the shareholders received an additional \$.7125 per share—12.5 shares (1000 x 1.25%) x \$57 (\$117-\$60) / 1000 shares originally held. Pricing returned to normal (Exhibit 8-9) after the deal. Chiron's price history for the period is displayed in the Exhibit 8-10.

**EXHIBIT 8 – 9**

1/4/95 Chiron Stock Option Prices after Completion of Tender

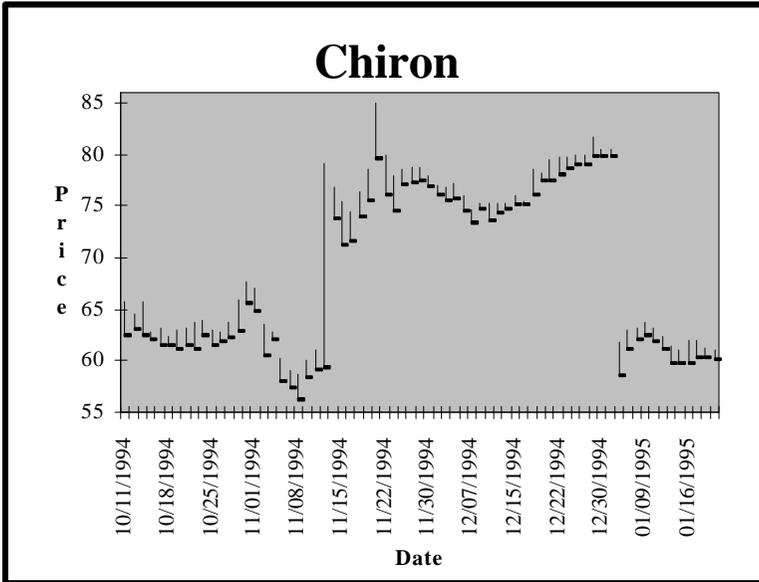
01/04/1995	Chiron	Call		60.00				Put
Conversion	Reversal	Butterfly	Call	Strike	Put		Box	Butterfly
0.50	-0.50		5.00	55	0.50			
						55/60	5.00	
0.50	-0.50	1.50	2.00	60	2.50	60/65	5.00	1.5
0.50	-0.50	1.00	0.50	65	6.00	65/70	5.00	1
0.50	-0.50	0.00	0.00	70	10.50	70/75	5.00	0.5
0.50	-0.50	0.00	0.00	75	15.50	75/80	5.00	0
0.50	-0.50	0.00	0.00	80	20.50	80/85	5.00	0
0.50	-0.50		0.00	85	25.50			

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**EXHIBIT 8 – 10**


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Chiron



Consider locks one last time. Should either a partial tender offer or a tender offer that is not a 100% cash offer occur, a trader would be better off with conversions as opposed to reversals. Such situations occur more than they once did. In a normal stock split, the share amount that each option represents is adjusted (e.g., in a 2-for-1 split each option that represented 100 shares will represent 200 shares). Exchange rules require that the quantity of options does not change because open interest figures would be distorted. In partial tender offers (e.g., Chiron and Paramount Communications), there is no adjustment. If we compare an at-the-money covered-write to an at-the-money short put, we can see that they are not equal because the stock holder participates in the cash portion of the tender and keeps the premium from the short call, while the put writer has to endure the pain of an at-the-money put which trades as if it were deep in-the-money because the back end of the deal put Chiron much lower.

Experience is the pricing model for this market nuance. Scotty said that he learned more about trading during a 20-minute period, when one of the masters of the game came into the pit, than at any other time in his career. Many other market makers dislike such competition but the liquidity that a great trader brings can be an advantage, quite apart from having the privilege of witnessing the trader's art.

**End**

### **OTHER TID-BITS**

The following information on implied interest rates is useful for pricing options. It becomes extremely important in three situations, namely, when tax games, interdepartmental games, and bad creditor borrowing games are being played.

### **TAX GAMES**

In the past, options strategies in the United States were used to defer or reclassify income and expenses where there was a difference between tax rates for different types of income and expenses. The strategies involved many different types of trades. For example, traders used to defer their income by liquidating only the losing combo of a box; that is, those options would be recognized as a loss for income tax purposes. This strategy was virtually without risk, because when one combo was liquidated, a new one was initiated, thereby forming another different box. The market makers in Superior Oil had very profitable years because everyone gave up a tick on thousands of boxes at a time. The stock of Superior Oil was extremely volatile in those days, and was therefore attractive for this type of trade. The combo prices had to have changed a great amount between the time that the box was first put on and the year-end, which was the last day that the loss could be realized. The tax authorities dealt with this by creating the mark-to-market rule for year-end income and loss determination.

Other tax games involve disparities between dividend tax treatment for nationals and foreigners, special treatment for long-term and short-term capital gains, and interest income and expenses. Details are country-specific and the regulation of such nuances changes from time to time.

## INTERDEPARTMENTAL GAMES

In some banks, traders take advantage of certain loopholes in bank rules. For example, some institutions do not have interdepartmental charges for capital (due to an oversight). In other words, if department A needs 100 million, it borrows it from department B at no cost. The bonus pool to department A is based upon A's performance. A takes advantage of the situation and borrows from B to use for trading. A then purchases boxes or trades similar locks and profits .10 for each box bought, having no risk. At fair value, the trade of a 5 point box, at 4.90 normally would be a "wash," meaning that there is no profit or loss. That is what fair value is supposed to mean. In this case, however, it is not a wash because there is no cost to carry. The borrower never receives a bill. Department A gets a nice bonus and continues to do so until department B wakes up.

## BAD CREDITOR BORROWING GAMES

**Story: Thanks for the Loan Dude:** A student of mine in a bank had been trading over-the-counter options in the foreign exchange market for five years. He could not understand why a certain customer was willing to trade \$30 million worth of deep in-the-money conversion for a 50-pip<sup>19</sup> edge to the trader. He thought it was like stealing.

It seemed to me that the customer was selling the deep call options on the conversion and collecting cash at an unattractive implied interest rate, so I asked, "What does this customer do and how is his credit rating?" The student said, "He has a company that is strapped to the gills with debt and he cannot borrow anymore from our bank. What has that got to do with a no-risk European-style conversion?" My reply was, "There is your answer. The bank will not lend him another penny at even three times your rate, but you just lent him 30 million at a half of a percent over your rate." The student was flabbergasted. This cannot happen on a regulated exchange, but it often occurs in the OTC market.

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<sup>19</sup> Pip

A *pip* is a tick in the foreign exchange market representing 1/100th of a basis point.

A market maker wears many hats. One of those hats comes with a three-piece suit and gold watch and chain. An options trader is a banker who borrows and lends. The premium trader, the directional trader, the skew trader, and the risk manager are other hats that the market maker wears from time to time. **End**

## CONCLUSION

How does one really know what is cheap and what is rich? The answer is known only after the fact and a model is not very helpful in predicting anything. This does not mean that the models are useless. Some traders use a different model for pricing than the model used for risk analysis. Risk analysis may be done using a combination of models and by referencing past experience of price relationships.

Understanding Greeks well enables us to see the similarities between call and put contracts. We find that in-the-money options are synthetically out of the money. Changes in implied volatility change the values of options and Greeks, just as the effects of time do. The following peculiarity may reinforce some of the concepts presented in the chapter:

When I started trading Eurodollar options in 1985, I hired a programmer to modify my software. There was very little time to prepare. The Euros are an inverted contract; that is, when they are trading at 93.00 it is like trading an underlying that is really priced at 7.00 ( $100.00 - 93.00$ ). A price change from 93.00 to 92.50 will have the same effect on the 93.00 puts as it will have on the 7.00 calls with an underlying move from 7.00 to 7.50. The programmer knew very little about options but was able to make the changes in one day. I told him to leave the formulae as they were, only to rename the puts to calls and calls to puts, change the math signs (+ and -) from negative deltas to positive and positive to negative, and to express the underlying as a number subtracted from 100.00. That worked perfectly. In an inverted market the put deltas are greater than the call deltas when equidistant from the underlying. The opposite is the case for a non-inverted market.

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CHAPTER

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## 9

**OPTION DIALOGUE**

Mentoring has been an interesting part of my trading career. I had a few mentors, starting in 1981 when I was an apprentice on the CBOE floor. They all had different styles of trading and different ways of explaining the nuances of the trade. Mostly, I learned by doing. I obtained financial backing from one of my mentors and went over to the CBOT in 1983. Within a year I established a trading group. Some of the traders had experience others did not. I gave classes at my clearing firm and got a seat on the CME to expand my operation in 1985. While interacting with experienced and inexperienced traders, I found that I had a knack for interpreting complicated ideas from my veteran traders and explaining them to my novices. In late 1989, I set out to create the curriculum for the International Trading Institute, Ltd. and traveled extensively working with and training traders. Since my first book was published, I have continued to work with traders in person, over the telephone and via email.

Email is my favorite medium, because they are easy to save, edit and illustrate when necessary. Email is particularly good because my pupils can save them, study them and revise from them. The following dialogue, between a trader and myself, covers the first couple of months of trading after he had finished reading my book. I chose this trader's emails because at that particular time period the market was not trending in an obvious manner. Both the Dow and the NASDAQ Composite were in tight trading ranges, 9000 and 2200 respectively. It was not a particularly easy time to trade, unlike the period in late 1999 / early 2000 when almost any call went into the money or later in 2000 almost any put went into the money. In the nonvolatile environment of 2001 having either bullish or bearish strategies failed while butterflies and time spreads prospered. The dialogue is presented in two different font colors (for color versions). The red font represents emails from the trader to

myself. These are also left justified. The black font represents emails from myself to the trader, and each paragraph is indented and right hand justified.

### Getting Started

Trader:

**December 31, 1998**

**What do I do?**

I've been studying the material for some time now. As usual, I understand some of it, but haven't digested all of it yet. One question, or issue, is looming ever larger as my first day of trading draws near. What will my first trade be? What strategy or strategies should I employ? I was thinking to use mostly verticals.

I think that I would like to trade some of the following stocks: Compaq, Microsoft, America Online, Yahoo, Amazon, Cisco, Dell, etc. It seems to me that I should start out slowly and probably with only one stock, mastering one or two strategies. I want to keep this as simple and as painless as possible in the beginning.

I have dozens of questions floating through my mind so rather than try to discuss them all now, which will probably lead to more questions, is there a way to devise a sort of recipe or set of instructions for the total beginner to follow? Can you provide me with a short list of basic strategies to learn and master, a secondary list of intermediate strategies and then some more advanced plays. I feel the simpler we can keep this in the beginning the faster my learning curve and confidence level will be.

What do you think? Would you rather I propose a list or set of guidelines?

RiskDoctor:

**January 4, 1999**

**Re: What do I do?**

I think it would be helpful to review some sections in the book. Please re-read "Speculative Alternatives Using Options" in Chapter 1 and "Rule the Beast" in Chapter 2.

“Thinking to use mostly verticals” gives you a lot of versatility and allows you to profit from being correct in your market opinion by being able to employ a wide variety strategies for almost any market scenario (bullish, bearish, tight range, big move either way, not to mention vega and theta control -- volatility long versus short versus neutral, etc. Now, if verticals were to become your bread and butter spread, you should also read, Chapter 5's: "Adjusting Speculative Trades Using Verticals".

All trades start with a directional opinion and/or a volatility assumption. Where has the stock and implied volatility been and where might they be going?

Take it slowly. Walk before you run.

An analogy to playing a hole in golf:

Remember that if you take a triple bogie on a hole, there are still a lot more left to birdie. Don't get discouraged and upset your inner game.

1. Line up your shot and take your stance (get a hunch).
2. Drive the ball (Put on your play or spread).
3. Go to where you hit the ball in order to plan your next shot (after some time or a market move, assess the situation).
4. Hit it again (adjust, exit or stay with it).

There is no need to wonder anything until you get to the ball.

(Until you get to know your trading self, learn. Don't worry about the strategy until your time horizon expires or your price targets or exit points have been met). Each time, assess your lie and your view to the pin.

You are going to slice, hook and fall into traps so keep your exposure low until you can rely on your own experience and abilities (not the golf book or video) to get you back on course.

Trader:

**January 4, 1999**

**Understood**

OK, I got it. Thanks for the reply. I will follow those words to the Tee. Here's the update for today, my first day trading:

1. I have put \$50,000 in my account to start with.
2. My only expenses will be commissions, and interest currently calculated at 5.75%. I will receive 4% on credit balances over 25,000. There is no monthly charge for my Internet real-time data.
3. I intend to take my time by starting out small (10 to 20 contracts). I do not need any added pressure to make money.
4. My trading software looks pretty thorough and sophisticated. It uses the Binomial model and can provide me with all my analysis.

I think that's all, for now anyway.

Trader:

**January 7, 1999**

**Quick Update**

Just wanted to let you know that everything is going well and that I don't really have any major news yet. I've been spending the past few days setting up and getting familiar with my

software. I'm actually very pleased and impressed with all of its capabilities. I'm going to use the rest of the week to finish customizing my screens and get into the market's rhythm as it relates to options. On Monday I'll make my opening move, perhaps in AOL (American Online) or MSFT (Microsoft). Once I have a position I'll email you with daily updates. Let me know if there is any information that you want specifically. "Options Metamorphosis" in Chapter 1 is a beautiful thing. I am making it my goal to completely master it, both in theory and execution. Life is great!

Trader:

**January 8, 1999**

**Cox Ross Model**

Have you heard of the Cox Ross and the Cox Rubenstein model? If so, does it yield significantly different values for equity options than the Binomial model?

RiskDoctor:

**January 10, 1999**

**Re: Cox Ross Model**

The Cox Ross, Cox Rubenstein and the Cox Ross Rubenstein models are all the same. It is the binomial model (discussed in Chapter 9) that discounts conversions/reversals and pumps up boxes by factoring in a probability of early exercise. I have also heard it called the Cox Ross Rubenstein model.

Become an expert in the pricing of the markets that you intend to trade. Get to know your skews and conversion/reversal values, but stick with and concentrate on only AOL and MSFT for now.

Trader:

**January 11, 1999**

**The Basics**

Thanks for your last response. I already have the MSFT and AOL price histories. I will do exactly as you say. I thought I'd

send you an email just to let you know my intentions. I've been reading the pages that you mentioned earlier and it all makes very good sense. I especially like the "Managing the Beast" section. I plan to follow that very carefully. The flow charts are also an excellent tool. I intend to review them daily, quizzing myself, until they become second nature. Here is a rough outline of what I plan to do, based on the fact that I'm a beginner:

1. Stick with one stock in the beginning. This will allow me to focus on one position and the necessary adjustments. I will also have less to worry about as I figure out the best way to get filled on my option orders. (My stock orders shouldn't pose any problems.)
2. I think that it is best, initially, to try to focus on two quadrants of the "Options Metamorphosis". Since I am bullish for the near term and believe volatility will stay at current levels or possibly increase, I think that I should try to stick with the adjustments in the long call quadrant and the long straddle quadrant in the early days to keep things simple. What do you think of this?
3. Since everything will be new to me (i.e. placing orders, speed of executions, waiting for confirmations, busy brokers, etc.), I am trying to figure out what the best initial trade would be. I know I can get quick easy fills on stock, but perhaps a better idea is to go with a relatively price insensitive strategy such as a vertical. If you have any thoughts on this let me know, otherwise I'll play it by ear and market opinion.
4. Am I right in assuming that I should be concerned with deltas? My concerns will also be with pricing, premium (especially vega and theta), P&L, and market opinion.
5. I am planning to trade with a maximum delta of 600 to start with.

If you agree with everything I've stated here then you really don't need to give me much of a response. I'm feeling very happy, comfortable and confident these days. I'll give you an update tomorrow when I get home.

RiskDoctor:  
**January 11, 1999**  
**Re: The Basics**

I agree with everything. Quadrants I & IV of the Options Metamorphosis are the appropriate quadrants for you right now. Remember that the price and delta of a vertical spread are relatively small when compared to a naked option. With 20 spreads you will generally have between 200 and 500 deltas, well within your self-imposed parameter of 600 deltas. The important thing is to predetermine where you are going to get out if you are wrong. If you do think about liquidating, remember that there are other options (alternatives). You can leave the position as is, instead of spreading your existing position off. It may be wiser, as another alternative, to trade the adjacent vertical and leave yourself with a long butterfly that may come back and reward you with profits at a later date.

Trader:  
**January 11, 1999**  
**The Basics 2**

A quick question: you said that it is not necessary to liquidate the bull spread, but that I could trade the adjacent bear spread against it. This in turn will produce a short butterfly, will it not (short referring to the wings of the butterfly)?

RiskDoctor:  
**January 11, 1999**  
**Re: The Basics 2**

Selling the vertical above produces long wings, hence a long butterfly. Say for example that you have the 170/175 bull spread on. If you trade into the 175/180 bear spread you will end up

long the 170/175/180 butterfly. To spread it off into a short butterfly you would have to trade into a bear spread using lower strikes. For example, trading into the 165/170 bear spread leaves you short the 165/170/175 butterfly. Long is not necessarily better or worse than short but you would have to desire the position.

Trader:

**January 12, 1999**

**1/11/99**

Thanks for the clarification on the vertical / butterfly. Who would have thought that you could sell the vertical above (at higher strikes than what I have on)? Wow, I like it! Unfortunately I don't have any news regarding trading today. I was still tying up some loose ends and missed the opportunity to jump into MSFT. Incidentally, I'm trying to get into the February options. They still have some time to go, aren't too sensitive to volatility, and have quite a bit of premium. I also think this rally will play itself out before February expiration. April seems a little far out to me. Am I looking at this the right way? Sorry I still don't have a vertical for you.

RiskDoctor:

**January 12, 1999**

**Re: 1/11/99**

Your assessment is correct.

### **PULLING THE TRIGGER**

Trader:

**January 12, 1999**

**MSFT FEB 145/150 Vertical**

Actual Position Before Open: None

Basic Position: Flat

I have made some trades. Here is what I did:

I sold 20 FEB 150 calls for 6.25 with MSFT trading at 143.38.

An hour later I bought 20 FEB 145 calls for 7.88 with MSFT trading at 142.13.

MSFT closed on the day's low of 142.06. My call vertical (I paid 1.62 for the FEB 145/150,) is worth about 2.00 at that stock price. The FEB 150/155 call vertical closed around 1.56 (5.75–6.00 and 4.25–4.38 respectively). So tomorrow I'll have to make a decision about whether to adjust or not. Intel's earnings were good, but maybe not good enough to rally the tech sector. My market opinion may be changing. My only question to you is how do you feel about me having legged into the spread? MSFT followed the S&P futures, trading with them almost tick for tick, all day. That is how I chose my entry points. I was very systematic. It worked, but I know there was also some luck on my side. Had I traded it as a spread I would have probably paid 2.13 or 2.25. I chose the 145/150 because at the time the 150/155 would have cost about 1.75 or 1.88. Let me know what you think.

Actual Position at Close: +20\*FEB 145 Calls / -20\*FEB 150 Calls

Basic Position: 20 FEB 145 / 150 Bull Spread. Stock at 142.06

RiskDoctor:

**January 12, 1999**

**Re: 1/12/99**

Basic Position: 20 FEB 145 / 150 Bull Spread

Stock at 142.06

Legging Verticals

1. I would prefer that when you leg a spread you start with the buy side. Obviously that will prevent you from getting stuck with a *naked* short option growing exponentially if the market explodes.
2. You are probably saying to yourself, "but I was *bearish* at the time - if I had bought the 150 calls first, then I would have had the opposite of what I wanted". That is true, but you could have bought the 150 puts first and then sold the

145 puts later, and you would have ended up with the same spread synthetically.

3. Your educated mind is probably thinking that the total play does not seem to be the same. It is not the same with regard to the deltas on the individual legs. It will, however, end up the same once the spread is completed. For example, you could be faced with a choice of selling a 50 delta option on the 145 calls or buying a minus 70 delta with the 150 put.
4. I suggested that you could start with a 20 lot-spread which on a 30 delta vertical would be a *limited risk exposure* of 600 deltas total. That means that when you leg into a spread, the trading leg can be no more than 600 deltas. Using the example deltas in point number three above, if you were to leg with a naked 50 delta option you would have to limit the trade to 12 contracts. With a 70 delta option, 9 contracts would put you slightly over, at 630 deltas (which is reasonably close).

Trader:

**January 13, 1999**

**1/13/99**

Actual Position before Open: +20\*FEB 145 Calls / -20\*FEB 150 Calls

Basic Position: 20 FEB 145 / 150 Bull Spread  
Stock at 138

The S&Ps were down 27.00 (over 2%) on Globex trading before New York opened. MSFT was trading around 138.00, prior to New York's open. Something was happening in Brazil. It looked as though it was time to change my market opinion, but I sat tight and observed. The market was very jittery today but the tech sector rebounded almost all the way to the previous day's close. I made no adjustments to my bull spread, and am still bullish after today's rebound. I have some questions developing and will soon email them.

RiskDoctor:

**January 13, 1999**

**Re: 1/13/99**

**Basic Position: 20 FEB 145 / 150 Bull Spread**

I admire your patience. Some times it is wise to just sit back and observe all the panic. It is nice to have a vertical on when the market is bowling everybody over, especially when your size is manageable. The beautiful thing about it is that when the market totally goes against you:

1. you can afford the maximum loss and
2. all the losses can come back another day.

Trader:

**1/17/99**

**Verticals**

**Basic Position: 20 FEB 145 / 150 Bull Spread**

**Stock at 138**

I would like to run by you what I've been doing and see if I'm on the right track. Also, I want to see if I'm looking for the right verticals (pricing), what kind of profits to shoot for in percentage terms, how many trades per day or week I should be thinking about, and what other things / areas I'll be getting into later.

RiskDoctor:

**1/18/99**

**Re: Verticals**

One method of measuring *consistency* is to trade equal sizes on all trades. This is for the simple reason that your profits, say of \$30,000 in a month for example, can consist of three hundred trades yielding an average of \$100 profit per trade or one 100 lot trade profiting \$4.00 (\$40,000) offset by \$10,000 worth of many losing trades. The importance of consistency is so that you can learn about a very important factor in the market: YOU! Get to know your trading-self as an Internet based trader. YOU will be

your greatest asset. Performance data can be cluttered with sporadic sizes. For now, why don't you maintain a trade size of 600 deltas per trade, for example, until you are able to get an idea of what works for you. Keep up the good work.

Trader:

**January 19, 1999**

**Condor**

Basic Position: 20 FEB 145 / 150 Bull Spread

Stock at 151

Good Morning!

MSFT opened up 1.00 and traded around 151.00. The high so far has been 153.50. MSFT was trading around 153.00 when I sold the 155/160 call spread, 20 times, for 2.00. I put the offer in (MSFT was around 152.00) when the crowd was 1.88–2.38, so it was a mediocre fill. At the time, I might have been able to get around 3 or 3.13 for my 145/150. So, I now own the 145/150/155/160 condor 20 times for a .25 credit. Now the stock is trading around 151.50 - 152 with the 145/150 call spread trading around 2.38–3.13 while the 155/160 is around 1.75–2.25. My market opinion is neutral to a little bearish, at this moment. We didn't rally as strong as I expected, and now we're slowly selling off. MSFT has earnings today after the bell.

Actual Position at Close:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls / +20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

RiskDoctor:

**January 19, 1999**

**Re: Condor**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Well done! I love buying wingspreads for less than free. As far as your market opinion is concerned, if you feel strongly about a sideways to down market, there is a slightly aggressive strategy, that you may wish to consider at some time in the future: Ratioed Verticals. A lopsided wingspread if you will. It simply involves

trading more of one vertical versus the other. It has the effect of a ratio spread without the open-ended risk. For example, you could sell 20 additional 155/160 call spreads against the existing condor (leaving you with 20\*145/150 bull spreads against 40\*155/160 bear spreads). It would be aggressive, but it is not uncommon for a trader to have one lower vertical against two or upper verticals or vice versa. The best experience to be had with no risk would be to paper trade it for actual pricing and monitor it with pricing analysis over time.

Trader:

**January 19, 1999**

**MSFT Earnings**

Basic Position: Long 20\*145/150/155/160 Condor

That ratioed vertical strategy sounds interesting, but I am glad that I did not try it. MSFT rallied 6.00 points in anticipation of earnings today. They beat the street's numbers by 0.14 (.59 vs. .73), which is considered to be BIG. After the announcement the stock was trading around 160.00 (up another 5.00 from the close). At 160.00 I have my 145/150 worth about 3.56. The 155/160 should be about 2.88. That puts the condor at .69. There is now a lot of bullish talk, especially in the tech sector. I will make a point of looking into studying ratioed verticals further for the future.

That's all for now.

RiskDoctor:

**January 19, 1999**

**Re: MSFT Earnings**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Oops! Well its nice to know that when you are wrong that you don't lose too much or anything at all. I hope that you are cognizant of the fact, that by selling the 155/160 spread (bear spread), you were in effect getting out of your bullish play (145/150 bull spread) and simultaneously initiating a new trade that desired market stability (the 145/150/155/160 condor). OK,

the condor is taking it on the chin a little bit but there is a lot of time until expiration and there is bound to be some correction by then. I would hang on to it and regard the old bullish trade as water over the dam with a completely new trade in progress. Owing to the nature of the spread's risk, I would put this spread out of your mind right now. Look for a new opportunity to play the direction again while ignoring the condor. It can take care of itself for a while. You will find that it is easier to generate trading decisions when you have something on. A condor is about the best spread to have on for that.

Trader:

**January 21, 1999**

**1/21/1999**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Today MSFT traded as high as 166.00–167.00. In the final hour, after looking strong all day, the tech sector sold off big to end almost unchanged (the NASDAQ was up over 50 points, i.e. 2%, earlier in the day). MSFT closed at 162.63 below its opening price of 163.00–164.00. My condor was trading at about .94 because the short call vertical (155/160) was trading at 3.06 (the market was 2.63–3.50) while my long 145/150 call vertical was trading at 4.00 (the market was 3.50–4.50). I made no adjustments during the day. Tomorrow (Thursday) I am looking for continued selling, maybe after an up opening. I think that I may sell the 155/160 synthetically, 20 more times (to go into the ratioed condor for a while), by legging into the 155/160 put vertical (buying the 160 puts then selling the 155 puts). If we start going up after I have bought the first leg (160 puts) I can buy stock and turn the puts into calls and hopefully sell them out for even, or a small profit. What do you think? I am still basically bullish, but today's rally was very narrow and I think tomorrow might be my opportunity to undo my short vertical.

RiskDoctor:  
**January 21, 1999**  
**1/21/1999**

Your thinking is correct. There is nothing wrong with the proposed series of trades.

Trader:  
**January 21, 1999**  
**New Idea**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

What do you think of this idea?

I like SunMicro (SUNW) a lot.

Today they will announce earnings. I'm expecting them to be good. The historical implied volatility in the options is around 45. Today they are trading with implied volatility of 70% - 75%. I would like to do a ratio-write. I would like to buy 1000 shares of stock at around 100.00 and sell 15 FEB 115 calls for about 4.00 each, leaving me 1 by 1.5. The stock rallied the other day to 115.13. Now it is trading around 100.00. Last week during the Brazil scare it went as low as 88.00. This would be a volatility play for maybe a week or so. I realize it has *unlimited risk* in both directions, but it seems reasonably safe. If you don't like it, do you have another idea? What about a vertical spread?

RiskDoctor:  
**January 21, 1999**  
**Re: New Idea**

You are correct about the unlimited risk aspects. You are wrong in mentioning that it is only a "volatility play" by itself. I believe that you realize that it is bullish because you are "expecting good earnings". Specifically the strategy is no different to a ratioed straddle, i.e. short 5\*115 calls and short 10\*115 puts. Obviously it is not market neutral because there would be half the amount of short out-of-the-money (OTM) calls against the deep in-the-money (ITM) puts. A much safer set of strategies would involve either ratioed vertical spreads or a vertical at-the-money (ATM)

against one further away. Both involve four strikes. Perhaps sell an out-of-the-money vertical on each side but make the call spread further away from the money. It would probably be safer to do a bigger size of these strategies than do something with unlimited risk that can ruin you. Simply stated, and for the record; if you are bullish on the market and, at the same time, bearish on implied volatility, sell an OTM put vertical (same as buying the ITM call vertical). I believe that your proposed strategy is too risky for you at this stage of your development and capital structure.

Trader:

**January 21, 1999**

**JAN 21, '99**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Here's the recap: the market was wild today. It looked lousy almost all day, then rallied before selling off in the final 20 minutes. I was trying to get into a long call vertical in SUNW most of the day. I missed two great opportunities when the stock was at or near its low of the day (~97.00). I was trying to get into the 100/105 for ~1.88 or 2.00. I did not get filled, and at the end SUNW closed off its low at 98.25. Earnings came in 0.02 above the street's estimate, and I'm pretty glad I did not try to pay up for my spread! MSFT closed at 158.06. Tomorrow it will probably sell off some more, and I may have to adjust.

Trader:

**January 22, 1999**

**JAN 22, Opening**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

It looks as if MSFT is going to open at around 155.00, down 2.00–3.00 points. Right in my sweet spot. If you have any strong ideas let me know.

RiskDoctor:

**January 22, 1999**

**Re: JAN 22 Opening**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

I would sit tight with the condor - it needs time. Find a new bull or bear leg in SUNW or MSFT and act on it.

Trader:

**January 22, 1999**

**JAN. 22, 1999**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

**GREAT NEWS!!!**

Last night I finally got my pricing software to provide me with decent theoretical values - I'm more on track. Now here's the good news. Shortly after the open I bought 20 MSFT FEB 155 puts for 5.13. I was bearish when the stock was trading around 158.00. Soon afterwards I picked up some buy signals (from my pocket oscillator) and bought 2000 shares at 157.88, turning the puts into calls. I sold and bought stock all day, between a range of 157.75 and 159.75, for a total of \$5,900. In the final hour of trading I sold my 20 puts for 5.25. Total gross profits for the day, ~\$6,100. My position over the weekend is the same trusty old condor. I'm earning decay, and my deltas are flat. MSFT will close around 156.00 (we have a few minutes to go) and the puts are now trading around 6.00-6.25. Also volatility came up several points. That's all for now. YOU are a GENIUS! I had a great time today. Have a great weekend.

RiskDoctor:

**January 22, 1999**

**Re: JAN 22, 1999**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Good work! Have a great weekend and come down to earth with a soft landing on Monday. Start out cautious like in your first week. Never lose that healthy fear. If

you can maintain that cautionary fear throughout your career you will become extraordinarily profitable.

Trader:

**January 24, 1999**

**Some Thoughts and Ideas**

Actual Position Before Open:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls /  
+20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

I'm having a great weekend, but I'm also eager to get back to trading. I love it when that happens! Here are some thoughts about the days ahead:

1. I know my condor needs time, and there still are some 26 days before expiration. Are there any basic guidelines to unwinding it? When do I start thinking about this? Does it make any sense to roll it (or part of it) into the next month?
2. In the next few trading days I see a possibility of MSFT trading below 150.00. Is there a "best" (or most appropriate) defensive strategy to protecting the currently long, in-the-money, 145/150 call vertical?
3. On Monday, I can imagine that, we will be trading in my "sweet spot", between 150.00 and 155.00. Is this not a good time to make adjustments to the Big Bird?

That's all for now.

RiskDoctor:

**January 24, 1999**

**Re: Some Thoughts and Ideas**

Actual Position Before Open:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls /  
+20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

To see a similar predicament, you might want to read "The Ugly Butterfly" from chapter 5. In this situation, you must ask yourself a series of questions:

What is the condor worth?

Is that price cheap or expensive (not to theoretical values but to whether you would buy it or sell it at that price)? Say, for example, it is worth .625 (twenty times so \$1,250 is the amount of your money that is still on the table). That seems like a cheap shot, and so you would probably have a tendency to want to buy it at .63. If you think it is cheap, you will naturally stay long the spread for a little while, waiting to see what develops. It is not worth hedging because there is not much value left to protect.

On the other hand, say for example that the condor is valued at 1.75 (which adds up to \$3,500 that would be left on the table). This price is rather high with 26 days to go. In this case you might be a little bit worried about how much you have left on the table. At this point you have to ask yourself how you can I protect your \$3,500 with very little money? You could buy some strangles or straddles if the price was right. This adjustment would protect it and change the position into a Batman spread of sorts. You would then have to ask yourself whether you would initiate the Batman spread at all the available prices (forget about your original costs -- those are old P&L trades i.e. history). You might find that, in this case, it is not worth protecting and therefore it is desirable to liquidate the condor. I would then, according to my market opinions, use the remaining components of the position to unwind as the market unfolds.

Since you see MSFT going below 150.00 take your profits now on the long 145/150 call spread, and then when you think that MSFT is bottoming, cover the 155/160 call spread. Keep in mind that taking profits on the 145/150 call spread leaves you short the 155/160 call spread. The question is, if you had no position, would you short the 155/160 call spread at the current market values? If you would, then go ahead and sell out the 145/150 and stay short the 155/160. If you would not, then you

have a much shorter term leg and must look to cover the 155/160 at some point soon.

I hope this helps.

Trader:

**January 25, 1999**

**Thanks**

Thanks for the helpful explanation! MSFT just announced a two for one stock split. Prior to this morning's open it was trading about 4.00 higher than Friday's close (156.00). I guess we may be going higher now but what exactly happens to my positions, strikes and costs?

RiskDoctor:

**January 25, 1999**

**Re: Thanks**

Actual Position Before Open:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls / +20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Your position will change in a two for one stock split on the ex-date. At that time your statement will reflect a position of twice as many options, still each representing 100s. Your current position would, for example, be:

Actual Position in the Event of a 2 for 1 Stock Split:

+40\*FEB 72.50 Calls / -40\*FEB 75 Calls / -40\*FEB 77.50 Calls / +40\*80 Calls

Basic Position in the Event of a 2 for 1 Stock Split:

Long 40 MSFT FEB 72.50 / 75 / 77.50 / 80 Condor

The other difference will be that everything will be carried at half the price it used to be. The stock will be valued at half the previous market close plus or minus the new day's net change. The strikes will all be halved along with the closing prices and costs of the transactions. What will change for the worse are the commissions. It may cost twice the amount to get out of the trades, depending on your cost structure.

Trader:

**January 26, 1999**

**JAN 25, '1999**

Actual Position Before Open:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls /  
+20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Apparently I played with my pocket oscillator too much this weekend. It wasn't working very well today and I ended up trading for a loss of \$950 (plus ~\$350 in commissions). I was trying to do what I did on Friday but MSFT wasn't following the S&Ps due to the stock split news. I should have known this, and should have played it differently. Anyway, it was a good learning experience. For Tuesday, I think, MSFT may go higher. I keep thinking that I should adjust one of my verticals. Obviously, if I am bullish, that would mean covering the short 155/160 call vertical. If I am still bullish at the open, and we haven't gapped up, I should consider covering (buying in my shorts) the 155 calls (either real or synthetically) on a leg for a scalp - hopefully at a higher price. Is this what you were telling me to do in your last response dated the 24th? Perhaps even buy a greater amount (say 40 of the 155 calls) and sell the same amount of 160 calls against them after a move up. This would leave me with two separate bull spreads (the 145/150 spread 20 times, and the 155/160 spread 20 times). Then I can sell the 160/165 vertical, or perhaps the 165/170, against the higher vertical and have a new butterfly or condor. I would of course still have the deep in-the-money vertical, (the 145/150, now worth 4.13) which is the same as short the put vertical at about .88. Am I being realistic, or reaching for the stars? I do see the possibility of MSFT testing last week's high of 166.00. Plenty of money keeps flowing into this market.

Proposed Position for Tomorrow (never executed):

+20\*FEB 145 Calls / -20\*FEB 150 Calls / +20\*FEB 155 Calls /  
-20\*160 Calls

Basic Position: Long 2 sets of 20 Bull Spreads 145/150 and the  
155/160

RiskDoctor:

**January 26, 1999**

**Re: JAN. 25, '1999**

Affirmative to all your thoughts except one: buying 40 of the 155 calls (each having a delta of about 70) would be buying 2800 deltas. Don't you think that size of a trade is a little too big for someone with your level of experience? Perhaps it isn't, but we talked about 1000 last week. You need a steady performance before you can ramp up your size. Granted a \$1,300 loss versus a \$6,100 gain the day before is nice work but is it a pattern that you can hold on to? It does not take many \$1,300 losses to deplete the \$6,100 in profits. Steady as she goes skipper. Let's not dock this ship on the reef. Now as far as delta size goes, what is going to be your limit intraday and interday? Keep to it until you establish a recognizable track record (not just a couple of lucky sessions). The jury is still out about whether your recent trading was luck or skill. If I had to vote now, I would say skill but I have been wrong before. Repeat: do not get overly confident. Remember that 2000 deltas can go against you for 5.00 points very quickly in a stock like MSFT. That is \$10,000. Can you imagine what a hit like that can do to one's confidence? How long will it take for you to shake that off? Not all sluggers bat 350 year after year. Grind out the money in little chips and someday you may have a big pile. May the force be with you.

Trader:

**January 26, 1999**

**Follow Up**

Actual Position Before Open:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls /

+20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

**ROGER, ROGER.**

**I HAVE A GOOD COPY ON ALL OF THAT.**

You are right, I wasn't even thinking of deltas. I don't intend to play with more than 2000 at a time. As for overnight, so far I've

enjoyed being relatively flat. I didn't mean to sound over confident.

RiskDoctor:

**January 26, 1999**

**Re: Follow Up**

Actual Position Before Open:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls / +20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

What will your deltas be until further notice? I will help you decide when to start increasing them and how to decrease them when in rusty slumps. Please reply, and get into the habit of including delta information in your updates. It will sharpen your perception of what is happening to your deltas as you adjust.

One thing to consider is your eventual "half" size delta so that you can add to your position at better prices if the first trade goes against you a bit. In other words, you fade the market as it keeps coming. You let them have some and then give them some more. Some would argue that this method is dangerous because you would be adding to a loser. The difference is that you are pre-determining how many 'bullets' you have and conserving them while the market is volatile. For now you shouldn't be adding to a position unless it is a winner. Eventually you will be able to add, if the position is against you. In the distant future you will perhaps vary your size according to opportunity. A grade 'A' trade, for example, might be 10000 deltas (in a certain stock), a grade 'B' trade might be 5000 (in the same stock), a grade "C" trade would be 3000, "D" 2000 and "E" 1000. So MSFT down at 158.00 might be a grade C for getting long, but down at 153.00 you could add 2000 upping it to a B trade. If it comes down to 148.00 you may want to be all out long with 10000 deltas. You are not ready for anything like this until you know your trading-self better and have made enough to be able to afford big losses when they come. It will be something for us to discuss when a solid track record is cemented into place.

Trader:

**January 26, 1999**

**Deltas**

Actual Position Before Open:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls /  
+20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

I seem to be OK with about 1500 deltas. In other words, on Friday I bought 20 of the 155 puts each with a delta of about 30 to 35 each. I then bought 2000 shares, which made me long about 1300 to 1400 deltas as we were moving up. I liquidated both before the close, first the stock then the puts. So far today I haven't done anything. I missed the move after the open, (we had already gapped up 4.00+ points). Now I'm looking for an end of the day play.

Actual Position at Close:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls /  
+20\*160 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

RiskDoctor:

**January 26, 1999**

**Re: Deltas**

OK then, for the record, your maximum intraday delta will be 3000 and 1500 for interday (overnight).

Trader:

**January 26, 1999**

**JAN 26, '99**

Well the stock was up ALL day. I think it closed up about 9.69 at 171.56. Essentially all that I have to show for the day is buying 20 of the FEB 175 puts for 8.63, when the stock was trading 171.00. Tomorrow if we open here, where we closed, they will be worth 8.25. I bought stock against 5 of them (500 shares at 171.50) and am going home short 600 deltas (although I currently have a 171.50 bid in for 600 more in the after hours

trading session). It was not a good day. I am learning some valuable lessons though. Hopefully they won't cost too much.

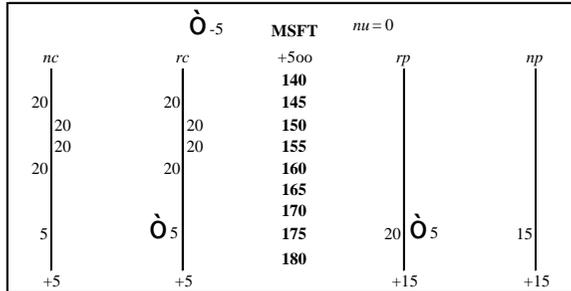
Actual Position at Close:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls / +20\*160 Calls

Plus: +20\*175 Puts / +500 MSFT

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Plus: Ratioed 175 Straddle (+5c by +15p)



RiskDoctor:

**January 27, 1999**

**Re: JAN 26, '99**

Suppose you get filled on your 600 shares, what then? I understand that sometimes you want to have a flat delta but how do you feel about having on the (+11 calls versus +9 puts) ratioed straddle?

Trader:

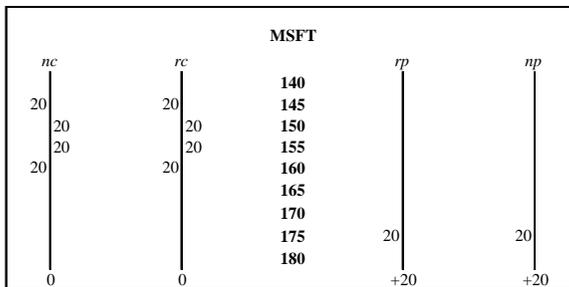
**January 27, 1999**

**More Thoughts**

I got filled on my 600 shares and felt comfortable with the ratioed straddle for overnight. I was just ending my bearish stance. I have been thinking, after trying for the last two days to replicate Fridays success, that I have come to realize that it probably had more to do with luck than anything else (don't tell anyone). I'm throwing away the "pocket oscillator", at least for now. Each day I've gone home thinking of what I want to do for the next day. Then in the morning something minor, like a gap opening, has distracted me from sticking with my game plan. So

I try some concocted way of "legging" into a vertical that will also leave me a way out should things go against me. It sounds fine, but is actually rather difficult to execute. By the end of the day I'm wondering why I didn't simply stick with my original plan. Right now the market looks very bullish. The tech sector is very hot and MSFT is leading the way. After today's close, the S&Ps continued rallying above 1260 by some 3.00 to 4.00 points. I think that they could go towards their high of about 1280 in the next few days. Tomorrow I would like to keep it simple (like you've been trying to get me to do!) and try to get into the 175/180 bull vertical. It may cost me extra because of today's debacle, but when we're trading above 175.00 it will probably look like a winner. If it goes against me, and starts looking ugly, I will spread it off into a butterfly by selling the vertical above. End of story. Since I already own 20 of the 175 puts (sold out my 1100 shares—too early), I'll probably do the spread only 20 times. Next time I'll do it 50 times.

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor  
Plus: +20\*175 Puts



RiskDoctor:

**January 27, 1999**

**Re: More Thoughts**

What is this pocket oscillator? Do you mean that you trade from the seat of your pants or are you using something real that has potential only if fine-tuned? You should perhaps have positions on before the gap (perhaps overnight). If you are in fact bullish, then there is no need to go home with short deltas. It would be better to pay-up on 1200 and go home long 600. Be consistent

by having positions that confirm your beliefs, unless of course your market opinion is always wrong. In that case if you are bullish go home short as you did. Some people do better doing the opposite of what they think (on every trade). This is all part of getting to know your trading-self.

Trader:

**January 27, 1999**

**JAN 27, 1999**

I have good news and bad news. First the good news: I did not do what I said I would do. Now the bad news: I did what I said I wouldn't do. When I came in this morning the market was up but not looking very strong. MSFT was up most of the day but it looked/felt like it was near a top. The S&Ps never looked good. So I did not put my bull spread on. Instead I got sucked in to the "day trading" game again (that's my "pocket oscillator"). In the end we were way down, closing around 168.63. My 20\*175 puts kicked in around 170.00 on the stock and erased most of my losses. For the day I traded for a \$500 loss, commissions were probably about another \$500. My position now consists of the condor, nothing else. I'm short about 70 deltas. I am frustrated. It seems difficult, when beginning, to figure out what to do, what not to do, and when to do it, especially if the market is difficult (I think it is a jittery market right now). So many things seem to conflict. It's hard to know if you are doing the right thing but the timing is wrong, or whether you are actually doing the wrong thing. I know you know all this. I'm just complaining.

Basic Position at Close: Long 20 MSFT FEB 145/150/155/160  
Condor

RiskDoctor:

**January 27, 1999**

**Re: JAN. 27, 1999**

It is always bad news when you do not carry out your plan, even if you save money, because you are losing control of yourself. You may have saved money for today but what about what may be on the heels of that trade over the next few days? It is twice

as bad when you do the opposite of what you have planned because you can really get into trouble and lose your confidence. It might be a good time to do a post mortem on your experiences. You are up money and have on a decent spread:

What are you good at?  
What are you not so good at?  
What have you done right?  
What have you done wrong?  
What works?  
What doesn't?

Revise your set of trading rules and follow them to a tee. Be a machine.

Have no emotion, no frustration. It is hard to do that but it is a goal to attain for long term trading success.

Trader:  
**January 27, 1999**  
**That makes sense**

That makes sense. I've actually been thinking of the machine approach.  
I'm thinking I might not do anything tomorrow, regroup mentally, and make a move when it feels right.  
Thanks.

Trader:  
**January 28, 1999**  
**JAN 28, 1999**  
Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Are you ready for this story?  
I sat out the whole day watching what MSFT was going to do. It was up 4.00 by mid-day, where it hovered for some time. I decided that the S&Ps, and MSFT, were going to either rally further or sell off in the final hour. I bought 20 of the 175 puts when the stock was trading 173.00. My plan was to have the

170/175 bear spread on by the end of the day. I got a good fill on the puts and the stock started looking heavy, with only one hour to go. MSFT fluttered around 173.00 but I thought it was leaning toward the down side, and I was ready to buy 2000 shares in case we rallied. Finally, we were trading around 172.38 with fifteen minutes to go. It still wasn't clear what was going to happen, when all of a sudden I noticed that they were buying IBM. Moments later, sure enough, the S&Ps and MSFT started to rally along with IBM. MSFT was around 172.50, with the stock looking ready to rocket upward, I was ready to buy my stock. What happened? I SOLD 2000 shares at 172.75 by mistake with a keypunch error. I was certain that I had it set up to BUY but in fact it was set, inadvertently, to SELL. I have recognized, and was warned by others, that professional electronic traders as well as Internet traders can very easily do the opposite of what you intend to actually do. With my past stock executions I realized the need to be very careful and double-check my order before I send it. This is what I need to be extremely thorough about, and is where I made the mistake.

In the end, I bought my 3000 (the 2000 that I was short on the error and an additional 1000 to spread off the 20\*175 Puts) shares at 174.00 and am now neutral. So I essentially have the 175 straddle on 10 times, delta neutral. This fiasco cost me about \$5,000 today. My Internet trading system is fast and efficient, but requires a lot of dexterity with the mouse and is very difficult to change/cancel orders, etc. Well the good news is that I planned my entry points and predicted accurately what the stock was going to do. I am a machine, and tomorrow is another day!

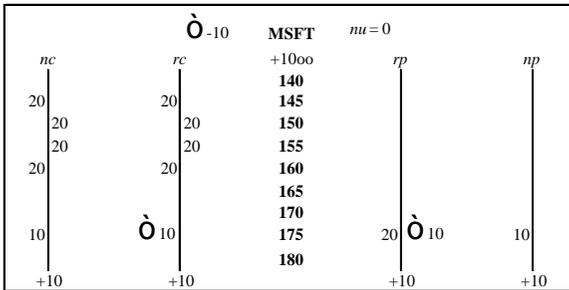
Actual Position at Close:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls / +20\*160 Calls

Plus: +20FEB 175 Puts / +1000 MSFT

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Plus: +10 FEB 175 Straddles



RiskDoctor:

**January 29, 1999**

**Re: JAN 28, 1999**

Regarding the keypunch error, perhaps it would be wise to speak out loud when executing, so that you can HEAR what you are clicking in addition to SEEING what you click.

You had a good plan with very sound reasoning. I like what you did save the execution error.

Trader:

**January 29, 1999**

**JAN 28, 1999 Too**

Good idea about speaking while I click. I will try that for a while and see if I don't drive myself nuts.

The total loss was \$4,300. I'm glad to hear you approve of my reasoning. It would have been good for about \$3,000-\$4,000. Well, I'm ready to try again today.

Trader:

**January 30, 1999**

**JAN 29, 1999**

I'll try to keep this one short.

My 20 FEB 175 puts were marked yesterday at 6.75. On today's open I sold the 1000 shares at 174.50. During the day I traded

the stock back and forth for a total net profit of \$4,625 (including commissions). Just before the close I was long 2000 shares of stock, long 20\*175 puts, and then I sold the 170 calls, 20 times, for 8.63 while the stock was trading around 175. The vertical has a delta of about 12, so with my condor being short about 70 deltas, I should be short about 310 deltas ((120 x 2) + 70). Vega and theta should both be close to neutral. That's all. The day went well and I'm feeling as though I'm getting a little better at this.

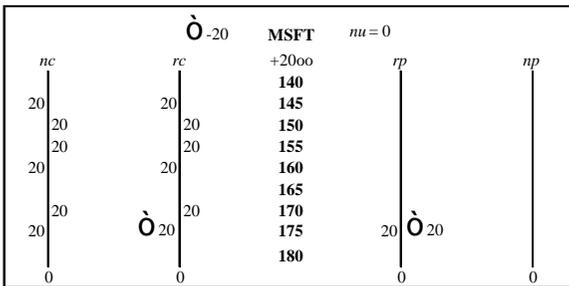
Actual Position at Close:

+20\*FEB 145 Calls / -20\*FEB 150 Calls / -20\*FEB 155 Calls / +20\*160 Calls

Plus: +20\*FEB 175 Puts / +2000 MSFT / -20 FEB 170 Calls

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Plus: 20 FEB 170/175 Bear Spreads



RiskDoctor:

January 30, 1999

Re: JAN. 29, 1999

That was a beautiful display of resiliency. You were not phased by the previous day's debacle - a great sign. The only comment I have is minor as everything else demonstrates correct thinking: 12 x 20 (12 deltas x 20 spreads) = the 240. More accurately: -12 x 20 = -240 plus -70 = -310. Have a good weekend.

Trader:  
**January 30, 1999**  
**Minus signs**

I guess I was just thinking positively!

Trader:  
**FEB 1, 1999**  
**Scalp**

I sold the 2000 shares of stock at 174.88 at the beginning of the late session sell off during the final hour (I missed the early morning sell off). I bought them back in at the close for a net profit of about \$3,500. So for tomorrow I'm going in **SHORT** just over 300 deltas with my 170/175 call bear spread 20 times.

That's all for today.

RiskDoctor:  
**February 2, 1999**  
**Re: Scalp**

Sounds good.

Trader:  
**February 3, 1999**  
**FEB 2, 1999**

Today I missed the 5-point downward move (I wanted to sell my 20s on the way down) and instead got caught negative scalping stock for a \$2,000 loss. But my bear spread is now done well, and if we stay around here tomorrow, and volatility comes in a bit, it should be trading for around 1.50 or maybe even less. Let me know when I should consider closing any of my FEB positions.

RiskDoctor:

**February 3, 1999**

**Re: FEB 2, 1999**

Position Coming In:

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Plus: 20 FEB 170/175 Bear Spreads

We have a problem. The problem has to do with perception and violation of one's rules. Let's start with rules:

One of YOUR self-imposed rules are that you are going to trade with limited risk, always. If this rule has changed, I need to know. One of my tasks is to help you enforce your rules by letting you know that you have violated one. Here is where perception and the options metamorphosis come in: although you had actual stock in your position you synthetically had no stock position. The stock that you had was a vital component of your bear spread. Without the stock you have a semi-future or off strike-combo (naked application). There was no way to get short with your existing position (by liquidating something) in a limited risk fashion. You chose to liquidate your stock but were negligent according to your rules that you are trading under. Again, I am here to make sure that you adhere to your rules. Breaking them from time to time is going to put you on the edge. Some people would argue that it is not as exciting to be playing with spreads as it is with stock. Stock gives immediate results. You want to make a career out of what you are trying to do, not make a quick buck to satisfy your ego. Am I right? You are in a development phase, one in which you are learning about yourself. Do you know your trading-self well enough to move on to the next step? I believe that you are still in uncharted territory. Why? You still don't know enough about your trading-self:

1. Error capacity—your reverse stock order.
2. Lifting the wrong leg, like in yesterday's trade that left you naked short calls.

3. Knowing where to get in or out. (You just asked me in this email). You, the trader, have to know that.
4. Making yourself get short (long) when you want to:  
Half of your emails tell me that you wanted to do something but didn't (not 'couldn't'). MSFT was down about 7.00 for a while and it was still down around 3.50 for a longer while—I would say that you had plenty of chances to take a nice piece of the remaining 3.50 at some point or another. Remember that you, personally, are playing for 5.00 to 10.00 point moves in the stock.

Since you are playing for 5.00 and 10.00 point moves (based on your market analysis and opinion), when the market yields a profit, take it (just like when the dog barks, you have to feed him). At a minimum, adjust to take a lot off the table. Missing a trading point by a couple of points should not be a deterrent from you entering or exiting the market. You would have liked to get short yesterday at 175.00 because you thought—what? You probably thought that it was going into the mid-160s. So you missed an opportunity at 175.00 but there were a few chances around 171.00 weren't there? MSFT opened in the 172.00 area—it traded down to 170.00 and back up to 171.50 and then established a down-trend to the 167.00 area. But when is the right time to pull the trigger? You will know the answer to that question after a healthy amount of experience and analysis of where you will buy and sell in the market.

Bottom line: Before you take your trading to the next level you need more experience. Your trading has to become more instinctive. That next level does not only pertain to the size of your delta but the nature of the beasts that you manage.

Please give me an official answer to the next question: Are you or are you not going to trade with limited risk applications, even between legs? I need to know this in order to let you know if you are making mistakes. In order to abide by the limited risk trading rule, the only trade for you was to buy some 170 puts and later either sell them out (for a profit) or sell the 175 puts against them to synthetically liquidate your spread. The latter would

have left you with the 170 conversion 20 times ( $-20 \times 170$  Calls /  $+20 \times 170$  Puts /  $+2000$  Stock). Eventually you may wish to become a day trader of stock. You need the staying power to get there. Staying power includes conservation of capital and accumulation of trading experiences to establish YOUR ultimate rules. The plan is to have you trade in a fashion that will keep you safe until you become a fully established trader. You will know that when, all of a sudden, you have no more questions and only answers that you will probably be unwilling to share.

Trader:

**February 3, 1999**

**Limited Risk**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Plus: 20 FEB 170/175 Bear Spreads

I have read your last email and I get the feeling you want me to trade with only limited risk strategies—so yes, I intend to trade with only limited risk strategies. Yesterday I didn't. I understand about buying the 170 puts to leg out of my exposure. I could also have bought the 175 calls and then sold stock against them when we turned down, Couldn't I? Then I could have either sold the 170 puts to spread off my synthetic long 175 puts, or I could have sold the 175 calls and bought back the stock. Is that correct? I am unclear about whether I can scalp stock or not. Do you want me to not scalp it at all, or to just do it when it is part of a long (premium) option strategy? You also say that I may become a stock day trader. I have been plugging along thinking that I will try every day to make a little money trading stock. When I have an actual market opinion I will implement an option strategy to capitalize on my opinion. I feel more comfortable with the idea of having a spread on 100 times (or 1000 times!), being right with opinion, and profiting handsomely. This to me is much more prudent than scalping stock day after day. I am still not comfortable increasing my spread size since I'm not yet confident in my market opinions. On the other hand, scalping seems to offer a way to make money on small intraday moves that occur almost everyday. I have been approaching this thinking that I need to learn both, long-

term spread strategies and daily stock scalping techniques. That is where I thought that I was going. Is this right? What is the next level? Where am I going? I hope I am not sounding defensive. I only wish to convey to you my thoughts and understanding of your lessons.

RiskDoctor:

February 3, 1999

Re: Limited Risk

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Plus: 20 FEB 170/175 Bear Spreads

You are mistaken about the idea of buying the 175 calls first and then selling stock because you start off with a LONG DELTA and it is your aim to get short in the first place. But, of course, if you did do the opposite, subsequently, you would have been liquidating it. However, once long the 175 calls and short stock, you could not sell the 175 calls first and buy back the stock. Selling the calls first would leave you with unprotected NAKED short stock in the interim.

You can scalp stock against long options, i.e. buy stock against long puts to turn it all into synthetic long calls. You may then, if you wish, take the stock off and be in just puts.

All I meant about becoming a stock day trader is that there are immediate results (good or bad) in trading the underlying. With options spreads, you tend to have positions on for a longer time horizon than a scalp.

Where are you going? Your goal is to make money and accumulate the necessary experience to graduate your size and develop your strategies whether they are limited risk strategies, naked stock or options strategies.

Trader:

**February 4, 1999**

**FEB 4, 1999**

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

Plus: 20 FEB 170/175 Bear Spreads

I fully understand your drift. You have my permission to shoot me if I violate that rule again, and thank you in advance.

Early in the morning I thought that we had hit the bottom, when the stock was trading around 166.00. I covered my short 20\*170 calls for 3.88 thinking that we were going up. Well, as you may know we went down another 6.00–7.00 points. I tried to sell and buy the stock when it seemed appropriate, but in the end I only made about \$400 on my stock trades and totally liquidated my stock position. Finally, in the final half hour, when it was obvious they were taking the S&Ps to their support of about 1252, I tried to buy the 160 puts (I wanted to roll out of my 175 puts). By the time I had bought them, I had to pay 6.00 for 20 of them. I sold the 175 puts for 16.75. Each put trade was made when the stock was trading around 159.00. I'm not sure that I like my put roll. Of course, if we continue to sell off tomorrow I'll like it, but I now own a fair amount of premium at 160. I also own 20 of the 160 calls (from my condor), that is the 160 straddle 20 times, with about \$200 in time decay (negative theta) per day and some 200 vegas after a 6 percentage point increase in implied volatility. My deltas should be close to neutral. What do you think?

Closing Position:

Basic Position: Long 20 MSFT FEB 145/150/155/160 Condor

RiskDoctor:

**February 5, 1999**

**Re: FEB 4, 1999**

To me it doesn't sound like you did so bad. Maybe I am still in the dark but I think that you are still quite short.

Your position was synthetically long the put spread or short the

call spread 20 times. When you covered the 170 calls that left you long cheap little 175 calls on a shot (synthetically). You cannot lose much with that, even if you were wrong. When MSFT went down another 6.00–7.00 points you were not losing much on the long 170 calls. The stock trades made about \$400 and you ended up with no stock, which then turned the 175 calls into 175 puts. That beats losing 6.00 or 7.00 points, which the stock had dropped (you saved \$12,000 to \$14,000). Your long deep in-the-money 175 puts went further in-the-money, more so the longer you waited as the stock was dropping. It was a good idea to roll the 175 puts into the 160 puts. Long out-of-the-money 160 puts are a lot less risky than the long in-the-money 175 puts. By the way, you said that you will be happy with the 160 puts on a continued drop. For your information the 175 puts will do a lot better because they are almost like short stock when going down. The purpose of your rolling the 175s into the 160s was to take money off the table. You did that to the tune of \$21,000 (20 x 10.50 x which is 16.50–6.00). It might have been easier to enter the order as a vertical spread, i.e. to sell 20\*160/175 put spreads.

As far as owning 20 of the 160 calls goes, part of the condor, it is not wise to combine a cheap condor with a naked put play and add up all your deltas. Your condor loved what happened today and will love it even more when the gas comes out (when implied volatility decreases). I would just try to concentrate on the 160 puts alone.

I think that, other than getting the best prices of the day, you did great.

I would have done it a little differently. After buying the 170 calls, I would have left the 175 synthetic calls alone (don't mess with deeps versus stock unless you have to). What were the calls trading for at the time? About 1.75? I would have then played the market with options closer to the money versus stock.

On Friday try not to let your condor inventory cloud your mind and confuse you. You seem to be getting wrapped up in the

components. Think synthetically. If you happen to trade a vertical, which involves parts of your position, trade it or keep it as that vertical until that new trade is over. If you decide at the end of the day that it has you half way liquidated, then assume the balance of the position as your new position. You will need to decide whether you want to leave it, liquidate it (in its simplest form), add to it or spread it off a new way. Keep it simple. Your condor can take care of itself as it is. You take care of those 160 puts. If those are still versus stock, then train yourself to think of the package as simply long the 160 calls—nothing more. You are doing well.

Trader:

**February 5, 1999**

**Clarification**

I incorrectly stated that I was going home delta neutral. In fact, I'm SHORT roughly 1000 deltas from the 20\*160 puts. I wasn't sure if I was happy about being short 1000 deltas and long all that premium (right after the close the S&Ps rallied 5.00–7.00 points, and MSFT was trading around 159.50–159.75) but three hours later the S&Ps were DOWN 3.50 from where they closed. My hunch is that the selling may continue on Friday. I'll focus on the 160 puts and be sure to not disturb the bird. She may lay a golden egg.

RiskDoctor:

**February 5, 1999**

**Re: Clarification**

You are also a tad short with the condor that desires MSFT to be between 150.00 and 155.00.

Over the past few sessions you have had positions involving many strikes. You will most likely have to break the position down over and over in order to keep it straight. During slow times and especially after fills, which do not require a quick second leg, dissect to check to see if you are where you intended to be. Don't forget to check your units and ensure that both sides

be either positive or flat (zero) after each trade. It should be a good exercise. If you have trouble or get confused, decrease your leg sizes until you get comfortable again. Do it all by hand until you are proficient at it.

In addition to taking profits on the 160 puts, I would consider buying back the 155/160 spread (in the condor), if MSFT gets down close to 155.00 or if the spread gets cheap enough not to be short it. By then, the stock will have been down about 10% from its highs at that point.

Trader:

**February 5, 1999**

**Friday AM Update**

I am looking at my position as the long 145/150 call vertical against the short 155/160 call vertical, both 20 times. I also own 20 of the 160 puts with no stock. Today I'll work the 160 puts with 2000 shares of stock for instant gratification. I imagine, by the end of the day, I will have either liquidated the puts and stock, or spread off the puts into either a bull or bear spread.

In your last email you told me to perhaps buy back "the 155/160 spread" from the condor, should we trade near the 155.00 level. I'll do that should we trade in that range, otherwise I'll leave the condor alone and focus on my 20\*160 puts. Thanks for all the help.

RiskDoctor:

**February 5, 1999**

**Re: Friday AM update & Chart Update**

If you buy the 2000 stock then all you will be left with is long 20\*160 calls. You might want to cover at least half of the 155/60 call spreads here, if you haven't already.

Trader:

**February 6, 1999**

**FEB 5, 1999 (sorry for the delay)**

I don't know how dynamic your market data is over there, but after we hung up MSFT rallied another 3.00 points. Before I knew what was happening the stock was trading 160.75! When I first clicked on my transaction screen we were trading around 155.50. So I was short some 1000 deltas for over 5.00 miserable points! The bounce happened so fast that I couldn't find my footing in the market. I had lost touch with my indicators and the flow. Something was wrong, I couldn't tell what, and MSFT was soaring. I was caught off balance, confused, and in disbelief. It turns out that the S&Ps only rallied a few points, which normally wouldn't spike MSFT up 5.00 points. I was furious that I had again missed the big move of the day! Now instead of a reasonable profit I was looking at a nasty loss. I could tell that I was about to lose it completely. Adrenaline was pumping, not from market excitement, but sheer rage. Like someone caught in a burning building, I was now looking for an exit strategy. I just wanted out. However, I couldn't bear the thought of going home with a \$5,000 loss (that's what my software was telling me anyway), on a Friday, and my birthday. No way! I took a deep breath. I thought, "I'll be darned if MSFT doesn't sell off at least a little." I was short. I sat tight. With only about 20 minutes to go, the S&Ps started selling off towards the day's low of 1238.00 But MSFT was barely moving. Finally, MSFT gave way and started trading around 159.00, and then in the 158.00 range. Oh, she fluttered back and forth like a rabid bat! The S&Ps were now hovering at a new intraday low of 1236.00, INTC, IBM, the NASDAQ Comp., etc. were all down, but off their lows of the day. I couldn't tell if we were about to collapse (those S&Ps still haven't tested their 50 day moving average of 1228.00) or if it was just another fake sell off. I didn't want to just "throw the dice" and try to buy stock around 158.50 in case we were about to tank. So I watched for clues. There were only some five minutes to my nightmare left. I knew that she was almost ready to reveal her secret. Finally, I decided it was time to buy the stock - and got filled at 159.00. We rallied

further. So I tried to hit the \$5 bid for the 160 puts - and actually got filled. At the closing bell MSFT was trading 160.00. I sold my 2000 shares, prior to opening in New York, for 160.13. The puts were marked at 5.00 (closing market was 4.75–5.13). I lost 1.13 (\$2,250) on them and traded stock all day for a \$250 loss. All in all it was a lousy day but I feel as though I was given a second chance at life.

Lessons learned:

1. Don't get caught chatting on the phone during a 5.00 point move. (By the way, you were absolutely right about covering in the 155.00 area. It was time to buy in my short call spread!)
2. Recognize when you are about to lose it and get neutral. Take your losses before you make them worse. (I came within an inch of throwing it all in for a heavy, reckless loss.)
3. Be very grateful if you ever, are lucky enough to, come out of a near meltdown with your losses cut in half. (I am. Believe me!)

I can imagine that these numbers aren't that much to most other traders. I know they're not. But I really hate giving away any money. Not losing money (well, actually...) but giving it away! I'm satisfied that I was able to recover some of it. My position now consists of nothing but my condor. Short 155 deltas, short 21 vegas, and earning \$42/day over the weekend. That's all to my miserable tale. I'm actually happy because I know how close it came to a mild disaster. I'm going to eat sushi, drink saki and beer, and see my girlfriend.

Have a good weekend.

RiskDoctor:

**February 7, 1999**

**FEB 5, 1999 (sorry for the delay)**

One major lesson that you are not seeing is that your original position was right for 5 lousy points!!! That's nothing to sneeze at. Most short sellers would take their profits and run.

Important: This is one of those important things that you need to take note of. Remember what I told you about learning about your trading-self (page 24, 40% down the page, the paragraph beginning: "Until traders'... What have you learned about your trading-self here? I will suggest for you what I hope you will learn:

1. You are able to lose your "footing in the market".
2. You are able to lose "touch with your indicators and the flow". These are signs that perhaps your reasons for being long or short are no longer valid. Get flat until the market corresponds with your indicators otherwise you may get shell-shocked and freeze. I'll reiterate reasons for exiting a trade: a) enough profits b) enough of a loss c) you lose your reasons for being bullish, bearish or thinking that the market is moving sideways (i.e. trading in a small range). What do you do? Get flat...now! Shoot first, and ask questions later. When you are no longer confused, you can look for a new entry point. You said that the S&Ps rallied only a few points (.025%) while MSFT rallied 5.00 points (over 3%). There is nothing 'normal' in this business. With this type of trading you must keep your finger on the trigger at all times. My daughter would not normally run out into the street but I hold her hand just the same.
3. **Important!** You are able to become "furious".

Anger can work for very few successful traders when they learn how to channel that negative energy to work for them in the markets. If you become one of them it will take an

enormous amount of work on your part to get in touch with how to benefit from that. For most traders, however, anger is their worst enemy. Anger can cause stubbornness and rash decision making which can be devastating. Until you learn how to control (use) your anger, do not use anger as a trading tool or strategy! It will most likely destroy you. When angry, get flat!

3. You are able to “again miss the big moves and you are not going to miss all of the big moves. It is going to be somewhere in between. It is just another day. Don't dwell on it. Until you become a master at integrating your disappointment, depression and anger into your trading, as stated above, it can serve you harmfully.
4. If you understand what I have been talking about (above) it will help you to react instinctively faster in the future and avoid becoming enraged.

The market does not know that you are down \$5,000 but it does have a way of knowing that you are short. Of course you have to be cognizant of the fact that it could cruise to 177.00 in a heartbeat, in spite of all your indicators.

You did a good job on your eventual cover point. Violating your trading rule about trading stock by itself, however, was not good.

You did undo the rule violation quickly though.

Have you thought about what would you have done if the price had broken to 158.00, prior to the opening in New York?

You are doing fine. Don't look a gift horse in the mouth. There will be days on the horizon that will be boring with small moves. You will be praying for one and two strike moves in a single session. This time you got in the way on the down move, but had you not, you probably would have

flattened at 155.00 because the move was big and the profits large enough.

It was not a lousy day at all. There were some shining moments in a day that ended in a loss. The day before you had the same kind of a day and you made a good profit. You are a businessman operating in a business that trades physically and emotionally. It is important to know this aspect of your trading-self: trading is very dramatic for you, which is not a problem as long as you recognize consists of managing profits and losses. You actually manage these and accept it.

If you are chatting on the telephone while trading, learn to hang up on people when you have to go. Say, "I've got to go" and just hang up. Whoever it is will learn to call you back after the close or sooner. Do not be afraid to hang up on your mother or me. Don't be polite and ask whether you can call the person back or wait for a reply. Let each person know in advance that you may have to go without warning.

As far as being right about pricing or market opinions in general goes, it is up to the trader to sift through all the information available, i.e. what their mentor says/thinks, what the trader next to him says/thinks, what the phone-order person says/thinks, what the indicators say or what you think they are saying, and form an opinion from this.

Pay no attention to what you hear about the profits and losses of other traders in chat sessions, because it is mostly hearsay.

You say that you hate give away money. Days like the one that you have described can teach you a great deal and can make you more careful in the future.

By the way, your condor position is fine.

## CONCLUSION

A lot can happen over the life of an option and the life of an options trader. The trader featured in this chapter is very successful today and makes his living from trading. As he got more and more comfortable with trading, he began to trade more stock outright and he believes that dabbling in options helped with that a lot. Recently, however, options have been playing a wider role in his day-to-day dealings, because it has been hard to pick the direction of stocks. Stock trading provides one with immediate results, whereas options are more desirable for longer time horizons on bigger sizes. It is very easy to get discouraged by the markets, but he has a system of pulling in the reins when things get tough. As he finds his footing, he gradually increases his size and earns his way to profitability. He performs his own RiskDoctoring now. Every once in a while I hear from him.

After you have established your own sound rules, trading options will become standard procedure. I now provide this service (as demonstrated by the above email dialogue) in a chat session at [www.thinkorswim.com](http://www.thinkorswim.com) or feel free to email me at [RiskDoctor@thinkorswim.com](mailto:RiskDoctor@thinkorswim.com). Having the best Internet options interface is one thing, but having a helping hand is still another. May the trend be with you.

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**G L O S S A R Y**

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**ABANDON:** The act of not exercising or selling an option before its expiration.

**ACCRUED INTEREST:** The interest due on a bond since the last interest payment was made, up to, but not including the settlement date. Anyone wishing to buy the bond pays the market price of the bond plus any accrued interest. Conversely, anyone selling a bond will have the proceeds increased by the amount of accrued interest.

**ACQUISITION:** The ‘A’ in M&A (Mergers and Acquisitions) is when one company buys enough stock of another company to take control of that company. When a take-over attempt is "unfriendly", the buying company may offer a price for the other company’s stock that is well above current market value. The management of the company that is being bought might ask for a better stock price or try to join with a third company to counter the take-over attempt.

**ADJUSTED OPTION:** An option resulting after an event such as a stock split (2 for 1 stock split), stock dividend, merger, or spin-off. An adjusted option may represent some amount other than the one hundred shares that is standard in the U.S. For example, after a 2 for 1 stock split, the adjusted option will represent 200 shares. For certain adjusted options, the multiplier of the option may be something other than the \$100 that is standard in the U.S.

**AFFIDAVIT OF DOMICILE:** A notarized affidavit executed by the legal representative of an estate reciting the residence of the decedent at the time of death. This document would be required when transferring ownership of a security from a deceased person’s name.

**ALL-OR-NONE ORDER (AON):** An order that must be filled completely when the order is executed or not filled at all. In other words, partial fills are not allowed on this type of order.

**AMERICAN DEPOSITORY RECEIPT (ADR):** Foreign company equities traded on a U.S. exchange. The ADR is issued by a U.S. bank in place of the foreign company’s shares, which are held in trust by the

bank. ADRs facilitate the trading of foreign stocks in U.S. markets. ADRs have exposure to currency fluctuations.

**AMERICAN STOCK EXCHANGE (AMEX):** One of the major stock and option exchanges in the U.S. It is located in the financial district of New York City.

**AMERICAN-STYLE OPTION:** An option contract that can be exercised at any time from the time the option is purchased to the expiration date of the option.

**ARBITRAGE:** The simultaneous purchase and sale of identical or equivalent financial instruments in order to benefit from a discrepancy in their price relationship. More generally, it refers to an opportunity to make risk-free returns that are greater than the risk-free rate of return.

**ASK or OFFER:** The price of a stock or option at which a seller is offering to sell a security, that is, the price that investor may purchase a stock or option.

**ASSIGNED:** To have received notification of an assignment on short options by The Options Clearing Corporation through a broker.

**ASSIGNMENT:** When the seller (writer) of an option receives an exercise notice that obligates him to sell (in the case of a call) or purchase (in the case of a put) the underlying stock at the option's strike price.

**AT-THE-MONEY (ATM):** An option is at-the-money when the price of the stock is at or near the strike price.

**AUTOMATED ORDER ENTRY SYSTEM:** Some exchanges have computerized systems designed to route stock and option orders directly to the trading pit. They are intended to speed the execution of orders. These systems generally have limits on the size of orders. Examples of these systems are: RAES, AUTO EX, and SUPERDOT.

**AUTOMATED EXECUTION SYSTEM (AUTO EX):** The automated order routing system on the American Stock Exchange.

**AUTOMATIC EXERCISE:** The Options Clearing Corporation (OCC) uses this procedure to exercise in-the-money options at expiration. Doing so protects the owner of the option from losing the intrinsic value of the option because of the owner's failure to exercise. Unless instructed not to do so by the owner of the option (through the owner's broker), The Options Clearing Corporation will exercise all expiring equity options that are held in customer accounts if they are in-the-money by 75 cents (3/4 of a point) or more. Thinkorswim will automatically exercise an option position if it is 75 cents (3/4 of a point) or greater in-the-money at expiration unless the owner of the option instructs otherwise.

**BACK MONTHS:** A rather arbitrary term that refers to the classes of options with the expiration months that are further dated the option class with the nearest expiration month.

**BACKSPREAD:** An option position composed of either all calls or all puts, with long options and short options at two different strike prices. The options are all on the same stock and usually of the same expiration, with more options purchase than sold. A backspread is the sale of an option(s) and the purchase of a greater number of the same type of options that are out-of-the-money with respect to the one(s) purchased. For example, an 80/90 put 1-by-3 backspread is long 3\*80 puts and short 1\*90 put.

**BANK GUARANTEE LETTER:** The document supplied by a bank certifying that a person has a specific amount of funds on deposit with the bank.

**BASIS:** Generally referring to the futures markets, it is the difference between the cash price of the underlying commodity and the price of a futures contract based on that underlying commodity. Cash price minus futures price equals basis.

**BASIS POINT:** A .01% tick on a 1.00% scale used to describe the yields of interest rates or interest rate products. For example, when the U.S. Fed raises the discount rate 25 basis points, the discount rate goes from 5.00% to 5.25%.

**BASIS RISK:** The risk of the basis between the cash price and the future price widening or narrowing between the time a hedge position is implemented and liquidated.

**BEAR:** A person who believes that the price of a particular security or the market as a whole will go lower.

**BEARISH:** The outlook of a person anticipating lower prices in a particular security or the market as a whole.

**BEAR MARKET:** Any market in which prices are trending lower.

**BEAR SPREAD:** Generally speaking, it is any spread that theoretically profits when the market moves down. Specifically it refers to a vertical spread.

**BETA:** A measure of the return (in percentage terms) on a stock relative to the return (in percentage terms) of an index. For example a stock with a beta of .80 should have a percentage net change equal to 80% of the percentage net change of the index. Therefore if the index is down 2% the stock in question should be down 1.6% ( $.80 \times 2\%$ ).

**BID:** The price of a stock or option at which a buyer is willing to purchase a security; the price at which a customer may sell a security.

**BID/ASK (OFFER) SPREAD:** The difference between the bid and ask prices for a particular stock or option.

**BINOMIAL MODEL:** A mathematical model used to price options. Generally used for American-style options, the model creates a binomial lattice to price an option, based on the stock price, strike price, days until expiration, interest rate, dividends, and the estimated volatility of the stock. One of the main differences from the Black Scholes Model is that it factors in the possibility of early exercise of the options.

**BLACK SCHOLES MODEL:** A mathematical model used to price options. Generally used for European-style options, the model prices options using a probability-weighted sum of stock and a bond. Black-Scholes uses the stock price, strike price, days until expiration, interest

rate, dividends, and the estimated volatility of the stock as variables in the model.

**BLOCK or BLOCK TRADE:** A large position or transaction of stock, generally at least 10,000 shares or more.

**BLUE SKY LAWS:** The popular name for laws enacted by various states to protect the public against securities fraud. The term is believed to have been coined by a judge who stated that some brokers were selling everything including the “blue sky” to investors.

**BOND:** A debt instrument or promissory note of a corporation, municipality, or the U.S. Government. A bond represents debt on which the issuer of the debt usually promises to pay the owner of the bond a specific amount of interest for a defined amount of time and to repay the loan on the maturity date. Bonds are distinct from stock (equity), which represents ownership.

**BOX SPREAD:** An option position composed of a long call and short put at one strike, and a short call and long put at a different strike. For example, a long 50/60 box spread would be long the 50 call, short the 50 put, short the 60 call and long the 60 put. Considered largely immune to changes in the price of the underlying stock, in most cases, a box spread is an interest rate trade. For all intents and purposes, the buyer of the box is lending money to the options market, and the seller of the box is borrowing money from the options market.

**BREAK-EVEN POINT(S):** The stock price(s) at which an option position generates neither a profit nor a loss. An option position's break-even point(s) are generally calculated for the options' expiration date. Option pricing models can be used to calculate a position's break-even point before the options' expiration date.

**BROKER:** A broker is an individual or firm that charges a fee or commission for executing, either on the floor of an exchange or electronically, buy, sell, or spread orders submitted by a customer or firm.

**BROKER LOAN RATE:** This is the interest rate that banks charge brokerage firms to finance their (the brokerage firms) customers' stock and option positions.

**BROKER-DEALER:** Generally, a broker-dealer is a person or firm who facilitates trades between buyers and sellers and receives a commission or fee for his services. When a broker acts in the capacity of a dealer, he may buy and sell stocks and options for his own account, which can generate profits or losses.

**BULL:** A person who believes that the price of a particular security or the market as a whole will go higher.

**BULLISH:** The outlook of a person anticipating higher prices in a particular security or the market as a whole.

**BULL MARKET:** Any market in which prices are trending higher.

**BULL SPREAD:** Generally speaking, it is any spread that theoretically profits when the market moves up. Specifically it refers to a vertical spread.

**BUTTERFLY SPREAD:** An option position composed of either all calls or all puts (with the exception of an iron butterfly), with long options and short options at three different strikes. The options are all on the same stock and of the same expiration, with the quantity of long options and the quantity of short options netting to zero. The strikes are equidistant from each other. For example, a long 50/60/70 put butterfly is long 1\*50 put, short 2\*60 puts, and long 1\*70 put.

**BUY ON CLOSE:** To buy at the end of a trading session at a price within the closing range.

**BUY ON OPENING:** To buy at the beginning of a trading session at a price within the opening range.

**BUYING POWER:** The amount of money available in an account to buy stocks or options. Buying power is determined by the sum of the

cash held in the brokerage account and the loan value of any marginable securities in the account without depositing additional equity.

**BUY-TO-COVER:** A buy order that closes or offsets a short position in stock or options.

**BUY-WRITE:** Synonymous to a covered call or covered write, this is a position of long stock and short a number of calls representing the same amount of shares as the long stock position. This position may be entered into as a spread order via Thinkorswim with both sides (buying stock and selling calls) being executed simultaneously. For example, a buy-write is buying 500 shares of stock and writing 5\*50 strike calls.

**CABINET OR “CAB” TRADE:** An option trade at a “cabinet price”, which is equal to one dollar. Generally, cabinet trades only occur at very far out-of-the-money options. Cabinet trades are not available via Thinkorswim.

**CALENDAR SPREAD (TIME SPREAD):** An option position composed of either only calls or only puts, with the purchase or sale of an option with a nearby expiration offset by the purchase or sale of an option with the same strike price, but a more distant expiration. The options are on the same stock and have the same strike price. The quantity of long options and the quantity of short options net to zero. For example, long the AUG/NOV 65 call calendar spread is short 1 August 65 call and long 1 November 65 call.

**CALL OPTION:** A call option gives the buyer of the call the right, but not the obligation, to buy the underlying stock at the option’s strike price. The seller of the call is obligated to deliver (sell) the underlying stock at the option’s strike price to the buyer of the call when the buyer exercises his right.

**CALLED AWAY:** The term used when the seller of a call option is obligated to deliver the underlying stock to the buyer of the call at the strike price of the call option.

**CALL WRITER:** An investor who receives a premium and takes on, for a specified time period, the obligation to sell the underlying security at a specified price at the call buyer's discretion.

**CANCELED ORDER:** An order to buy or sell stock or options that is canceled before it has been executed. Generally, it is easier to cancel a limit order than a market order. A limit order can be canceled at any time as long as it has not been executed. Market orders can get executed so quickly that it is usually impossible to cancel them. Thinkorswim will not accept an order cancellation for a market order.

**CAPITAL GAIN OR CAPITAL LOSS:** Profit or loss generated from transactions in stocks, options, bonds, real estate, or other property.

**CARRY/CARRYING CHARGE:** Interest is charged on any money borrowed to finance a position of stocks or options. The interest cost of financing the position is known as the carry.

**CASH ACCOUNT:** An account in which all positions must be paid for in full. No short positions in stocks or options are allowed in a cash account.

**CASH MARKET:** Generally referred to regarding futures markets, the cash market is where transactions are made in the commodity or instrument underlying the future. For example, there are cash markets in physical commodities such as grains and livestock, metals, and crude oil, financial instruments such as U.S. Treasury Bonds and Eurodollars, as well as foreign currencies such as the Japanese yen and the Canadian dollar. As it relates to futures on stock indices, the cash market is the aggregate market value of the stocks making up the stock index.

**CASH SETTLED OPTION:** An option that delivers a cash amount, as opposed to the underlying stock or futures contracts such as with options on stocks or futures, when exercised. The amount of cash delivered is determined by the difference between the option strike price and the value of the underlying index or security. In the U.S., stock index options like the OEX and SPX are cash settled options.

**CHICAGO BOARD OF TRADE (CBOT):** Founded in 1848 with 82 original members, today the CBOT is the one of the largest futures and options exchanges in the world. It is known for its grain and U.S. Treasury Bond futures. Futures and futures options are traded at the CBOT.

**CHICAGO BOARD OPTIONS EXCHANGE (CBOE):** The Chicago Board Options Exchange is currently (2000) the largest option exchange in the U.S. Formed in 1973, the CBOE pioneered "listed options" with standardized contracts. Equity and index options are traded at the CBOE.

**CHICAGO MERCANTILE EXCHANGE (CME):** Originally formed in 1874 as the Chicago Produce Exchange, where products such as butter, eggs, and poultry were traded, the CME is now one of the biggest futures and options exchanges in the world. The CME trades futures on stock indices, foreign currencies, livestock, and Eurodollars. Futures and futures options are traded at the CME.

**CLASS OF OPTIONS (OPTIONS CLASS):** Options of the same type either all calls or all puts on the same underlying security.

**CLEAR/CLEARING:** The process by which orders are accounted for and matched, and funds transferred.

**CLEARING BROKER-DEALER:** A broker-dealer that clears its own trades as well as those of introducing brokers.

**CLEARING HOUSE:** An agency connected with an exchange through which all stock and option transactions are reconciled, settled, guaranteed, and later either offset or fulfilled through delivery of the stock and through which payments are made. It may be a separate corporation, rather than a division of the exchange itself.

**CLEARING MEMBER:** Clearing members of U.S. exchanges accept responsibility for all trades cleared through them, and share secondary responsibility for the liquidity of the exchanges' clearing operation. Clearing members earn commissions for clearing their customers' trades. Clearing members must meet minimum capital requirements.

**CLOSE (C), THE:** The time at which trading on a stock or option ends for the day. In reference to the O,H,L,C “C” represents the closing price of the session.

**CLOSING PRICE:** The price of a stock or option at the last transaction of the day.

**CLOSING PURCHASE:** A transaction in which a person who had initially sold short a stock or option exits or closes his short position by buying back the stock or option.

**CLOSING RANGE:** The range of high and low prices, or bid and ask prices, recorded during the close (the final closing minutes of the trading day).

**CLOSING TRANSACTION:** A transaction in which a person who had initially bought or sold stock, futures or options exits or closes (liquidates) his position by selling his long stock, futures or options or buying back his short stock, futures or options.

**COMBO:** Often another term for synthetic stock, a combo is an option position composed of calls and puts on the same stock, same expiration, and typically the same strike price. The quantity of long options and the quantity of short options nets to zero. Buying a combo is buying synthetic stock; selling a combo is selling synthetic stock. For example, a long 60 combo is long 1\*60 call and short 1\*60 put. Sometimes, combo is used to describe options at two different strikes, in which case it would not be synthetic stock.

**COMMINGLING:** The combining by a brokerage firm of customer securities with firm securities and pledging them as joint collateral for a bank loan; this practice is prohibited unless authorized by customers.(NASD)

**COMMISSION:** The one time fee charged by a broker to a customer when the customer executes a stock or option trade through the brokerage firm.

**CONDOR SPREAD:** An option position composed of either all calls or all puts (with the exception of an iron condor), with long options and short options at four different strikes. The options are all on the same stock and of the same expiration, with the quantity of long options and the quantity of short options netting to zero. Generally, the strikes are equidistant from each other, but if the strikes are not equidistant, the spread is called a pterodactyl. For example, a long 50/55/60/65 call condor is long 1\*50 call, short 1\*55 call, short 1\*60 call, and long 1\*65 call. In a long (short) condor the highest and lowest strikes are both long (short) while the two middle strikes are both short (long).

**CONFIRMATION STATEMENT:** After a stock or options transaction has taken place, the brokerage firm must issue a statement to the customer. The statement contains the name of the underlying stock, the number of shares or options bought or sold and the prices at which the transactions occurred.

**CONSOLIDATED TAPE:** The ticker reporting transactions of NYSE listed stocks that take place on the NYSE or any of the other regional stock exchanges. Similarly, transactions of AMEX listed securities, and certain other securities listed on regional stock exchanges, are reported on a separate tape.

**CONTINGENCY ORDER:** When you place a stock or options order you can choose to place contingencies on that order, meaning that the order will be filled only when a specific event has occurred. For example, a contingency order might be, “Buy 10 XYZ 80 calls at the market if XYZ stock trades above 75”.

**CONTRACT:** The basic unit of trading for options. An option, whether it’s a put or a call, is an agreement between two parties (the buyer and the seller) to abide by the terms of the option contract as defined by an exchange.

**CONTRACT MONTH:** Generally used to describe the month in which an option contract expires.

**CONTRACT SIZE:** The number of shares of the underlying stock that an options contract would deliver if exercised. Contract sizes for equity

options in the U.S. are generally 100 shares, unless the contract size has been adjusted for a split, merger, or spin-off. For example, if you are long 1 XYZ 50 call with a contract size of 100 and you exercise that call, you will get 100 shares of XYZ for a price of \$50 per share. If you are long 1 ABC 90 call with a contract size of 250 and you exercise that call, you will get 250 shares of ABC for a price of \$90 per share. Thinkorswim incorporates the contract size in the calculation of your delta and gamma.

**CONVERSION:** A position of long stock, short a call, and long a put (with the call and put having the same strike price, expiration date, and underlying stock). The short call and long put acts very much like short stock, thus acting as a hedge to the long stock. So, a conversion has a very small delta. A conversion is a way to exploit mispricings in carrying costs.

**CORRECTION:** A temporary reversal of direction of the overall trend of a particular stock or the market in general.

**COST BASIS:** The original price paid for a stock or option, plus any commissions or fees. It is used to determine capital gains or losses when the stock or option is sold.

**COVER:** Frequently used to describe the purchase of an option or stock to exit or close an existing short position.

**COVERED WRITE OR COVERED CALL OR PUT/COVERED CALL OR PUT WRITING (SELLING):** An option strategy composed of a short call option and long stock, or a short put option and short stock. For example, selling (writing) 2 XYZ 50 calls while owning 200 shares of XYZ stock is a covered call position.

**COVERED WRITER (SELLER):** Someone who sells or "writes" an option is considered to have a "covered" position when the seller of the option holds a position in the underlying stock that offsets the risk of the short option. For example, a short put option is covered by a short position in the underlying stock, and a short call option is covered by a long position in the underlying stock.

**CREDIT:** An increase in the cash balance of an account resulting from either a deposit or a transaction. As it relates to option orders, a credit is how much the premium collected from selling options exceeds the premium paid for buying options.

**CREDIT BALANCE (CR):** This is the money the broker owes the customer after all commitments have been paid for in full. The money could come after a sale of securities, or simply be cash in the customer's account.

**CREDIT SPREAD:** Any option spread where you collect a credit when you execute the spread.

**CROSSED MARKET:** A situation that occurs on multiple-listed stock and options, where the highest bid price for a stock or option on one exchange is higher than the lowest ask price for that same stock or option on another exchange.

**CROSSING ORDERS:** The practice of using one customer's orders to fill a second customer's order for the same security on the opposite side of the market. For this to occur each order must be first offered on the exchange floor; if there are no takers, the broker may cross the orders usually at a price somewhere in between the existing bid and ask prices.

**CURRENT MARKET VALUE (CMV):** The current worth of the securities in an account. The market value of listed securities is based on the closing prices on the previous business day. Syn. long market value (LMV). (NASD)

**CUSTOMER:** Any person or entity that opens a trading account with a broker-dealer. The customer may be classified in terms of account ownership, payment methods, trading authorization or types of securities traded.

**CUSTOMER AGREEMENT:** The document a customer signs when opening a margin account with a broker-dealer; this document allows the firm to liquidate a portion or all of the customer's account if the customer fails to meet margin requirements set by the firm or Exchange.

**CUSTOMER STATEMENT:** This document displays a customer's trading activity, positions and account balance. The SEC requires the statement be sent quarterly, however, Thinkorswim's customer statements will be sent daily via email or may be accessed on line at anytime day or night.

**DATE OF RECORD (RECORD DATE):** Date on which you must own shares of a stock to be entitled to the dividend payment on that stock. The day after the record date and until the day the dividend is actually paid, the stock trades ex-dividend.

**DAY ORDER:** A day order is an order that is "good for the day" and is automatically cancelled if it cannot be executed the day it was placed. Compare to good-til-cancelled (GTC) orders.

**DAY TRADE:** A stock or option position that is purchased and sold on the same day.

**DAY TRADING:** Buying and selling the same stock or option position in one day's trading session, thus ending the day with no position.

**DEALER:** A firm or individual engaged in the business of buying or selling securities for its own account. Thinkorswim is not a dealer.

**DEBIT BALANCE (DR):** In a customer's margin account, that portion of the value of stocks that is covered by credit extended by the broker to the margin customer. In other words, the amount of money a customer owes the brokerage firm. (NASD)

**DEBIT SPREAD:** Any option spread where you pay money for the spread. The debit occurs when the amount of premium paid for the option purchased exceeds the premium received for the option sold.

**DECK:** The stack of stock or option orders that are to be filled by a broker on the floor of an exchange.

**DECLARATION DATE:** The date a company announces the payment date, record date and amount of an upcoming dividend.

**DEFERRED:** Refers to “back month” options or futures.

**DELAYED OPENING:** Exchange officials can postpone the start of trading on a stock beyond the normal opening of a day’s trading session. Reasons for the delay might be an influx of large buy or sell orders, an imbalance of buyers and sellers, or pending important corporate news that requires time to be disseminated.

**DELAYED QUOTES:** Stock or option price quotes that are delayed by the exchanges 15 or 20 minutes from real-time.

**DELIVERY:** When referring to stock options, delivery is the process of delivering stock after an option is exercised. If a trader is long a call, and he exercises that call, the person who is short that call must deliver the underlying stock to the trader who is long the call. If a trader is long a put, and he exercises that put, the trader will deliver the underlying stock to the person who is short that put. Actually, the delivery of the stock takes place through clearing firms under very specific terms and procedures established by the exchange where the option is traded. See assignment and exercise.

**DELTA:** An approximation of the change in the price of an option relative to a change in the price of the underlying stock when all other factors are held constant. For example, if a call has a price of \$1.5 and a delta of .33, if the underlying stock moves up \$1, the option price would be \$1.83 ( $\$1.5 + (.33 \times \$1.00)$ ). Generated by a mathematical model, delta depends on the stock price, strike price, volatility, interest rates, dividends, and time to expiration. Delta also changes as the underlying stock fluctuates. See gamma.

**DERIVATIVE SECURITY:** A security whose value is derived from the value and characteristics of another security, called the underlying security. Calls and puts are derivative securities on underlying stocks.

**DESIGNATED ORDER TURNAROUND (DOT):** NYSE’s automated order entry system.

**DISCOUNT RATE:** The rate that the Federal Reserve Bank charges on short term loans it makes to other banks and financial institutions.

**DISCRETIONARY ACCOUNT:** An account in which the customer has given the registered representative authority to enter transactions at the rep's discretion. Thinkorswim does not offer this type of account.

**DIVIDEND:** A payment made by a company to its existing shareholders. Dividends are usually cash payments made on a quarterly basis. Dividends can also be in the form of additional shares of stock or property.

**DIVIDEND FREQUENCY:** Indicates how many times per year (quarterly, semi-annually) a particular stock pays a dividend.

**DIVIDEND YIELD:** The annual percentage of return that received from dividend payments on stock. The yield is based on the amount of the dividend divided by the price of the stock and of course fluctuates with the stock price.

**DON'T KNOW (DK) NOTICE:** A term used when brokers or traders compare confirmations on a transaction. If one party receives a confirmation on a trade that it does not recognize, that party would send the other party a D.K. notice.

**DOWN-TICK:** A term used to describe a trade made at a price lower than the preceding trade. A short sale may not be executed on a down or minus tick.(NASD)

**DOWNTREND:** Successive downward price movements in a security over time.

**DUAL/MULTIPLE LISTED:** When the same stock or option is listed on two or more different exchanges. For example, IBM options are traded on the CBOE, PHLX and AMEX.

**DUPLICATE CONFIRMATION:** SRO regulations require a duplicate confirmation (of a customer's confirmations) be sent to an employing broker-dealer, if the customer is an employee of another broker dealer. Also, this duplicate confirmation may be sent to a customer's attorney if the request is put in writing. (NASD)

**EARLY EXERCISE:** A feature of American-style options that allows the buyer to exercise a call or put at any time prior to its expiration date.

**EQUITY:** Equity can have several meanings, including 1) stock, as it represents ownership in a corporation, or 2) in a margin account, equity represents a customer's ownership in his account; it is the amount the trader would keep after all his positions have been closed and all margin loans paid off.

**EQUITY OPTIONS:** See [Stock options](#).

**EUROPEAN-STYLE OPTIONS:** An option contract that can only be exercised upon its expiration date. Compare to American-style options.

**EXCESS EQUITY:** The value of cash or securities held in a margin account that exceeds the federal requirement. (NASD)

**EXCHANGE:** An association of persons (members) who participate in buying and selling securities. It also refers to the physical location where the buying and selling takes place.

**EXCHANGE-LISTED SECURITY:** Securities that have met certain requirements and have been admitted for full trading privileges on an exchange such as the NYSE or AMEX. These securities will have a three letter designation (IBM) rather than a four letter designation (MSFT) for over-the-counter securities.

**EX-DIVIDEND:** Describes a stock whose buyer does not receive the most recently declared dividend. Dividends are payable only to shareholders recorded on the books of the company as of a specific date of record (the "record date"). If you buy the stock any time after the record date for a particular dividend, you won't receive that dividend.

**EX-DIVIDEND DATE:** The day on and after which the buyer of a stock does not receive a particular dividend. This date is sometimes referred to simply as the "ex-date," and can apply to other situations beyond cash dividends, such as stock splits and stock dividends. On the ex-dividend date, the opening price for the stock will have been reduced

by the amount of the dividend, but may open at any price due to market forces.

**EXECUTION:** The actual completion of an order to buy or sell stock or options.

**EXERCISE:** If the buyer of a stock option wants to buy (in the case of a call) or sell (in the case of a put) the underlying stock at the strike price or, in the case of a cash-settled option, to receive the index price and the strike price settlement amount, the option must be exercised. To exercise an option, a person who is long an option must give his broker instructions to exercise a particular option (or if the option is  $\frac{3}{4}$  of a point in-the-money at expiration it will be automatically exercised for a customer) Someone with short option positions must be aware of the possibility of being assigned if his short options in-the-money, and he must make sure he has adequate buying power available in his account to cover any such potential assignment.

**EXERCISE PRICE (STRIKE PRICE):** The cost per share at which the holder of an option may buy or sell the underlying security. (NASD/Options)

**EXPIRATION CYCLE:** The expiration cycle has to do with the dates on which options on a particular underlying security expire. A stock option, other than LEAPS, will be in one of three cycles, the January cycle (with options listed in January, April, July or October), the February cycle (with options listed in the February, May, August or November) or the March cycle (with options listed in March, June, September or December). At any given time, an option will have contracts with four expiration dates outstanding.

**EXPIRATION (EXPIRATION DATE):** On the expiration date, an option and the right to exercise it cease to exist. Every option contract becomes null and void after its expiration date. For stock options, this date is the Saturday following the third Friday of the expiration month.

**EXTRINSIC VALUE (TIME VALUE):** The difference between the entire price of an option and its intrinsic value. For example, if a call option with a strike price of \$50 has a price of \$2.75, with the stock price

at \$52, the extrinsic value is \$.75. The price of an out-of-the-money (OTM) option is made up entirely of extrinsic value.

**FAST MARKET:** The exchange declares trading in stocks or options to be in a “fast market” when transactions in the pit occur in such volume and with such rapidity that price reporters are behind in entering quotes. During this time, executing brokers are not held to any fills if a price is traded through on a limit order.

**FED FUNDS (FEDERAL FUNDS):** The money a bank borrows from another night to meet its overnight reserve requirements.

**FED FUNDS RATE:** Set by the Federal Reserve Board, the Fed Funds Rate is the rate banks charge each other on overnight loans held the Federal Reserve Bank.

**FEDERAL OPEN MARKET COMMITTEE (FOMC):** A committee of the Federal Reserve Board which operates by buying and selling government securities in the open market. This buying and selling is how the Federal Reserve Board controls the U.S. money supply. The FOMC decides whether to change the discount rate or not.

**FEDERAL RESERVE BOARD (FRB):** A seven-member board of governors of the Federal Reserve System, appointed by the U.S. President and confirmed by the Senate, that is responsible for monetary policy within the United States. It controls the supply of money and credit to try to control inflation and create a stable, growing economy.

**FENCE:** An option and stock position consisting of long stock, long an out-of-the-money put and short an out-of-the-money call, which emulates a bull spread. Alternatively, a reverse fence can be long stock, long in-the-money put and short in-the-money call which emulates a bear spread. All the options have the same expiration date.

**FILL:** The result of executing an order.

**FILL OR KILL (FOK):** A type of order that is canceled unless it is executed completely within a designated time period, generally as soon

as it is announced by the floor broker to the traders in the pit. Compare to all-or-none (AON).

**FLAT:** Used to describe an account that has no open positions in stocks or options. Flat can also be regarding a position with little or no delta or gamma.

**FLOAT:** Number of shares of stock of a corporation that available for public trading.

**FLOOR:** Physical location of an exchange where the buying and selling of stocks or options takes place.

**FLOOR BROKER:** A member of an exchange who executes orders on the exchange floor for clearing members or their customers.

**FLOOR TRADER:** A member of an exchange who trades only for his own or proprietary account. On the CBOE, they are known as “market makers”.

**FREE CREDIT BALANCE:** The amount of cash in a customers account. Broker-Dealers are required to notify customers of their free credit balances at least quarterly, however, Thinkorswim customers may access this information at any time.

**FROZEN ACCOUNT:** An account which requiring cash in advance for a buy order to be executed or securities in hand before a sell order is executed. In most cases Thinkorswim customers whose accounts are frozen will be restricted to closing transactions only. (NASD)

**FULL POWER OF ATTORNEY:** A written authorization for someone other than the beneficial owner of an account to execute trades, make deposits or withdrawals in a customer account. (NASD)

**FULL TRADING AUTHORIZATION:** An authorization, usually provided by a full power of attorney, which gives someone other than the customer full trading privileges in the account. (NASD)

**FUNDAMENTAL RESEARCH:** Analysis of companies based on such factors as revenues, expenses, assets, debt level, earnings, products, management, and various financial ratios. As it relates to the economy, fundamental research includes analysis of gross national product, interest rates, unemployment, savings, etc.

**FUNDAMENTALS:** Factors that are used to analyze a company and its potential for success, such as earnings, revenues, cash flow, debt level, financial ratios, etc.

**FUNGIBILITY:** Interchangeability resulting from identical characteristics or value. Options on a stock with the same expiration date, type (call or put) and strike price as standardized by the Options Clearing Corporation (OCC) are fungible. Therefore, dual-listed options traded on the CBOE can be liquidated or closed on the AMEX.

**FUTURE(S) CONTRACT:** A forward contract for the future delivery of a financial instrument (ex. Treasury bond) or physical commodities (corn), traded on a futures exchange (ex. CBOT, CME).

**GAMMA:** An approximation of the change in the delta of an option relative to a change in the price of the underlying stock when all other factors are held constant. Gamma is accurate for small changes in the price of the underlying stock, but is expressed in terms of a change in delta for a 1 point move in the stock. For example, if a call has a delta of .49 and a gamma of .03, if the stock moves down 1 point, the call delta would be .46 ( $.49 + (.03 \times -\$1.00)$ ). Generated by a mathematical model, delta depends on the stock price, strike price, volatility, interest rates, dividends, and time to expiration.

**GOOD-TIL-CANCELED (GTC):** A type of limit order that is active until it is filled or canceled. As opposed to a day order, a GTC order can remain active for an indefinite number of trading sessions.

**GREEKS:** Regarding options, it's a colloquial term for the analytic measurements such as delta, gamma, theta, vega and rho, etc.

**HANDLE:** The whole-dollar part of the bid or offer price. For example, if the bid and offer prices for an option are 3 1/8 bid, offer 3/1/2, the handle is 3.

**HEDGE:** A position in stock or options that is established to offset the risk of another position in stock or options. You can use Thinkorswim's analytics to hedge the Greeks of your position.

**HIGH (H):** In reference to the O,H,L,C, "H" represents the high price of the session.

**HISTORICAL VOLATILITY:** The annualized standard deviation of percent changes in the price of a stock over a specific period. Compare to implied volatility.

**HOLDER:** Someone who has bought an option or owns a security.

**HYPOTHECATION:** The act of pledging of securities as collateral, as might be done in a margin account.

**IMMEDIATE OR CANCEL (IOC):** A type of order that must be filled immediately or be canceled. IOC orders allow partial fills, with the balance of the order canceled.

**IMPLIED VOLATILITY:** An estimate of the volatility of the underlying stock that is derived from the market value of an option. Implied volatility is the volatility number that, if plugged into a theoretical pricing model along with all the other inputs, would yield a theoretical value of an option equal to the market price of the same option. Compare to historical volatility.

**INDEX:** A proxy for the overall stock market or segments of the stock market. An index is typically made up of a group of stocks that are selected to represent all stocks in the stock market or market segment (such as technology stocks or big capitalization stocks). The performance of the index gives an idea of how individual stocks might be performing. The S&P 500 (Standard & Poor's 500) and Dow Jones Industrial Average are two well-known indices.

**INDEX OPTION:** An option that has a stock index as the underlying security. The value of an index option is based on the value of the index. Typically, index options are cash settled options.

**INITIAL MARGIN REQUIREMENT:** The amount of equity a customer must deposit when making a new purchase in a margin account. For retail customers the SEC 's Regulation T requirement for equity securities currently stands at 50% of the purchase price. In addition, the NASD and NYSE initial margin requirement is a deposit of \$2,000 but not more than 100% of the purchase price. Purchases of options must be paid for in full while the sale of naked options is subject to house requirements prescribed by Thinkorswim. Also, the amount of money required to be in an account with a brokerage firm to carry a new position into the next trading day.

**INITIAL PUBLIC OFFERING (IPO):** A corporation's first sale of stock to the public.

**INSTITUTIONAL INVESTORS:** Organizations such as mutual funds, pension funds, endowment funds, and insurance companies that typically have very large sums of money to invest.

**INTEREST:** Money paid when borrowing money or money earned when lending money.

**INTEREST RATE:** A percentage that is charged when borrowing money, or that is earned when lending money.

**INTEREST RATE RISK:** Risk that a change in interest rates will cause a position to change in value.

**IN-THE-MONEY (ITM):** A call option is in-the-money when the price of the underlying stock is greater than the call's strike price. . Conversely, a put option is in-the-money when the price of the underlying stock is lower than the put's strike price. At expiration, options that are  $\frac{3}{4}$  of a point ITM are automatically exercised.

**INTRINSIC VALUE:** Any positive value resulting from the stock price minus the strike price (for calls) or strike price minus the stock price (for

puts). Only in-the-money options have intrinsic value, and intrinsic value can never be zero or less. For example, if a call option with a strike price of \$50 has a price of \$2.75, with the stock price at \$52, the intrinsic value is \$2.00. If a put option with a strike price of \$15 has a price of \$1.50, with the stock price at \$14, the intrinsic value is \$1.00. Compare to extrinsic value.

**INVESTOR:** Someone who purchases a stock with the intent of holding it for a some amount of time and profiting from the transaction. Compare to day trading.

**IRON BUTTERFLY SPREAD:** An option spread composed of calls and puts, with long options and short options at three different strikes. The options are all on the same stock and of the same expiration, with the quantity of long options and the quantity of short options netting to zero. The strikes are equidistant from each other. An iron butterfly can be seen as a straddle at the middle strike and a strangle at the outer strikes. For example, a long 50/60/70 iron butterfly is long 1\*50 put, short 1\*60 call, short 1\*60 put, and long 1\*70 call. It's important to understand that you buy an iron butterfly for a credit, that is, you take money in when you buy it.

**IRON CONDOR SPREAD:** An option spread composed of calls and puts, with long options and short options at four different strikes. The options are all on the same stock and of the same expiration, with the quantity of long options and the quantity of short options netting to zero. Generally, the strikes are equidistant from each other, but if the strikes are not equidistant, the spread is called an iron pterodactyl. An iron condor can be seen as a strangle at the middle strike and a strangle at the outer strikes. For example, a long 50/55/60/65 iron condor is long 1\*50 put, short 1\*55 put, short 1\*60 call, and long 1\*65 call. It's important to understand that you buy an iron condor for a credit, that is, you take money in when you buy it.

**ISSUE:** As a verb, when a company offers shares of stock to the public; as a noun, the stock that has been offered by the company.

**ISSUER:** (1) An entity that offers or proposes to offer its securities for sale. (2) The creator of an option; the issuer of a listed option is the OCC.

**JOINT ACCOUNT:** An account that has two or more owners who possess some form of control over the account and these individuals may transact business in the account. See also joint tenants.

**JOINT TENANTS (JT):** A type of account with two owners. There are two types of joint tenant accounts: 1) Joint Tenants With Rights of Survivorship - in the event of the death of one party, the survivor receives total ownership of the account and 2) Joint Tenants in Common - in the event of the death of one party, the survivor receives a fractional interest of the account, the remaining fractional interest goes to the deceased party's estate.

**JUNK BOND (HIGH-YIELD BOND):** A bond with a credit rating of BB or lower, carrying higher risk of default than investment grade bonds.

**KEOGH PLAN:** Qualified retirement plan designed for employees of unincorporated businesses or persons who are self-employed, either full-time or part-time.

**KNOW YOUR CUSTOMER:** The industry rule that requires that each member organization exercise due diligence to learn the more essential facts about every customer.

**LAST (PRICE):** The price of the last transaction of a stock or option for a trading session.

**LAST TRADING DAY:** The last business day prior to the option's expiration date during which options can be traded. For equity options, this is generally the third Friday of the expiration month. Note: If the third Friday of the month is an exchange holiday, the last trading day will be the Thursday immediately preceding the third Friday.

**LEAPS:** An acronym for Long-term Equity Anticipation Securities. LEAPS are call or put options with expiration dates set as far as two years into the future. They function exactly like other, shorter-term exchange-traded options.

**LEG(S) LEGGING:** A term describing one option of a spread position. When someone "legs" into a call vertical, for example, he might do the

long call trade first and does the short call trade later, hoping for a favorable price movement so the short side can be executed at a better price. Legging is a higher-risk method of establishing a spread position, and Thinkorswim **STRONGLY** suggests that if you decide to leg into a spread, you should, for margin and risk purposes, do the long trades **FIRST**.

**LEVERAGE:** The ability to control of a larger amount of money or assets with a smaller amount of money or assets, typically done by borrowing money or using options. If prices move favorably for a leveraged position, the profits can be larger than on an unleveraged position. However, if prices move against a leveraged position, the losses can also be larger than on an unleveraged position, but not necessarily with an options position. Buying stock on margin is using leverage. A long option position is leveraged because it “controls” a large number of shares with less money than it would take to maintain a position with the same number of shares.

**LIMIT MOVE:** Relating to futures markets, a limit move is an increase or decrease of a futures price by the maximum amount allowed by the exchange for any one trading session. Price limits are established by the exchanges, and approved by the Commodity Futures Trading Commission (CFTC). Limit moves vary depending on the futures contract.

**LIMIT (PRICE) ORDER:** An order that has a limit on either price or time of execution, or both. Compare to a market order that requires the order be filled at the most favorable price as soon as possible. Limit orders to buy are usually placed below the current ask price. Limit orders to sell are usually placed above the current bid price. It is wise to use limit orders when trading spreads. In markets with low liquidity or in fast markets, some traders use limits to ensure getting filled by putting in a limit order to buy at or above the ask price or a limit order to sell at or below the bid price.

**LIMITED POWER OF ATTORNEY:** An authorization giving someone other than the beneficial owner of an account the authority to make certain investment decisions regarding transactions in the customers account.

**LIMITED TRADING AUTHORIZATION:** This authorization, usually provided by a limited power of attorney, grants someone other than the customer to have trading privileges in an account. These privileges are limited to purchases and sales; withdrawals of assets is not authorized.

**LIQUIDATION:** A transaction or transactions that offsets or closes out a stock or options position.

**LIQUIDITY:** The ease with which a transaction in stock or options can take place without substantially affecting their price.

**LIQUIDITY RISK:** The potential that an investor might not be able to buy or sell a security when desired.

**LISTED OPTIONS:** An exchange-approved call or put traded on an options exchange with standardized terms. Listed options are fully fungible. In contrast, over-the-counter (OTC) options usually have non-standard or negotiated terms.

**LISTED STOCK:** The stock of a corporation that is traded on a securities exchange.

**LOAN CONSENT AGREEMENT:** The agreement between a brokerage firm and its margin customer permitting the brokerage firm to lend the margined securities to other brokers; this contract is part of the margin agreement.

**LOAN VALUE:** The maximum amount of money that can be borrowed in a margin account at a brokerage firm using eligible securities as collateral.

**LOCAL:** A term for a trader at the CBOT or CME who trades for his own account. They compete with each other to provide the best bid and ask prices for futures. Locals are basically the same type of traders that market makers are at the CBOE.

**LOCKED LIMIT:** Refers to a futures market that has moved its daily maximum amount and, if the move is up, no one is willing to sell.

Conversely, if the move is down, no one is willing to buy. Hence, the market is “locked” at the limit price with no trading.

**LONG:** As a noun, it refers to people who have bought stock or options. As an adjective, it refers to a position of long stock or options. Compare to short.

**LONG HEDGE:** The strategy of buying puts as protection against the decline in the value of long securities.

**LONG MARKET VALUE (LMV):** See Current Market Value.

**LOT:** Contract

**LOW (L):** In reference to the O,H,L,C, “L” represents the low price of the session.

**MAINTENANCE MARGIN:** An amount of cash or margin-eligible securities that must be maintained on deposit in a customer's account to maintain a particular position. If a customer's equity in his account drops to, or under, the maintenance margin level, the account may be frozen or liquidated until the customer deposits more money or margin-eligible securities in the account to bring the equity above the maintenance margin level.

**MARGIN:** The amount of equity contributed by a customer (in the form of cash or margin-eligible securities) as a percentage of the current market value of the stocks or option positions held in the customer's margin account.

**MARGIN ACCOUNT:** An account that allows a customer to borrow money from a brokerage firm against cash and margin-eligible securities held in the customer's margin account at that brokerage firm.

**MARGIN BALANCE:** The amount a customer has borrowed, using cash or margin-eligible securities as collateral, in his margin account.

**MARGIN CALL:** A brokerage firm's demand of a customer for additional equity in order to bring margin deposits up to a required

minimum level. If the customer fails to deliver more equity in the account, the customer's positions may be liquidated.

**MARGIN-ELIGIBLE SECURITIES:** Securities, such as stocks or bonds, that can be used as collateral in a margin account. Options are not margin-eligible securities.

**MARGIN REQUIREMENT:** The minimum equity required in an account to initiate or maintain a position in stock or options.

**MARKET:** 1) A quote, that is a bid and ask price for a stock or option, ex. the market on the XYZ Dec 75 calls is 2 ½ - 3, or 2) a term for all stocks as a whole, ex. the market is going up means stocks in general are rising, or 3) a place to trade.

**MARKET ARBITRAGE:** The simultaneous purchase and sale of the same security in different markets to take advantage of price disparity between the two markets. For example, purchasing a call or put on the CBOE subsequently selling the contract at the PHLX at a higher price.

**MARKET IF TOUCHED (MIT):** A type of stock order that becomes a market order when a particular price on a stock is reached. A buy MIT order is placed below the market; a sell MIT order is placed above the market.

**MARKET MAKER:** A term for a trader at the CBOE or PCX who trades for his own account. They compete with each other to provide the best bid and ask prices for options to the public.

**MARKET ON CLOSE (MOC):** An order to buy or sell stock or options at the end of the trading session at a price within the closing range of prices. MOC orders must be placed 45 minutes before the close of trading.

**MARKET (PRICE) ORDER:** An order to buy or sell stock or options that is to be executed as soon as possible at the best possible price. Compare to a limit order or stop order, which specifies requirements for price or time of execution.

**MARK-TO-MARKET:** The daily updating of the value of stocks and options to reflect profits and losses in a margin account.

**MARRIED PUT:** The purchase of a put option and the underlying stock on the same day. Special tax rules may apply to this position.

**MERGER:** The act of combining two or more corporations into one corporate entity. Options on stocks involved in mergers can be difficult to evaluate.

**MINIMUM PRICE FLUCTUATION:** The smallest possible increment of price movement for a stock or option. It is often referred to as a "tick".

**MODEL:** Any one of the various option pricing models used to value options and calculate the "Greeks". Models typically use six factors in their calculations: the underlying stock price, the strike price, the time until expiration, dividends, interest rates, and the volatility of the stock. Thinkorswim uses the Black-Scholes model for European-style options, and the Binomial model for American-style options.

**MONEY MARKET FUND:** A special type of mutual fund that invests only in short-term, low-risk fixed-income securities, such as bankers' acceptances, commercial paper, repurchase agreements and Treasury bills. The money market fund manager tries to maintain a share price of \$1.00. Money market funds are not federally insured, even though the money market fund's portfolio may consist of guaranteed securities.

**MULTIPLE LISTED:** When the same stock or option is listed on two or more different exchanges. For example, IBM options are traded on the CBOE, PHLX and AMEX.

**MULTIPLIER:** Refers to the number, typically \$100, used to calculate aggregate strike prices and premiums for options. The multiplier affects profit/loss calculations on options positions.

**NAKED CALL OR PUT:** Refers to a short option position that doesn't have an offsetting stock position. For example, a customer has a naked

call if he sells a call without being long the quantity of stock represented by his short call or a long another call spread against it. He has a naked put if he sells a put without being short the quantity of stock represented by his short put or long another put spread against it. Compare to covered call or put.

**NATIONAL ASSOCIATION OF SECURITIES DEALERS (NASD):** Is an association of brokers and dealers in the over-the-counter (OTC) stock business.

**NATIONAL ASSOCIATION OF SECURITIES DEALERS AUTOMATIC QUOTATION SYSTEM (NASDAQ):** An electronic information network that provides price quotations to brokers and dealers for the more actively traded common stock issues in the OTC market. There are three levels to the NASDAQ. Level I shows highest bid and lowest ask prices in the system for an OTC stock. Level II shows individual OTC stock market maker's quotes for an OTC stock. Level III is used by OTC stock market makers to enter their quotes into the NASDAQ system.

**NET CHANGE:** The change in the price of a stock or option from the closing price of the previous day.

**NET POSITION:** The difference between a customer's open long and open short positions in any one stock or option.

**NEW YORK STOCK EXCHANGE (NYSE):** Founded in 1792, it is the oldest and largest stock exchange in the United States. Options are not traded on the NYSE.

**NOMINAL OWNER:** The role of a brokerage firm when customer securities are held in street name.

**NON-MARGIN SECURITY:** Security that must be paid for in full. Call and put option contracts are examples of this type of security.

**NOT HELD ORDER (NH):** An order that gives the floor broker discretion on time and price in getting the best possible fill for a

customer. When entering a not held order, a customer agrees to not hold the broker responsible if the best price is not obtained.

**NUMBERED ACCOUNT:** This account is titled with something other than the account holder's name (for example-symbols or numbers). To open this type of account with Thinkorswim the customer must sign a form designating ownership of the account.

**ODD LOT:** The purchase or sale of stock in less than the round lot increment of 100 shares.

**OEX:** OEX is the symbol for the Standard & Poor's 100 cash Index. It is a capitalization-weighted index of 100 stocks from a broad range of industries. Cash-settled, American-style options on the OEX are traded at the CBOE.

**OFFER:** Another name for the ask price. The price of a stock or option at which a seller is offering to sell.

**ONE CANCELS OTHER (OCO):** Two orders submitted simultaneously by one customer, where if one order is filled, the other is canceled immediately. A type of order which treats two or more option orders as a package, whereby the execution of any one of the orders causes all the orders to be reduced by the same amount. For example, the investor would enter an OCO order if he/she wished to buy 10 May 60 calls or 10 June 60 calls or any combination of the two which when summed equaled 10 contracts. An OCO order may be either a day order or a GTC order.

**OPEN (O), THE:** The beginning of the trading session. In reference to the O,H,L,C, "O" represents the opening price of the session.

**OPEN EQUITY.** The value of all open positions in stock and options, less the margin requirements of those positions.

**OPEN INTEREST:** The number of outstanding option contracts in a particular class or series. Each opening transaction (as opposed to a closing transaction) has a buyer and a seller, but for the calculation of open interest, only one side of the transaction is counted.

**OPEN (PRICE) ORDER:** An order that is active until it is either executed or canceled.

**OPEN OUTCRY:** A public auction, using verbal bids and offers, for stocks or options on the floor of an exchange.

**OPEN POSITION:** A long or short position in stock or options.

**OPENING PRICE/RANGE:** The range of the first bid and offer prices made or the prices of the first transactions.

**OPENING ROTATION:** Process by which options are systematically priced after the opening of the underlying stock.

**OPENING TRADE/TRANSACTION:** An opening purchase transaction adds long stock or options to a position, and an opening sale transaction adds short stock or options to a position.

**OPTION:** A call or a put, an option is a contract that entitles the buyer to buy (in the case of a call) or sell (in the case of a put) a number of shares of stock at a predetermined price (strike price) on or before a fixed expiration date.

**OPTION CHAIN:** A list of all options on a particular stock.

**OPTION CLASS:** See CLASS OF OPTIONS

**OPTION PRICING MODEL:** Any one of the various models used to value options and calculate the “Greeks”. Models typically use six factors in their calculations: the underlying stock price, the strike price, the time until expiration, dividends, interest rates, and the volatility of the stock. Thinkorswim uses the Black-Scholes model for European-style options, and the Binomial model for American-style options.

**OPTIONS CLEARING CORPORATION, THE (OCC):** The issuer and registered clearing facility of all options contracts traded on the AMEX, CBOE, PCX, and PHLX. It supervises the listing of options and guarantees performance on option contracts.

**OPTIONS DISCLOSURE DOCUMENT:** This document is published by The Options Clearing Corporation (OCC) and must be distributed to all customers intending to open an option account with Thinkorswim. The document itself outlines the risks and rewards of investing in options. The document is also called the OCC Risk Disclosure Document.

**ORDER:** An instruction to purchase or sell stock or options.

**ORDER BOOK OFFICIAL (OBO):** Employees of the exchanges, OBOS manage customers' limit orders on the floor of the exchange.

**ORDER FLOW:** The orders to buy and sell stock or options that brokers send to market makers.

**ORDER ROUTING SYSTEM (ORS):** The system utilized by the Chicago Board Options Exchange (CBOE) to collect, store, route and execute orders for customers of the exchange. The ORS system automatically routes option market and limit orders to the various execution vehicles at the CBOE including the RAES system.

**OTC OPTION:** Options traded in the OTC market. **OTC options** are not listed on or guaranteed an **options** exchange and do not have standardized terms, such as standard strike prices or expiration dates. See fungibility.

**OUT-OF-THE-MONEY (OTM):** A call is out-of-the-money when the price of the underlying stock is lower than the **call's** strike price. A put is out-of-the-money when the price of the underlying stock is higher than the **put's** strike price. **Out-of-the-money** options have zero intrinsic value.

**OUT-TRADE(S):** A situation that results when there is some error on a trade. Differences between the buyer and seller regarding option price, **option** strike price or expiration month, or underlying stock are some of the reasons an out-trade might occur. Other costly errors occur when there was a buy versus a buy or a sell versus a sell.

**OVER-THE-COUNTER (OTC) MARKET:** A securities market made up of dealers who may or may not be members of a securities exchange. In the OTC market, there is no exchange floor, such as the NYSE or CBOE.

**PACIFIC EXCHANGE (PCX):** Located in San Francisco, the PCX is one of four U.S. exchanges that trade equity options.

**PARITY:** A term used to describe an in-the-money option when the option's total premium is equal to its intrinsic value. Such an option moves 1 point for every 1 point move in the underlying stock, and is said to be "worth parity" or "trading for parity".

**PARTIAL FILL:** A limit order that is only partially executed because the total specified number of shares of stock or options could not be bought or sold at the limit price.

**PAYABLE DATE:** Date on which the dividend on a stock is actually paid to shareholders of record. Compare to ex-dividend date and record date.

**PHILADELPHIA STOCK EXCHANGE (PHLX):** Located in Philadelphia, the PHLX is one of four U.S. exchanges that trade equity options.

**PIN RISK:** The risk to a trader who is short an option that, at expiration, the underlying stock price is equal to (or "pinned to") the short option's strike price. If this happens, he will not know whether he will be assigned on his short option. The risk is that the trader doesn't know if he will have no stock position, a short stock position (if he was short a call), or a long stock position (if he was short a put) on the Monday following expiration and thus be subject to an adverse price move in the stock.

**PLUS TICK or UP TICK:** A term used to describe a trade made at a price higher than the preceding trade.

**PLUS TICK RULE:** SEC regulation governing the market price at which a short sale may be made. Meaning, no short sale may be executed

at a price below the price of the last sale. See also down tick or minus tick.

**POINT:** The minimum change in the handle of a stock or option price. For stock or options in the U.S., a point means \$1. If the price of an option goes from \$2.00 to \$7.00, it has risen 5 points.

**POSITION:** Long or short stock or options in an account.

**POSITION LIMIT:** For a single trader, customer, or firm, the maximum number of allowable open option contracts on the same underlying stock. The limits are established by the exchanges.

**POSITION TRADING:** Establishing a position in stocks or options and holding it for an extended period of time. Compare to day trading.

**PREFERRED STOCK:** A class of stock (as distinguished from common stock) with a claim on a company's earnings before dividends may be made on the common stock. Preferred stock usually has priority over common stock if the company is liquidated.

**PREMIUM:** The price of an option.

**PRIME RATE:** The lowest interest rate commercial banks charge their largest and most credit-worthy corporate customers.

**PUT OPTION:** A put option gives the buyer of the put the right, but not the obligation, to sell the underlying stock at the option's strike price. The seller of the put is obligated to take delivery of (buy) the underlying stock at the option's strike price to the buyer of the put when the buyer exercises his right.

**QUOTE:** The bid to buy and the offer to sell a particular stock or option at a given time. If you see a "quote" for an option on the screen "3 ½ - 3 7/8", it means that the bid price is \$3.50 and the ask price is \$3.875. This means that at the time the quote was disseminated, \$3.50 was the highest price any buyer wanted to pay, and \$3.875 was the lowest price any seller would take.

**RALLY:** A rise in the price of a stock or the market as a whole. Compare to reaction.

**RANGE:** The high and low prices of a stock or option recorded during a specified time.

**RATIO SPREAD:** An option position composed of either all calls or all puts, with long options and short options at two different strike prices. The options are all on the same stock and usually of the same expiration, with more options sold than purchased. A ratio spread is the purchase of an option(s) and the sale of a greater number of the same type of options that are out-of-the-money with respect to the one(s) purchased. For example, a 50/60 call 1-by-2 ratio spread is long 1\*50 call and short 2\*60 calls.

**REACTION:** A decline in price of a stock or the market as a whole following a rise. Compare to rally.

**REALIZED GAINS OR LOSSES:** The profit or loss incurred in an account when a closing trade on a stock or option is made and matched with an open position in the same stock or option.

**RECORD DATE (DATE OF RECORD):** The date by which someone must be registered as a shareholder of a company in order to receive a declared dividend. Compare to ex-dividend date and payment date.

**REGISTERED OPTIONS PRINCIPAL:** An employee of a brokerage firm who has passed the NASD Series 4 exam, which provides in-depth knowledge related to options. The registered options principal is an officer or partner in a brokerage firm who approves customer accounts in writing.

**REGISTERED REPRESENTATIVE:** An employee of a brokerage firm who has passed the NASD Series 7 and Series 63 exam.

**REGULATION T (REG T):** The regulation, established by the Federal Reserve Board, governing the amount of credit that brokers and dealers may give to customers to purchase securities. It determines the initial

margin requirements and defines eligible, ineligible, and exempt securities.

**REHYPOTHECATION:** The practice of pledging a customer's securities as collateral for a bank loan. A brokerage firm may rehypothecate up to 140% of the value of their customers' securities to finance margin loans to customers.

**REJECTED ORDER:** An order that is not executed because it is invalid or unacceptable in some way.

**RESTRICTED ACCOUNT:** A margin account in which the equity is less than the REG T initial requirement.

A restricted account with Thinkorswim will be restricted to closing transactions only.

**RETAIL AUTOMATIC EXECUTION SYSTEM (RAES):** The system utilized by the CBOE to execute option market and executable limit orders for retail customers received by the exchange's ORS. Retail option orders executed via the RAES system are filled instantaneously at the prevailing market quote and are confirmed almost immediately to the originating firm.

**REVERSAL (MARKET REVERSAL):** When a stock's direction of price movement stops and heads in the opposite direction.

**REVERSAL (REVERSE CONVERSION):** A position of short stock, long a call, and short a put (with the call and put having the same strike price, expiration date, and underlying stock). The long call and short put acts very much like long stock, thus acting as a hedge to the short stock. So, a reversal has a very small delta. A reversal is a way to exploit mispricings in carrying costs.

**REVERSE SPLIT:** An action taken by a corporation in which the number of outstanding shares is reduced and the price per share increases. For example, if a trader were long 100 shares of stock of a company with a price of \$80, and that company instituted a 1-for-4 reverse split, the trader would see his position become long 25 shares of stock with a price of \$320. The value of the trader's position does not

change (unless the price of the stock subsequently changes) and his proportionate ownership in the company remains the same. Compare to stock split.

**RHO:** An approximation of the change in the price of an option relative to a change in interest rates when all other factors are held constant. This is typically expressed for a one-percent (100 basis point) change in interest rates. For example, if a call has a price of \$4.00 and a rho of 0.2, if interest rates rise 1%, the call would have a price of \$3.8 ( $\$4.00 - (.2 \times 1.00)$ ). Generated by a mathematical model, rho depends on the stock price, strike price, volatility, interest rates, dividends, and time to expiration.

**ROLL, THE:** An option spread position composed of both calls and puts. The options are all on the same stock and strike price, but on two expirations. The roll is long synthetic stock (long call, short put) at one expiration and short synthetic stock (short call, long put) at another expiration. The quantity of long options and the quantity of short options net to zero. For example, short the SEP/DEC 70 roll is long 1 September 70 call, short 1 September 70 put, short 1 December 70 call, and long 1 December 70 put. The roll is usually executed when someone wishes to roll from a hedge in an expiring month to a hedge in a deferred month for added time.

**ROLL, TO:** Adjusting or changing a position by closing out an existing option position and substituting it with an option on the same stock but with a different strike price or expiration date.

**ROUND LOT:** A standard quantity of trading. For example, in U.S. equities, a round lot is 100 shares of stock.

**SCALP:** A quick entry and exit on a position.

**SCALPER/SCALPING:** Someone who enters and exits stock or options positions quickly, with small profits or losses, holding a position only for a short time during a trading session.

**SEAT:** A name for a membership on an exchange.

**SECONDARY MARKET:** Markets in which securities are bought and sold subsequent to their being sold to the public for the first time.

**SECURITIES AND EXCHANGE COMMISSION (SEC):** A government agency established by Congress to help protect investors. The SEC regulates the stock, stock options, and bond markets.

**SECURITIES INVESTOR PROTECTION CORPORATION (SIPC):** This is a nonprofit corporation created by an act of congress to protect clients of a brokerage firms that are forced into bankruptcy. SIPC provides customers of these firms up to \$500,000 coverage for cash and securities held by the firms, however, of that \$500,000 only \$100,000 in cash is covered.

**SECURITY:** A generic term for investment or trading vehicles. Securities can be stock, bonds, or derivative securities such as options or futures.

**SEGREGATION:** The holding of customer-owned securities separate from securities owned by other customers and securities by the brokerage firm.

**SELF REGULATORY ORGANIZATION (SRO):** Organizations accountable to the SEC for the enforcement of federal securities laws and the supervision of securities practices within their assigned fields of jurisdiction. Examples of these organizations are: NASD, NYSE and the CBOE.

**SERIES:** All option contracts of the same class that also have the same exercise price and expiration date.

**SETTLEMENT:** The conclusion of a stock or options trade through the transfer of the security (from the seller) or cash (from the buyer).

**SETTLEMENT DATE:** Date on which a transaction must be settled. Buyers pay for securities with cash and sellers deliver securities.

**SETTLEMENT PRICE:** The closing price of a stock or option used for account statements and to calculate gains and losses in an account.

**SHARES:** Stock.

**SHORT:** As a noun, it refers to people who have sold stock or options without owning them first. As an adjective, it refers to a position of short stock or options. Compare to long.

**SHORT COVERING:** Buying stock or options to close out a short position.

**SHORT HEDGE:** The selling of options as protection against a decrease in value of a long securities position.

**SHORT INTEREST:** The number of shares of stock that have been sold short is known as a stock's short interest.

**SHORT SELLER:** Someone who sells stock or options without owning them first. The short seller looks to profit from buying the stock or options back later at a price lower than where he sold it.

**SHORT SQUEEZE:** When traders who have sold a stock short start to lose profits or incur losses as the stock begins to rise, sometimes dramatically. The short sellers are forced to buy back their short stock positions in order to limit their losses.

**SINGLE ACCOUNT:** An account type in which only one individual has control over the investments and may transact business.

**SKEW:** See volatility skew.

**SLIPPAGE:** The difference between the price someone might expect to get filled at on an order, and the actual, executed price of the order.

**SPECIAL MEMORANDUM ACCOUNT (SMA):** A line of credit in a customer's margin account, it's a limit on the amount of money a customer can borrow against collateral in the account.

**SPECIALIST:** Members of the NYSE, PHLX, and AMEX whose function is to maintain a fair and orderly market by managing the limit

order book and making bids and offers in a particular stock or class of options.

**SPECULATOR:** Someone who buys or sells stocks or options hoping to profit from favorable moves in their price or volatility. Generally, a speculator does not hedge his positions.

**SPIN-OFF:** When a corporation divides its assets into two companies, one the original company and the other a new, independent company. Shares of stock in the new company are issued to stockholders of the original corporation.

**SPLIT:** An action taken by a corporation in which the number of outstanding shares is increased and the price per share decreases. For example, if a trader were long 100 shares of stock of a company with a price of \$120, and that company instituted a 3-for-1 split, the trader would see his position become long 300 shares of stock with a price of \$40. The value of the trader's position does not change (unless the price of the stock subsequently changes) and his proportionate ownership in the company remains the same. Compare to reverse split.

**SPREAD:** 1) a position or order involving two or more different options or stock and options (see leg), or 2) the difference between the bid and offer prices of a stock or option.

**SPREAD ORDER:** A type of order specifying two different option contracts on the same underlying security.

**SPX:** SPX is the symbol for the Standard & Poor's 500 cash index. It is a capitalization-weighted index of 500 stocks from a broad range of industries. Cash-settled, European-style options on the SPX are traded at the CBOE.

**"SPYDERS" (SPDR):** Standard & Poor's Depository Receipts are pooled investments that trade like a stock, and are designed to provide investment results that generally correspond to one of the Standard and Poor's indices.

**STATEMENT:** A summary of a brokerage account's activity and balances.

**STOCK:** Another name for equity, it is a security that represents ownership in a corporation.

**STOCK OPTIONS:** Calls or puts with the right to buy or sell individual stocks.

**STOP LIMIT (PRICE) ORDER:** A type of order that turns into a limit order to buy or sell stock or options when and if a specified price is reached. Stop limit orders to buy stock or options specify prices that are above their current market prices. Stop limit orders to sell stock or options specify prices that are below their current market prices.

**STOP (STOP LOSS) ORDER:** A type of order that turns into a market order to buy or sell stock or options when and if a specified "stop" price is reached. Stop orders to buy stock or options specify prices that are above their current market prices. Stop orders to sell stock or options specify prices that are below their current market prices.

**STRADDLE:** An option position composed of calls and puts, with both calls and puts at the same strike. The options are on the same stock and of the same expiration, and either both long or both short with the quantity of calls equal to the quantity of puts (with the exception of a ratioed straddle). For example, a long 50 straddle is long 1\*50 call and long 1\*50 put. A long straddle requires a large move in the stock price, an increase in implied volatility or both for profitability, while a short straddle performs well when the stock is in during a tight trading range, decreased implied volatility or both.

**STRANGLE:** An option position composed of calls and puts, with both out-of-the-money calls and out-of-the-money puts at two different strikes. The options are on the same stock and of the same expiration, and either both long or both short with the quantity of calls equal to the quantity of puts (with the exception of a ratioed strangle). For example, a short 50/70 strangle is short 1\*50 put and short 1\*70 call. A long strangle requires a large move, an increase in implied volatility or both

for profitability, while a short strangle performs well during a tight trading range, decreased implied volatility or both.

**STREET NAME:** Securities held in the name of a brokerage firm on behalf of a customer. This is required for margin accounts, and facilitates delivery for stock transactions.

**STRIKE PRICE:** The pre-determined price at which underlying stock is purchased (in the case of a call) or sold (in the case of a put) when an option is exercised.

**SYMBOLS:** Every corporation whose stock is traded on the NYSE, AMEX or NASDAQ, and every option traded on the CBOE, AMEX, PHLX, or PCX is given a unique identification symbol of up to five letters. Generally, these symbols abbreviate the corporation's complete name and, in the case of options, their strike price, expiration date, and whether they are calls or puts.

**SYNTHETIC:** Creating a position that emulates another by combining at least two of calls, puts or stock that acts very much like a position of outright stock, calls or puts.

**SYNTHETIC LONG CALL:** An option position composed of long puts and long stock. The quantity of long puts equals the number of round lots of stock. For example, long 5 synthetic 70 calls at can be created by being long 5\*70 puts and long 500 shares of stock.

**SYNTHETIC LONG PUT:** An option position composed of long calls and short stock. The quantity of long calls equals the number of round lots of stock. For example, long 8 synthetic 80 puts at can be created by being long 8\*80 calls and short 800 shares of stock.

**SYNTHETIC LONG STOCK:** An option position composed of long calls and short puts on the same stock, strike price and expiration. The quantity of long options and the quantity of short options nets to zero. For example, long 500 shares of synthetic stock can be created by being long 5\*70 calls and short 5\*70 puts. See combo.

**SYNTHETIC SHORT CALL:** An option position composed of short puts and short stock. The quantity of short puts equals the number of round lots of stock. For example, short 3 synthetic 60 calls at can be created by being short 3\*60 puts and short 300 shares of stock.

**SYNTHETIC SHORT PUT:** An option position composed of short calls and long stock. The quantity of short calls equals the number of round lots of stock. For example, short 4 synthetic 70 calls at can be created by being short 4\*70 calls and long 400 shares of stock.

**SYNTHETIC SHORT STOCK:** An option position composed of short calls and long puts on the same stock, strike price and expiration. The quantity of long puts and the quantity of short calls nets to zero. For example, short 400 shares of synthetic stock can be created by being short 4\*70 calls and long 4\*70 puts. See combo.

**SYSTEMATIC RISK:** The broad macroeconomic factors that affect all companies in a stock market. It is also known as market risk. Theoretically, it's the risk in a portfolio that cannot be reduced through diversification. Compare to unsystematic risk.

**TECHNICAL ANALYSIS:** Calculations that use stock price and volume data to identify patterns helping to predict future stock movements. Some technical analysis tool include moving averages, oscillators, and trendlines.

**TENDER OFFER:** An offer from one company to buy shares of stock of another company from that other company's existing stockholders. Those stockholders are asked to "tender" (surrender) their shares for a specific price (represented by cash, shares in another company, or both), which is usually higher than the current market price of the stock.

**THEORETICAL VALUE:** An estimated price of a call or put derived from a mathematical model, such as the Black-Scholes or binomial models.

**THETA:** An approximation of the decrease in the price of an option over a period of time when all other factors are held constant. Theta is generally expressed on a daily basis. For example, if a call has a price of

\$3.00 and a theta of 0.10, one day later, with all else unchanged, the call would have a price of \$2.90 ( $\$3.00 - (.10 \times 1)$ ). Generated by a mathematical model, theta depends on the stock price, strike price, volatility, interest rates, dividends, and time to expiration.

**TICK:** The smallest possible price increment for a stock or option.

**TICKER:** The telegraphic system which prints or displays last sale prices and volume of securities transactions on exchanges on a moving tape within a minute after each trade. Also known as the "tape".

**TIME AND SALES:** A record of the time, price and volume of each transaction of every stock and option.

**TIME DECAY:** Option price erosion over time. Another name for theta.

**TIME SPREAD:** Another name for calendar spread.

**TIME VALUE:** Another name for extrinsic value.

**TRADING AUTHORIZATION:** Written permission from the owner of an account authorizing another person to enter trades on behalf of the owner. Also called Power of Attorney.

**TRADING FLOOR:** The part of an exchange where the stocks and options are actually bought and sold.

**TRADING HALT:** A temporary suspension of trading in a particular stock due anticipation of a major news announcement or an imbalance of buy and sell orders.

**TRADING PIT:** A particular location on the trading floor of an exchange designated for the trading of a specific stock or options on a specific stock or index.

**TRANSFER AGENT:** Usually a division of a large bank or other financial institution that keeps records of the names of registered shareholders of a particular stock, the shareholders' addresses, the

number of shares owned by each shareholder, and oversees the transfer of stock certificates from one shareholder to another.

**TREASURY STOCK:** Shares of stock issued by a company but later bought back by the company. These shares may be held in the company's treasury indefinitely, used for employee bonus plans, reissued to the public, or retired. Treasury stock is ineligible to vote or receive dividends.

**TREND:** Either an uptrend or a downtrend, successive price movements in the same direction in a security over time

**TRUST:** A legal relationship in which a person or entity (the trustee) acts for the benefit of someone else.

**TYPE:** The classification of an option as either a call or a put.

**UNCHANGED:** When the market is unchanged.

**UNCOVERED CALL OR PUT:** Another term for naked call or put.

**UNDERLYING (STOCK OR SECURITY):** The stock or other security that determines the value of a derivative security and that (with the exception of cash-settled options) would be purchased or sold if an option on that underlying stock or security was exercised. Examples of underlying securities are stocks, bonds, futures and indices.

**UNSYSTEMATIC RISK:** The company-specific microeconomic factors that affect an individual stock. Theoretically, it's the risk in a portfolio that can be reduced through diversification. Compare to systematic risk.

**UP-TICK:** A term used to describe a trade made at a price higher than the preceding trade.

**UPTREND:** Successive upward price movements in a security over time.

**VEGA:** An approximation of the change in the price of an option relative to a change in the volatility of the underlying stock when all other factors are held constant. This is typically expressed for a one-percent change in volatility. For example, if a call has a price of \$2.00 and a vega of .65, if volatility rises 1%, the call would have a price of \$2.65 ( $\$2.00 + (.65 \times 1.00)$ ). Generated by a mathematical model, vega depends on the stock price, strike price, volatility, interest rates, dividends, and time to expiration.

**VERTICAL:** An option position composed of either all calls or all puts, with long options and short options at two different strikes. The options are all on the same stock and of the same expiration, with the quantity of long options and the quantity of short options netting to zero. A long call vertical (bull spread) is created by buying a call and selling a call with a higher strike price. A short call vertical (bear spread) is created by selling a call and buying a call with a higher strike price. A long put vertical (bear spread) is created by buying a put and selling a put with a lower strike price. A short put vertical (bull spread) is created by selling a put and buying a put with a lower strike price. For example, a short 70/80 put vertical is long 1\*70 put and short 1\*80 put.

**VIX (VOLATILITY INDEX):** Created by the CBOE, the VIX is an index of volatility calculated from the implied volatility of the OEX index options.

**VOLATILITY:** Generically, volatility is the size of the changes in the price of the underlying security. In practice, volatility is presented as either historical or implied.

**VOLATILITY SKEW:** Volatility skew, or just “skew”, arises when the implied volatilities of options in one month on one stock are not equal across the different strike prices. For example, there is skew in XYZ April options when the 80 strike has an implied volatility of 45%, the 90 strike has an implied volatility of 47%, and the 100 strike has an implied volatility of 50%. If the implied volatilities of options in one month on one stock ARE equal across the different strike prices, the skew is said to be “flat”. You should be aware of volatility skew because it can dramatically change the risk of your position when the price of the stock begins to move.

**VOLUME:** The total number of shares of stock or option contracts traded on a given day.

**WARRANT:** A security issued by a corporation that gives the holder the right to purchase securities at a specific price within a specified time limit (or sometimes with no time limit). Warrants are sometimes like call options, but the main differences are that warrants typically have much longer lives whereas options tend to expire relatively soon, and that warrants are issued by a company to raise money whereas options are created by the OCC.

**WRITE/WRITER:** An individual who sells an option short.

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## **Legging Options in an Electronic World OR Caught Naked Between Spread Legs**

It was once considered sound advice not to leg into and/or out of an options spread. Most investors still shy away from doing this and put all their orders in as spreads (see last page). It was good advice when orders were physically handled in the pits on the options floors around the country and one had very little control when transacting. Levels of frustration run high when people are waiting for information about impending fills, canceled orders or even a simple quote. The world has changed and immediate gratification has become more attainable. Options can be clicked into and out of in a matter of seconds and therefore the transaction risk has been greatly diminished. There are a couple of nuances of the options market that we advise to keep in mind when legging, especially when 'caught naked between spread legs'.

### **Bottom Line:**

- 1. In an electronic world, one gains control by legging spreads, avoiding floor procedures at all costs.**
- 2. One needs to understand synthetic relationship in order to have other ways in or out of a position.**
- 3. Save money while still motivating market makers to take the other side of your orders.**
- 4. One should not be afraid to use stock to 'stop the bleeding' (or at least change the flow of blood).**

### **Which Side First?**

From a margin and risk standpoint it is prudent to leg the buy side first but if you have the wherewithal, by all means, go ahead and leg from the short side. Having said that, it may be inconsistent with your market opinion and you might want to consider executing the synthetic equivalent position as an alternative, i.e. when bearish buy a put vertical (bear spread) instead of selling a call vertical (also bear spread). When at the same strikes, the synthetic equivalents move at about the same rate and maintain a fairly constant relationship (called the "box"). It's also wise to consider that the out-of-the-money synthetic equivalent options' bid/ask spreads can be considerably narrower reducing the cost of doing business.

### **Hard Side First**

Do the hard side first. One leg of the spread can be considered harder than the other side when there is lower liquidity in one of the components. To help determine the level of liquidity, check the volume and open interest (under information layout in the upper right-hand corner of the thinkorswim platform) and make sure that there is some trading going on in those options. Note the widths of the individual markets in order to indicate what you might be faced with when trying to make subsequent adjustments or liquidating the trade.

For calendar spreads (also known as time spreads) the hard side would almost certainly mean trading the deferred month first and then the closer dated month. The front month moves faster (higher gamma) but the options are usually more liquid. There are those, more experienced 'leggers', who prefer to enter their buys and sells to work at the same

time but that is not recommended for everyone. Either way one may prepare orders and store them in the “Order Queue” ready for sending.

For a Ratio/Back (ShortMore/LongMore) spread, I like to grab the greater quantity side first. It is easier to pull the trigger on the smaller quantity especially if it starts to get away.

### Risk and Money Management

Let’s say that you have Long 10 March 90/95 call spreads (bull spreads), when you are long 10 Mar 90C and short 10 Mar 95C and want to liquidate it (with a bear spread). On the natural markets, the spread is 3.60 (bid) – (at) 4.00 which is 40 cents wide. It’s a pretty good bet that the spread is worth about 3.80 when 3.80 is the current average between bid and offer. The inside or actual market would be something like 3.70 – 3.90 or possibly even 3.75 – 3.85 if the crowd felt that they had to be a bit more competitive with one another or the other exchanges. By the way, the 3.60 bid is derived from 8.60, the bid price of the 90s, minus 5.00, the offer price of the 95s).



The 4.00 offer price is derived from 8.80, the offer price of the 90s, minus 4.80, the bid price of the 95s. Incidentally, one should always consider the corresponding put spread and in this case the Mar 90/95 put spread is 1.05 – 1.35, only 30 cents wide on the naturals and most likely something like 1.15 – 1.25 when the fair value is 1.20. The 1.05 bid is derived from 2.20, the bid price of the 95s, minus 1.15, the offer price of the 90s. The 1.35 offer is derived from 2.35, the offer price of the 95s, minus 1.00, the bid price of the 90s.

Very seldom does one have to “pay up” to “take” the natural offer or “sell down” to “hit” the natural bid. Often traders like to middle the market in hopes that the market will move to their price. The market would almost certainly have to move because there is little incentive for market makers to meet in the middle unless the trade happens to fit their position. It is rare, indeed, that a market maker meets in the middle since the reason they come to work is to buy under-value and sell over-value. **Note:** When a spread is invoked in the thinkorswim trading platform (see last page), the middle or average price between bid and ask (offer) is displayed but is not the price at which one can instantly be filled. The number floats around until the little padlock is clicked and locked (click again to unlock) and again this price represents an estimate of what the theoretical or fair value is on a collective basis, at any given moment in time. A current offer at the middle, i.e. 3.80 would prove fruitless temporarily but could get bought in the event of a market rally enough to motivate a market maker to buy it. The spread happens to have a delta of

about .20 so a 50-cent rally in the stock may increase the spread's value by about 10 cents meaning that it would then be worth 3.90 making the 3.80 a better buy so the offer may be scooped up.

**Back to the trade...**remember, we are through with being bullish, or we are now bearish, or we have enough profit, and now we want out. From a market opinion standpoint it doesn't make sense to leg by buying our short 95 calls back first. It may also be prohibitive from a risk and margin standpoint to sell out our long 90 calls because that would leave us naked short the 95s. What oh what can we do? Buy the 90/95 put spread (some call it the 95/90 put spread) instead. If we get filled, we will be long the 90/95 box. It may be necessary to sell the box later due to the pin risk<sup>1</sup> potentially involved (don't worry, the box can usually be sold just prior to expiration for a nickel or two less than the 5.00 value). It is reasonable to assume that if we bid 2.30 for the 95 puts (just a nickel away from the ask of 2.35), we would get filled then by offering the 90 puts at 1.05 (only a nickel away from the 1.00 bid). The net price of 1.25 for the spread is synthetically equivalent to selling the call spread for 3.75 when the box is worth around 5.00<sup>2</sup>. Not bad.

### **Adjust the Leg Size**

What if you wanted to just get long 10 put spreads, and you intended to buy it at about 1.25. That would be \$1250 of risk. Therefore, when legging you should not risk more than that amount (assume the worst). This means that you buy about 5 contracts at a price of 2.30 on the first leg, get filled and get filled on the other side's sale before going for the next set of fives. Legging 5 at a time instead of legging all 10 at once (\$2300) will end up costing a bit more in commissions on this size, but would not cost any more with a size of 3 spreads or less with thinkorswim's current pricing structure<sup>3</sup>. The immediate accomplishment, along with the fact that you are more assured of getting in or out of the market, will make it well worthwhile. Remember also that the reason you are legging in the first place is to get a fill at possibly a better price. Better prices for your spreads will save more than the extra commissions spent.

**Remember: The biggest problem with legging is stubbornness. Be disciplined and pull the trigger. Don't be greedy. When you mess up, spread off, and move on.**

**Leg with a coach the first time** – (no phone charge). If you want to have a thinkorswim representative coach you while you try this, please call toll free 1 866 839 1100. Once you've done it once you will feel empowered.

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<sup>1</sup> Pin Risk is discussed in *Coulda Woulda Shoulda* starting on page 75.

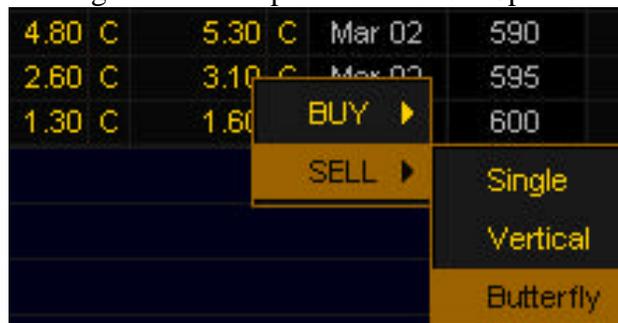
<sup>2</sup> Actually a box is worth the present value between the strikes with some exceptions. See more about boxes in Chapter 8 of *Coulda Woulda Shoulda*, starting on page 169.

<sup>3</sup> Comparison of commissions on 20 spreads vs. legging two 10 lot spreads. The 20 lot is \$70 (40 options X 1.50 plus \$10 ticket charge). Four 10 lot legs will cost \$100 (10 options X 1.50 plus \$10 ticket charge 4 times). Take the \$30 and divide by 20 spreads equals 1.5 cents more for the spread when buying or 1.5 cents less when selling. That is if we bought the spread for 1.25 it translates to 1.265. .015 is much less than the .05, .10 or more saved through legging.

## Entering a Spread Order on the Thinkorswim Trading Platform

For spread orders, it's the only "Right" click (for Macs: "Command" click) in the whole system. From the "TRADE" page, right-click right on the "Bid" or "Offer" of an option in the spread (the spread below is for a butterfly so right-click on the body strike) and a tiny submenu will appear: "Buy" or "Sell". Roll your cursor over one or the other and a bigger menu of spreads will appear. Click one (butterfly in this case) and the trading ticket will show at the bottom of the screen displaying your default quantity(ies). The price displayed will be calculated using the middles of each option involved. Then by clicking any of the "Blue Arrows", you can modify the quantity(ies) and depending on the spread selected, changing one quantity changes them all. Then adjust the price (the price lock will lock when the user changes the price). From this order ticket you may modify; buy vs. sell, months, strikes, exchange routing or call vs. put. (See more in two tutorials at [www.thinkorswim.com](http://www.thinkorswim.com) and clicking "DEMO"). While at the web site change, if you desire, your size defaults under "thinkClients".

Right click on a price to invoke a Spread



Select (roll cursor over) Buy or Sell, then Select (left click) a spread listed.

After the click, look at the trading ticket below:

The default limit price is calculated using each option's average price. That is the middle price between the bid and offer price of each option involved in the spread:

$$.80 \text{ is equal to } 5.05 - (2 * 2.85) + 1.45$$

STRIKE	TYPE	PRICE
590	CALL	.80
595	CALL	
600	CALL	

To help get filled, one should try to motivate the market makers by adjusting your limit price up when buying or down when selling by .05 to .20, or more depending on that particular market's liquidity and competition. Market makers usually want about .05 per option so if you are buying this butterfly, bid between .90 and 1.00. If selling, offer it at a price between .60 and .70. For a quick reference on the value check the corresponding "PUT" butterfly by clicking on the "Blue Arrow" under "TYPE" to see if the spread is of similar value.

Good Trading and Best of Luck – thinkorswim support