

OPTIONS TRADER

MAY 2005
Volume 1, No. 2

- **STEP-BY-STEP**
trade planning
- **THE SLINGSHOT STRANGLE:**
Catching reversals
the options way
- **OPTION BASICS:**
Understanding
the option "Greeks"
- **INTERVIEW:**
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Have a question about something you've seen in *Options Trader*?

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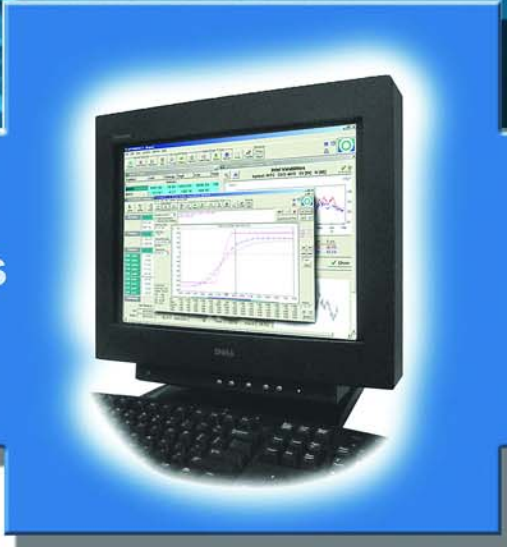
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▼ **Kevin Lund** is a private trader and writer.

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Confirmed Speakers:



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Walter Bressert Futures Online
High Probability Trading in the Forex and Stock Indices with Multiple Intraday Cycles and Time Frames



Larry McMillan

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The Option Strategist and
The Daily Strategist
Options: Should You Speculate or Hedge?



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Trading Strategies

- **“Easing the pain: Option repair strategies”** highlights the flexibility of trading with options. When you’re in a losing trade, you typically have a choice between two unattractive courses of action: Wait for your trade to get stopped out (or stop yourself out prematurely) or risk ruin by canceling your stop and hoping the market goes in your favor. This article shows how adding new legs to an existing option position can change its risk profile into something more in tune with current market conditions.
- **“The slingshot strangle”** describes how to use options to bottom pick markets you think can make big up moves. Although bottom picking is typically an exercise in futility — it’s impossible to know precisely when a market will reverse — options can buy you a larger time window and thus a better chance of catching the turnaround.
- **“Approaching options through volatility”** describes an approach for identifying quality trades based on volatility analysis, among other things. It provides a good model for approaching any trade, using any technique: a step-by-step methodology that addresses the factors that could impact the position.

Trader Interview

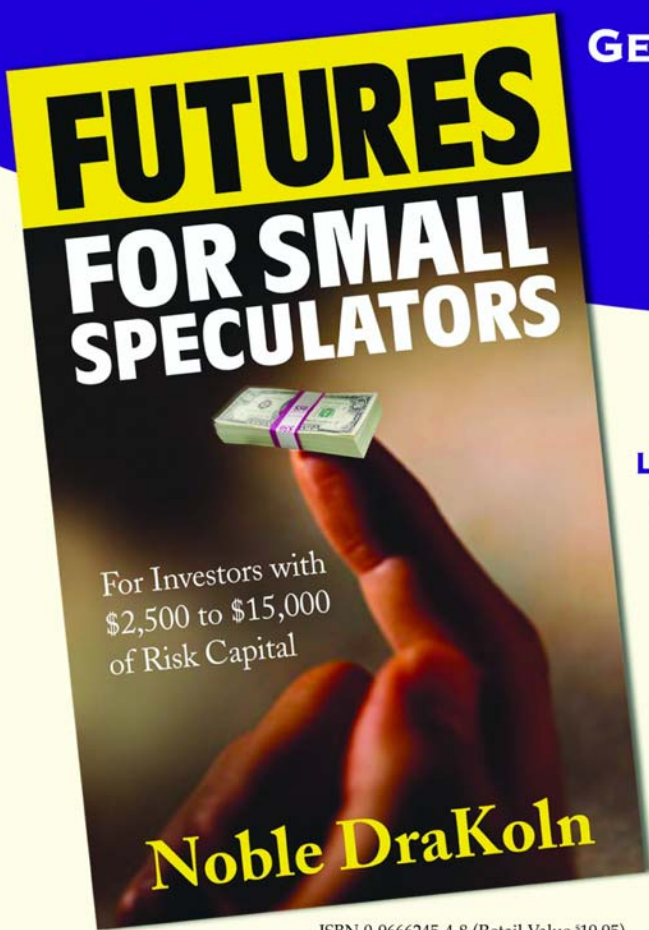
- **Don Fishback** discusses his understanding of options pricing and volatility analysis, and how he uses it to construct high-probability trades. Fishback makes many of the arcane aspects of options more intuitive and shows how a handful of principles can be channeled to create better trades.

Option Basics

- For those just getting their feet wet in options, we have in-depth features on two subjects you’ll want to get a handle on as soon as possible — the option **“Greeks”** (delta, gamma, et al.) and the **put-call ratio**.

Resources, Expiration Calendar, and more

- **Options Resources** takes a look at a Web site that allows you to “paper trade” your option strategies without risking real money.
- As always, the **Options Expiration calendar** will keep you on top of this month’s important trading dates, and you can check out upcoming industry conferences and seminars in the **Events** section. Finally, **Industry News** has a story on the continued strength in options trade volume.



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Although it's not foolproof, paper trading is a good way to prepare for the real thing. It allows you to improve your skills without risking actual money.

However, paper trading has its obstacles and complications. For example, you have to perform a lot of manual "paperwork" and calculations, not to mention the need to be completely accurate — and honest — to obtain realistic results.

Paper trading while someone else keeps track of the results is the better situation. This way, you can concentrate on the process of trading without concerning yourself with accounting worries. And the possibility of "cheating" — fudging on entry/exit prices or not recording a trade because "if I was trading real money, I wouldn't have entered it" — is eliminated.

information for trades that have been entered. The page allows you to click a "close position" button and be transferred to the order page, where a closing order can be triggered with one more click.

Users of e-opts are allowed to trade on margin, and the program has a screen showing exactly how much money is left in each account. Plus, there is a "virtual" commission (\$9.99 plus \$1.75 per contract) assessed for each trade.

There's also a History page, which provides a record of all transactions for a specified time period. This is a helpful tool for traders who track their trades in an effort to identify certain patterns (e.g., all put trades were profitable, all call trades were profitable, etc.).

FIGURE 1 — OPEN ORDERS

Just as a broker would, e-opts.com allows users to keep track of all open orders on a single screen.

Equity Option Orders														
Enter Date	Enter Time	Buy/Sell	Qty	Option	Current Bid	Current Ask	Order Last	Order Price	Order Amount	Order Type	Order Expire	Status	Cancel	Tracking #
2002-06-02	20:39:59.0	Sell	10	SBUX Jul 22.5 P	0.45	0.6	0.5	0.45	450.0	Market	Day	Open	<input type="checkbox"/>	556366
2002-06-02	20:46:09.0	Sell	1	SOV Jun 17.5 P	2.0	2.4	0.0	2.0	200.0	Market	Day	Open	<input type="checkbox"/>	556368
2002-06-02	20:47:17.0	Sell	3	OIL Jun 35.0 P	3.8	4.2	0.0	3.8	1140.0	Market	Day	Open	<input type="checkbox"/>	556369
2002-06-02	20:53:41.0	Buy	1	GE Jul 32.5 C	0.95	1.05	1.0	1.05	105.0	Market	Day	Open	<input type="checkbox"/>	556371

Cancel checked orders

Source: www.e-opts.com

Some brokerages offer paper trading through simulated accounts, but only after you've opened an account with them and deposited thousands of dollars. However, there is a Web site where would-be traders — or even experienced traders looking to try a new system — can focus on trading without spending thousands of dollars.

The Equity Options Paper Trading System (www.e-opts.com) isn't free — there are three different subscription levels depending on how many accounts you want to open and how many orders you plan to place. However, it offers a good way to practice for real-world options trading by allowing users to paper trade stocks.

The data is the least reliable part of e-opts — options chains and stock prices are provided, but they are not automatically updated in real time (you have to refresh the quotes yourself). So you might want to refer to another data another source while using e-opts.

Everything else, though, is on par with a regular brokerage. Users can enter positions such as spreads, straddles, strangles, covered calls, etc., as well as simple calls and puts, through a standard order screen resembling that of any options system.

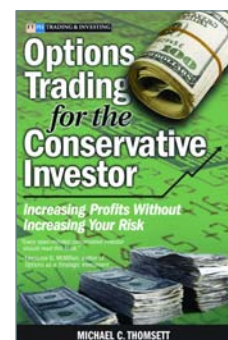
E-opts also has a screen that keeps track of open orders (Figure 1) and another that shows profit/loss and other

Subscription levels run \$9.95, \$14.95, and \$24.95 per month. To some, that may seem like a lot to pay when there's no chance of making the money back when you trade, but it's far better than losing thousands of real dollars because you're not ready to enter the market. ☹

Options Trading for the Conservative Investor: Increasing Profits Without Increasing Your Risk

By Michael C. Thomsett
 Financial Times Prentice Hall, 2005
 Hardback, 288 pages
 \$34.95

Thomsett targets all investors, especially those with no previous options experience. He explains how to trade options in a way that can limit surprises. He presents five underlying assumptions of a conservative investor, outlines basic aspects of options, and then delves into possible strategies and trading examples.





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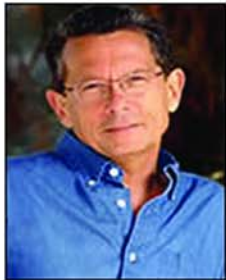
10:05-11:30 Márcio
Ferracini, CMT - Inter
market analysis

11:35-13:00 Felipe
Brandão, MBA -
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14:30-16:00 John
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16:05-17:00 John
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17:05-18:00 Russell
Sands, CTA - Turtle
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Larry Williams, is one of the best-known trading authorities in the world today. He has traded the markets for nearly 40 years, and in the process has pioneered revolutionary trading techniques and indicators that have been used by literally thousands of traders. His breakthrough Williams %R Indicator is now an accepted technical indicator that is incorporated into numerous software charting packages and financial web sites, and is published in financial newspapers internationally. Larry is perhaps most famous for winning the world's most prestigious real-money trading championship.



John Bollinger - CFA, CMT is probably best known for his Bollinger Bands, which have been widely accepted and integrated into most of the analytical software currently in use. His book "Bollinger on Bollinger Bands" was published in 2001 by McGraw Hill. He is the president and founder of Bollinger Capital Management, Inc., an investment management company that provides technically driven money management services.

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09:00-10:00
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10:05-11:30 Alexandre
Póvoa, MBA - Valuation

11:35-13:00 Invited
Analysts - Market tour

14:30-16:00 Larry
Williams, professional
trader - How to succeed
Day trading futures

16:05-17:00 Frank
Tirado, Trading SPDRs
Options

17:05-18:00 Álvaro
Bandeira, economista -
How to build a stock
portfolio

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Another record?

No slowing equity options volume

The six U.S. options exchanges — the International Securities Exchange, the Chicago Board Options Exchange, the American Stock Exchange, the Philadelphia Stock Exchange, the Pacific Exchange, and the Boston Options Exchange — combined to trade almost 1.1 billion equity option contracts in 2004, marking the first time the industry had gone over the 1 billion mark and besting the 2003 volume record by more than 30 percent.

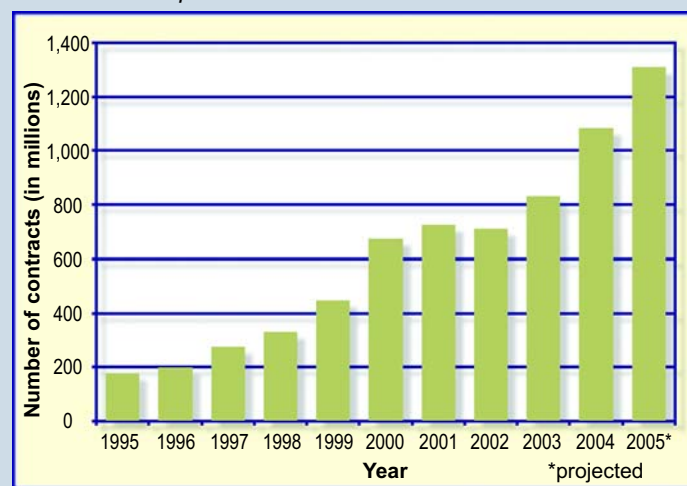
However, if the first quarter of 2005 is any indication, the record will be short-lived. The Options Industry Council (OIC) reported record volume of more than 112 million contracts for March 2005, marking the second time in three months a monthly record had been set (the previous record was set in January 2005). Through the end of March, average daily volume for 2005 was about a million contracts a day better than 2004.

Volume didn't slow down in April, as April 15 volume of more than 11 million contracts set a daily record and gave 2005 four of the top five highest-volume days in OIC history. As of April 15, the month was on pace to trade more than 11.7 million contracts, which would set another record.

"The volume trend is continuing due to several factors," says Gina McFadden, Executive Director of the OIC. "A key component is the ongoing education initiative showing more and more investors how options can be used in any type of market environment."

FIGURE 1 — OPTIONS VOLUME

Overall volume in equity contracts has steadily increased since 1995 and is on pace to set another record in 2005.



Source: Options Industry Council

Options volume has been on the increase for almost a decade. Since 1995, when a then-record 174.4 million contracts were traded, a new volume record has been set every year except one. That came in 2002, when the annual total of just more than 700 million fell short of the more than 722 million that traded in 2001. However, volume picked up again in 2003 when more than 830 million contracts changed hands. ☺

Gaining independence

CBOE gets SEC go-ahead

After denying a request by a Chicago Board Options Exchange member to reconsider its approval, the Securities and Exchange Commission gave the CBOE the go-ahead to purchase exercise rights held by Chicago Board of Trade members.

CBOE member Marshall Spiegel has long opposed the plan and asked the SEC to deny approval on the grounds that not enough of the CBOE membership approved the purchase (about 54 percent voted in favor of it). However, the SEC was not swayed by Spiegel's argument.

"We are gratified by the commission's decision and pleased to have the purchase offer back on track," said William J. Brodsky, CBOE Chairman and CEO. "The exercise right has been embedded in the CBOT membership for 32 years, and the purchase offer represents CBOE's first opportunity to begin to buy back any portion of those rights."

Since 1973, when the CBOE was created as an arm of the CBOT, the exercise rights have given CBOT members the ability to become CBOE members without purchasing a separate membership. Purchasing the rights gives the CBOE a greater deal of independence from the CBOT, which would make it easier to convert to a stockholder-owned company and sell shares to the public, if it chooses to take that route.

Rights will be priced between \$60,000 and \$100,000, and CBOT members willing to sell their rights can offer them at any price in that range. Through a modified Dutch Auction process, the price where the most selling interest lies will be the price paid for all rights, although the CBOE is under no obligation to purchase a minimum number of rights.

The purchasing was expected to begin in late April and last for 30 days. ☺

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EASING THE PAIN:

Option repair strategies

It can be frustrating when the market
doesn't go your way,
but it doesn't have to be painful.
Two option "repair" strategies —
a bear put spread and a butterfly spread —
can reduce an unprofitable
long put's risk and preserve potential profitability.

BY JOHN SUMMA

Most option traders accept that not all trades turn out to be winners, but dealing with sudden, unexpected losses just after entering a position presents a dilemma. You're faced with two choices: Exit the trade at a loss, or implement a "repair strategy" that adjusts to the new market conditions and has the potential to restore the trade's profitability.

It is essential to analyze a number of what-if scenarios (i.e., what could go wrong) before placing any trade — especially if you sell options, because of the risk of unlimited losses. However, repair strategies should be part of your trading plan regardless of whether you're a buyer or seller.

Two options repair trades — a bear put spread and a butterfly spread — can reduce the risk of an unprofitable long put position and increase the probability of a winning trade. "Options strategy briefing" reviews the put strategies discussed here.

The following examples use S&P 500 stock index puts. However, you can adapt these repair strategies to calls if you have a bullish outlook, and they can be applied to individual stocks as well.

Your long put goes south

With the current outlook for stocks somewhat rocky in late March, you might have considered buying S&P 500 puts, especially since they were

trading with low levels of implied volatility — the ideal time to buy them.

Figure 1 shows that by March 29, the S&P 500 had already declined 4.89 percent from its March 7 high of 1225.31 to 1165.36, and some analysts were predicting another 5-percent drop was likely before the end of the year.

December 2005 put options, which expire on Dec. 16, 2005, would provide enough time to catch such a move between April and the end of the year. An out-of-the-money December 1150 put cost \$41 on April 4, or a premium of \$4,100.

Now let's see what you can do if the S&P rises back above 1200 to 1211 just

continued on p. 14



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after buying the December 1150 put. Figure 2 shows the put's potential profit and loss based on the S&P500's price. The solid line is the potential profit at expiration, while the upper blue dashed line shows its profitability on April 4; the other lines represent interim periods.

If instead of falling as expected, the index rallies from 1176 (the close on April 4) to 1211, the long put will suffer an immediate, unrealized loss of about \$1,000. This assumes no time

value decay, which would add to the loss.

However, many things can happen before the put's Dec. 16 expiration date. Your maximum loss (\$4,100) is fixed, so you don't have to worry about unlimited losses in a runaway bull market. Meanwhile, the S&P 500 could eventually head lower so you might want to remain in your long put position and ride out the bounce. But risking the entire premium may still be too much for you.

Options strategy briefing

Spreads, which are positions consisting of both long and short options, can be effective tools for reducing the risk of an existing option trade. They can be organized according to three general characteristics: Linear vs. ratio, credit vs. debit, and vertical vs. calendar.

Linear vs. ratio. A linear spread has an equal number of long and short options; ratio spreads contain more long options than short ones (or vice versa). For example, the bear put and butterfly spreads shown in Figures 3 and 4 are linear, but the bull put spread discussed in "Other repair strategies" has more short puts than long ones, making it a ratio spread.

Credit or debit. When you place a credit spread, you receive more premium for the short options than you pay for the long options. A debit spread has the opposite characteristic — i.e., it costs you money to put on the position.

Vertical vs. horizontal. All options used in vertical spreads have the same expiration month, but different strike prices. Vertical bear spreads have risk profiles that typically resemble the one in Figure 3; a bull spread's risk profile is similar, but it reaches its maximum profit if the underlying moves higher instead of lower.

Once you've bought a put, you can change it into a put butterfly spread similar to Figure 4 by selling two same-month puts at the money and then buying a second same-month put deep in the money. The strike prices of all three "legs" must be equidistant from each other.

In contrast, horizontal (or calendar) spreads consist of options with different expirations. For example, you could sell an S&P 500 index September 1175 call and buy a same-strike December call. Here, you'll profit if the market trades near 1200 at the Sept. 16 expiration date. Calendar spreads can also be diagonal using different strikes across time.

Sources: Lawrence G. McMillan, *McMillan on Options* (John Wiley and Sons, 2004, second edition). Guy Cohen, *The Bible of Options Strategies: The Definitive Guide for Practical Trading Strategies* (Financial Times Prentice Hall, 2005).

FIGURE 1 — S&P 500 DAILY CHART

Buying a December 1150 put for \$4,100 on April 4 could be a good strategy if you thought the S&P 500 may sell off further. If the market suddenly rallies, however, you'd face hefty unrealized losses.



Source: OptionVue 5 Option Analysis Software (www.optionvue.com)

TABLE 1 — LONG PUT BEFORE AND AFTER S&P 500 RALLY

When the S&P 500 rallies nearly 3 percent instead of falling, the long put position loses 24 percent. At this point, you can make adjustments that will reduce the trade's risk and preserve some profit potential.

S&P price	December 1,150 put price
1,176	41.00
1,211	31.00

ing another put with a higher strike price while also selling two December 1150 puts, which can raise the long put's breakeven point and increase its probability of profit without increasing risk.

Again, let's assume the S&P 500 has climbed to 1211 from its April 4 close of 1176. To create a bear put spread out of the long put position, place two orders: Sell two December 1150 puts and buy one December 1200 put.

Because you are long one December 1150 already, selling two 1150 puts converts the original position to a short December put. When this is combined with the new long December 1200 put, you are left with a bear put spread.

Table 1 shows how the original December 1150 put's value drops to \$31 from \$41 as the S&P climbs. Table 2 shows how the original position's cost is reduced when you sell two December 1150 puts at \$31 each and buy a December 1200 put at \$48.

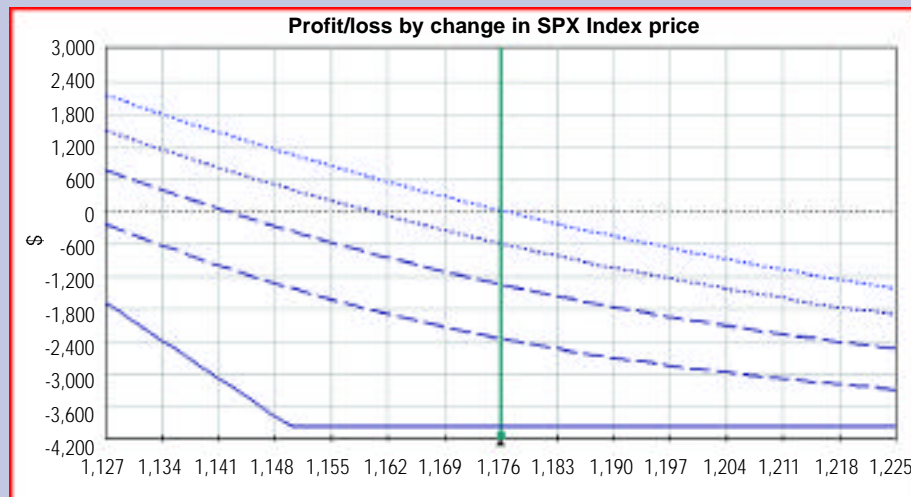
Figure 3 shows the total risk dropped to \$2,700 from \$4,100 (excluding commissions). More importantly, the breakeven point climbs to 1173 from 1109 — a 5.8-percent rise.

At this point, the new position's breakeven point is just 3.15 percent below the S&P's current level of 1211

continued on p. 16

FIGURE 2 — DEALING WITH UNEXPECTED LOSSES

If the S&P rallies to 1211 (from 1176), your long put will drop by \$1,000 (top blue dashed line). However, Figures 3 and 4 show how two clever adjustments can improve this risk profile.



Source: OptionVue 5 Option Analysis Software (www.optionvue.com)

Repairing the damage with a bear put spread

Let's consider the choices for this position. If you simply wait for the downward trend to resume, you could possibly lose the entire investment — which you know you don't want to do. You could take the loss now, which means you're out \$1,000.

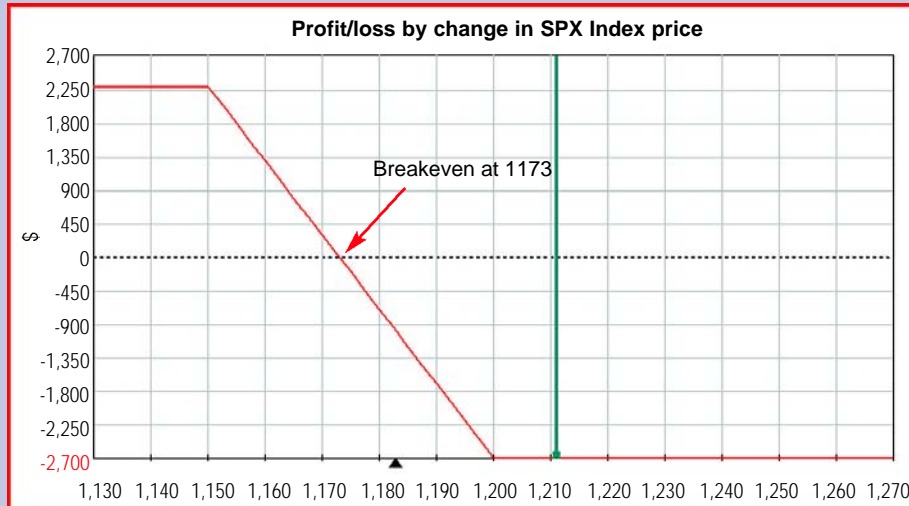
One possible fix is to buy another put option at a higher strike price to raise the breakeven level for this trade. However, this would add additional risk to the trade — if the S&P heads higher, you'll lose even more.

An acceptable "middle-ground" adjustment is to transform the long put into a bear put spread by purchas-



FIGURE 3 — BEAR PUT SPREAD

Transforming a losing long put into a bear put spread by following the steps outlined in Table 2 raises your breakeven point without adding risk, but it limits the original trade's potential profit to \$2,300.



Source: OptionVue 5 Option Analysis Software (www.optionvue.com)

potential benefits — i.e., lifting the breakeven level without adding risk.

Other repair possibilities
Depending on your outlook, there are other ways to adjust the original long put position. Many of these choices will be limited by your risk tolerance. If you believe the market has good upside potential after the market successfully tests support and turns higher, you could convert the original long put into a bull put spread, which is a net-selling strategy with a long put leg.

To create a bull put spread, you would sell another put above the December 1150 put to bring in enough premium to pay for the cost of the initial December long put.

More aggressive traders might roll into a bull put ratio spread by selling two further out-of-the-money puts (e.g., December 1125) below the original December 1150 long put. This method would collect enough premium to easily pay for the original long put, and generate a credit offering a potential profit if the S&P 500 stays above the short strike prices by the Dec. 16 expiration date.

Having the December long put above the short strikes lets the strategy pick up additional profit if the S&P500 closes between 1125 (the short puts' strike price) and 1150 (the original long put's strike price) by expiration. However, the bull put spread has one uncovered put that poses substantial risk if the index heads sharply lower. This would require additional adjustments to reduce risk.

The butterfly spread
If your S&P outlook has changed from bearish to neutral, a more conservative approach is to adjust the position into

continued on p. 18

TABLE 2 — REPAIR #1: BEAR PUT SPREAD

If your long put takes a hit, you can sell two identical puts (at a lower price) and buy a put that is closer to the money; this step reduces your risk and raises your breakeven point.

Transactions	Debits/credits	Cumulative net debits/credits
Original trade:		
Bought 1 December 1,150 Put at \$41	-\$4,100	-\$4,100
Repair trade:		
Sell 2 December 1,150 Puts at \$31	+\$6,200	+\$2,100
Buy 1 December 1,200 Put at \$48	-\$4,800	-\$2,700

— much better than the original long put's breakeven point, which was 8.42 percent lower.

If the S&P 500 rally fails and the index declines to the support level around 1164, the bear put spread will profit below 1173, which is above the starting point of the original trade.

The tradeoff

The bear put spread's drawback is it limits potential profit in exchange for

the higher breakeven level and greater probability of profit. However, it substantially lowers the total risk in the process.

Profit is now limited by the short 1150 put in the new spread trade. Figure 3 shows if the S&P settles at 1150, maximum profit on this position is \$2,300, or \$5,000 (the spread's value) - \$2,700 (the debit for the trade). The cost of the bear put spread, though, appears to be far outweighed by the

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June 2002	July 2002	Aug. 2002	Sept. 2002	Oct. 2002	Dec. 2002
Feb. 2003	May 2003	June 2003	July 2003	Aug. 2003	Sept. 2003
Aug. 2004	Sept. 2004				

Dealing Rates

Currency	Sell	Buy
EUR/USD	1.2350	1.2353



a put butterfly spread, which involves buying an in-the-money December 1250 put and selling two at-the-money December 1200 puts when the S&P 500 passes the 1200 level on the way back up.

Figure 4 shows how these three new legs can reduce risk, which decreases to \$1,400 — the new maximum loss. With this position you'll make money if the S&P stays between 1164 and 1236, with a profit of \$3,600 if the S&P 500 settles right at 1200 at expiration.

In this butterfly spread, maximum profit exists at the strike of the two short calls (December 1200), but big moves up or down may lead to losses. Moving past the breakeven points, maximum losses would be \$1,400 (upside) and \$1,400 (downside).

Because this is a market-neutral strategy, a comprehensive repair strategy for the original December 1150 long put might be to combine adjustments. For example, you could mix a butterfly spread with a bear put spread by having multiple lot positions. If you were long two puts from the start, you could adjust to one butterfly spread and one bear put spread. This would keep some potential profitability intact if the market moves lower, and offer a higher breakeven point.

Taking advantage of flexibility

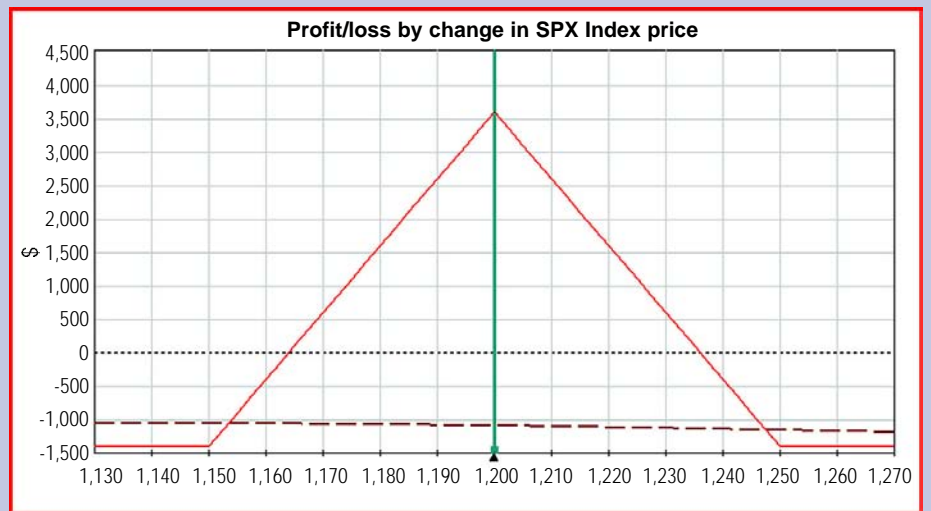
Options offer traders flexibility — outright positions the underlying instrument cannot match. You can manage potential losing trades with repair strategies that may reduce risk and increase the probability of success.

So when you do your homework and place an options trade — but your analysis turns out to be wrong — look into the possibility of adapting to the new market conditions with a repair strategy that can ease the pain. 📞

For information on the author see p. 4.
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FIGURE 4 — BUTTERFLY SPREAD

This butterfly spread caps your risk at \$1,400, and you'll make money if the S&P trades between 1164 and 1236 at expiration (Dec. 16). Here, you'll gain \$3,600 if the S&P settles at 1200.



Source: OptionVue 5 Option Analysis Software (www.optionvue.com)

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The slingshot strangle

Catching market bottoms is a great approach — for traders with crystal balls. If you're like most traders, though, the odds are you'll miss the reversal point while waiting for confirmation of the trend change. A variation of the option strangle trade gives you more time to "fish" for a market turnaround while simultaneously capping your risk level.

BY KEVIN LUND

It's one thing to believe a market reversal is coming, but it's something else predicting exactly when it will occur.

Most of the time, trying to catch tops and bottoms results in getting caught on the wrong side of the market. Unfortunately, although phrases such as "Don't catch a falling knife" are mantras in the trading world, some traders stubbornly continue to try to outsmart the market.

There is a useful technique, however, for bottom-fishers with a little patience and market insight: the "slingshot strangle" (slingshot for short), a reversal strategy using options that can be entered with minimal risk even when extreme pessimism is rampant in the market. It is an often-neglected option strategy that is worth dusting off the next time you find yourself close to a market rebound.

Strangle basics

A traditional strangle is nothing more than the simultaneous purchase of a call option and a put option with the same expiration date but different strike prices. Typically, the call and put are both out-of-the-money (OTM). An example would be to buy a 45 call and a 35 put on a stock trading at 40.

Traders use strangles when they expect an imminent breakout in the underlying issue but are unsure in which direction it will occur. When the breakout occurs, either the call or the

put profits on the move, while the other side loses. If the move is large enough, the winning side will gain much more than the losing side loses.

There is really no hard-and-fast rule about the options being out-of-the-money. Strangles can contain options that are both in the money (ITM), or one in and one out, depending on a trader's degree of bullishness or bearishness. The slingshot strangle consists of a call and a put that are both in the money.

Setting the stage: Panic at market bottoms

Just before a broad market sell-off bottoms out, the selling is largely indiscriminate and driven by panicky investors "throwing in the towel." The selling pressure becomes so extreme the market typically becomes oversold, like a rubber band that has been stretched too far.

At some point a positive catalyst emerges to release this pressure, replacing pessimism with optimism.

What follows is a high-volume rally as traders cover the short positions they established when the market was selling off. The momentum of this reversal is analogous to the catapult action of a slingshot.

During such heavy selling periods — and prior to the appearance of the catalyst — some aggressive traders attempt to pick up stocks at cheap levels. Not surprisingly, they wind up losing large sums of money when, as we've seen many times in the last couple of years, a rebound never occurs.

Making the trade: Finding the right stocks

The slingshot strangle allows you to enter a trade without confirmation of an upside reversal, while limiting risk to only a couple hundred dollars. In addition, you also can profit if the market continues to drop, provided you follow a few simple rules:

1. Look for stocks that have been beaten down severely. Find solid

The greatest advantage the slingshot strangle has over other reversal strategies is that it retains most of its value until a major move occurs in the underlying market. Its drawback is that profits initially come more slowly compared to other short-term strategies.

stocks that have declined as a result of a broader market sell-off, rather than those that have tumbled because of their own specific problems. When the broader market rebounds, usually it's the beaten down "darlings" that are the first to bounce back.

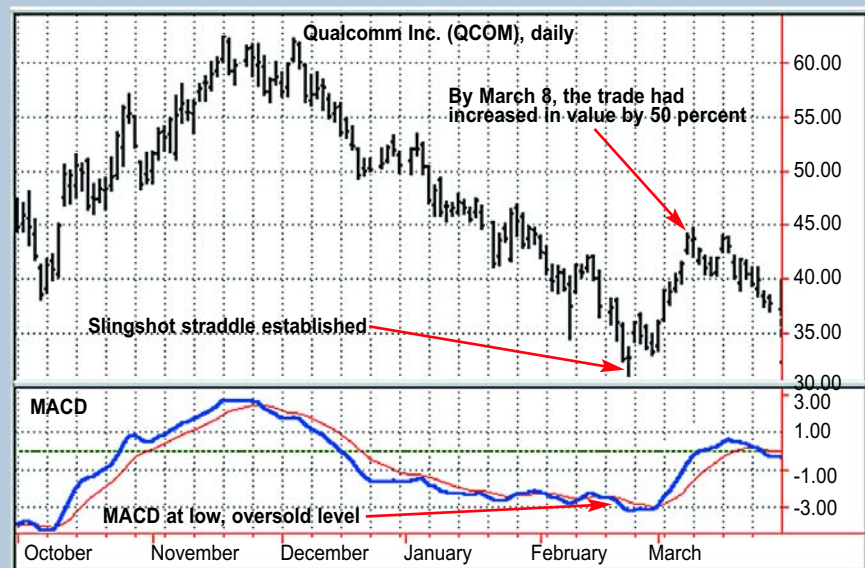
2. Choose stocks that have high historical volatility. In other words, focus on the big movers. A stock with a history of going from 20 to 40 and back to 20 over a six-month period is a much better candidate for a slingshot strangle than a stock that moves only \$5 in either direction over the same time frame.

3. Establish appropriate risk parameters: Trade options that are no more than two strike prices in the money, while keeping the combined time value (also known as extrinsic value) of the put and call under \$2 to \$3, depending on how far out you buy the options. (Tip: Although this rule will generally preclude you from buying options with more than 30 days until expiration, you'll increase your edge if you can buy options that are two or more months out for less than \$3 combined time value. This will allow you to get out of the trade with minimal time decay if the stock fails to make a significant move.)

Because you are simultaneously buying an ITM put and call, the options' intrinsic values are never in jeopardy. If the stock price waffles back and forth a little, one option will gain as much as the other loses (aside from the time decay present in both options). When the upside reversal occurs, the call's profit will be greater than the put's loss: As the stock moves higher, the call's delta remains high while the put's delta shrinks. In other words, as long as the stock continues to rally, the put's delta will eventually reach 0 while the call's (nearly) 1.00 delta will produce dollar-for-dollar gains relative to the stock. If the stock continues to sell off, the same phenomenon would occur because the put would gain on a nearly one-to-one basis with the stock.

FIGURE 1 — SLINGSHOT: CAPTURING A BOUNCE

A relatively oversold market sets up for a slingshot strangle: Buying a March (2002) 25 call and a March 35 put produced a 50-percent return by March 8.



Source: TradeStation Platform by TradeStation Group

Exiting the trade: Taking your time and your profits

To exit slingshot strangle trades, use either a "profit stop" or a "time stop." A profit stop consists of taking profits when the open profit is 25 percent of the cost of the trade. For example, if you entered a slingshot strangle at a cost of \$10, take profits when the position's value is \$12.50. Profits will sometimes exceed this level, so if you choose to let them run, trail your stop — i.e., move your stop up as the trade moves in your direction. Your first stop level (at the 25 percent profit-taking level) should be at the breakeven point; at the 50-percent profit-taking level, move the stop up to the former 25-percent profit-taking level, and so on.

The time stop is designed to hold on to some of the options' time premium in the event the stock goes nowhere. Exit the trade within two weeks if no upside reversal or downside continuation move occurs. This can help salvage some of the time value of the options. If you placed the trade with options that expire in less than two weeks, your time decay will

TABLE 1 — QCOM PROFIT PROGRESS

Day-by-day profit and loss figures for the slingshot strangle trade.

Date	Stock	Quote	Profit
2/21/02	32.50	12.12	-.18
2/22/02	32.70	12.26	-.44
2/25/02	35.91	13.08	.78
2/26/02	34.77	12.44	.14
2/27/02	33.57	11.65	-.66
2/28/02	33.25	11.38	-.92
3/1/02	35.97	12.38	.08
3/4/02	38.87	14.38	2.08
3/5/02	38.86	14.34	2.04
3/6/02	39.95	15.22	2.92
3/7/02	41.44	16.57	4.27
3/8/02	43.80	18.87	6.57

Source: Optionetics.com Platinum

be minimal, and you can exit at any time.

Trade example

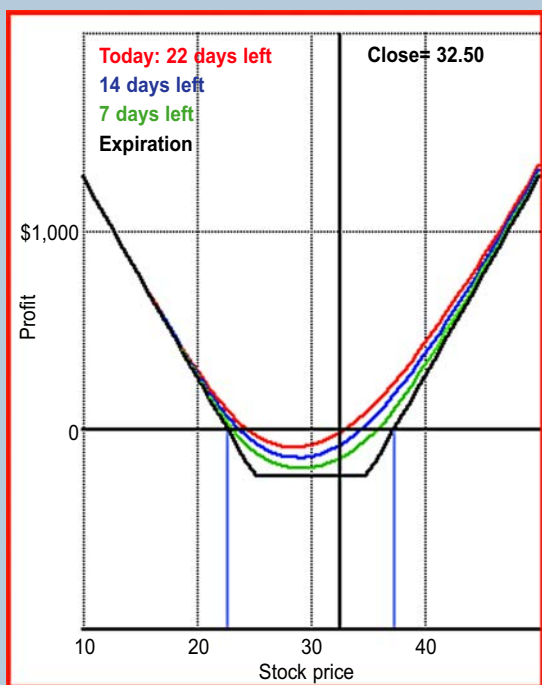
During most of January and February 2002, Qualcomm (QCOM) was in a solid downtrend (see Figure 1, top right). It had traded from approximate-

continued on p. 22



FIGURE 2 — SLINGSHOT PROFILE

This profile shows the straddle's profit at different points in time.



Source: Optionetics.com Platinum

ly 40 in October 2001 to 62 by December 2001, and back to 32.50 on Feb. 21, 2002. Assume that your analysis indicated a reversal was imminent because the current down move had already lasted significantly longer than the previous August-September 2001 sell-off, and various indicators, including the moving average convergence-divergence (MACD) indicator, were suggesting the market was over-sold and due for a bounce.

On the Feb. 21 close, a "March 25/35" slingshot strangle could have been placed by buying a 25 call and a 35 put for 12.30, or \$1,230. With the stock trading around 32.50, the call and the put are in the money 7.50 and 2.50, respectively. The remaining 2.30 is time value, which is

also your total risk on the trade (2.30*100 shares per contract = \$230). Because the call is more in the money than the put, it will have the higher delta of the two options.

The risk curve in Figure 2 shows that just a \$5 up move will produce a nice profit on the position. For a stock like QCOM, which has a history of moving \$20 every few weeks, a \$5 move in either direction is a relatively high-probability proposition.

A continuation of the downtrend also would generate a profit, but because the put's delta is smaller than the call's, it would take a larger move (about \$7 to \$8) to get in the black. Regardless of the direction the stock moves, though, your risk is very minimal while you wait.

The stock staged a sharp upside reversal in early March. As Table 1 shows, by March 7, the trade had profited 25 percent; one day later, it had gained 50 percent. Notice, though, the position incurred a small loss in the first five days of the trade, until the reversal occurred on March 1.

Use the advantages, but remember the risks

The greatest advantage the slingshot strangle may have over other reversal strategies is that it retains most of its value until a major move occurs in the underlying market. This allows you to enter the trade with minimal risk, and little in the way of technical confirmation that a reversal or continuation is underway.

One of the drawbacks of the slingshot strangle is that profits initially come more slowly compared to other short-term strategies. But if you consider how many times you've probably been hurt trying to catch a falling knife, this strategy can help you hold on to a few fingers in turbulent market conditions. 📌

For more information on the author see p. 4. Questions or comments? [Click here](#). A version of this article previously appeared in Active Trader magazine.

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EUR/USD	1.208	1.215	0.6%
EUR/JPY	133.3	133.7	0.3%
USD/JPY	107.1	106.9	-0.2%
AUD/USD	0.701	0.684	-2.5%
USD/CAD	1.201	1.201	-0.2%
GBP/JPY	162.7	166.4	-3.8%

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INDUSTRY NEWS

Interest rate differentials on the move

By CURRENCY TRADER STAFF

After nearly two years of inflation cooling in the U.S., the Fed has begun to raise the global economy. Nine central banks last month that it's time to take away the extraordinary supply of U.S. dollars.

The central bank also shifted to a sideways range and mid-range trading between 0.24 and 0.17 through last September. Accompanying this shift from aggressive dollar selling to sideways consolidation was an important change in U.S. monetary policy. Analysts say this has signaled the start of a new trend in interest rate differentials.

Interest rate differentials refer to the spread between the interest rates being paid on two different currencies. For example, a British account has been earning a much higher rate than a U.S. savings account simply because the U.S. Federal Reserve has aggressively slashed the Fed funds rate to a near-zero level, leaving it percent in late 2003. This made dollars fairly attractive to foreign investors.

Responding to signs of faster economic growth and potential inflation, the Fed has raised its target for the Fed funds rate to 1.75 percent. The Fed is largely expected to continue to tighten policy into 2005 to return the Fed funds rate to a neutral level. The remaining question is how long it will take to do so.

"We are seeing the beginning of a global normalization of interest rates," says Kathleen Stephenson, director of global economic research at Credit Suisse First Boston. "For the last two to three years, we have seen a dramatic

low level of interest rates. Rate levels around the globe had to adjust lower to reflect the global economy. Nine central banks last month that it's time to take away the extraordinary supply of U.S. dollars. This has led to a new trend in interest rate differentials.

The yield curve is steep in the U.S. and the highest interest rate on the pricing of that rate will be 2.25 to 2.50 percent, higher in some two years, says Brian Doherty, director of research at Citicorp.

Analysts will be watching a couple of key indicators in the months ahead, in relation to any Fed tightening scenario, including how long the hike is coming, how much inflation is behind the rate hike and the size of the hike.

"Maybe the dollar will be able to catch a bid on higher interest rates in the U.S.," says Tom Rogerson, New York currency analyst at Thomson Financial. "But for rates to fall, the bid for the dollar in the Fed is raising rates because of economic strength and not because of inflation."

Bank of England
The sterling has lost one of the most attractive interest rate differentials for months. The Bank of England (BoE) has already lifted its base rate by 1/2 basis point in 2004, from 1.75 percent to 2 percent. A central factor in the sterling's near-term performance this year is whether the BoE will continue to raise rates.

If additional tightening is in the pipeline this year, it should continue to underpin strength in the currency, which would play into the dollar outlook and aggressive tightening is well underway, which would help the dollar.

However, some analysts believe the BoE may be raising the rate of the rate cycle, at least for the near-term, which would play into the dollar outlook for interest rate differentials. "I think that's on the hold," says Brian Doherty, U.S. Treasury market

PIPS

GET OUT THE RECORD BOOKS

The Chicago Mercantile Exchange (CME) to start a new trading contract of 177 contracts in the electronic foreign exchange market. The total was a 4 percent increase from the previous year's total. The volume of trading in the CME's FX market was \$27 billion. CME's FX volume represented 60 percent of total FX volume in the U.S. market.

GETTING A PIP ACROSS
The Federal Reserve Bank of New York, recently issued guidelines on how to trade the pip. The guidelines state that traders should be aware of the pip's value and how it changes in different currencies.

CRIME DOESN'T PAY
The U.S. Treasury Department has announced that it will pay more than \$100 million in restitution after a federal judge found that a criminal had stolen \$100 million from the U.S. Treasury.

INTERNATIONAL MARKET SUMMARY

Rank	Country	Currency	FOREX (vs. U.S. DOLLAR)						
			1 month	3 months	6 months	12 month	24 month		
1	Brazilian	Real	0.348	0.018	0.688	1.185	0.358	0.103	N/A
2	Canadian	Dollar	0.699	1.195	1.495	0.175	0.659	0.307	N/A
3	South African	Rand	0.152	0.104	0.295	0.189	0.619	0.141	N/A
4	Indian	Rupee	0.02187	0.066	0.235	-0.195	0.0203	0.0215	N/A
5	Japanese	Yen	0.02429	0.068	0.476	-0.465	0.0092	0.0219	N/A
6	Taiwanese	Dollar	0.2047	0.395	0.785	-1.665	0.0321	0.0080	N/A
7	Russian	Ruble	0.25423	0.035	0.675	-2.465	0.032	0.0383	N/A
8	Canadian	Dollar	0.757	0.005	0.770	0.725	0.783	0.138	N/A
9	Hong Kong	Dollar	0.1802	0.005	0.005	-0.045	0.175	0.175	N/A
10	Swedish	Krona	0.1339	-0.225	0.805	0.755	0.144	0.142	N/A
11	Japanese	Yen	0.00805	-0.675	-1.175	-3.125	0.0087	0.0067	N/A
12	Euro	Dollar	1.2182	-1.545	0.345	-0.795	0.087	1.0025	N/A
13	New Zealand	Dollar	0.662	-1.895	0.695	0.795	0.712	0.565	N/A
14	British	Pound	1.7918	-2.275	-2.635	-2.205	1.941	1.635	N/A
15	Swiss	Franc	0.7862	-2.345	-2.245	-0.185	0.823	0.765	N/A
16	Australian	Dollar	0.6978	-0.995	1.225	-1.725	0.085	0.065	N/A

Rank	Country	Rate	INTEREST RATES			
			3-month	6-month	1-year	2-year
1	U.S.	10-year T-note	11.9	0.98	4.67	-2.41
2	U.S.	10-year T-bill	4.78	0.24	0.25	-0.44
3	Australia	3-year bond	64.81	0.13	0.25	N/A
4	U.S.	10-year T-note	64.80	-0.28	0.25	-0.26
5	Germany	BUND	116.89	0.08	2.83	-0.16



Approaching options through volatility

Option traders understand volatility provides an edge in the market. This method is designed to help you find high-probability options based on their volatility characteristics.

Losses in the options market often occur because traders fail to fully recognize options are a wasting asset within a certain time window. Yes, you pay the premium for unlimited profit potential with limited risk, but the fact is most long option trades are unprofitable because of the time decay factor.

However, by adhering to a few guidelines, you can increase the probability of making profitable trades. First, you need to know the keys to trading options successfully:

- Understand the different option strategies available.
- Know the appropriate strategy for a given set of circumstances.
- Understand the difference between historical volatility and implied volatility.
- Use a strategy to take advantage of disparities in the implied volatilities of different options.
- Know when to buy premium and when to sell premium.
- Buy undervalued options and sell overvalued options.
- Have a strategy to cut losses.
- Have a strategy to take a profit.

We'll illustrate these points in the context of the *vertical spread* trade. Before detailing this approach, let's review the most important component to trading options: implied volatility.

Historical vs. implied volatility

Traders who know at a glance if options are "cheap" or "expensive" on a historical basis have a distinct advantage. The best traders buy premium when volatility is low and sell premium when volatility is high, and estab-

lish spread positions in which they buy undervalued options and sell overvalued options. Using spread strategies gives the trader the best of both worlds.

There are two basic categories of volatility: historical volatility and implied volatility. Historical volatility is the standard deviation of the price fluctuations of the underlying security over a specific period of time, such as 90 days. For example, we can calculate the standard deviation of the Nasdaq 100 Index tracking stock (QQQs) over the last 90 days to determine the 90-day historical volatility.

While this statistic can be of some value for traders desiring the day-to-day risk of holding a position, implied volatility is more important for options traders. The difference between historical and implied volatility is that the former looks at the past while the latter reveals the marketplace's current expectations of future volatility. In options, value is determined by implied volatility.

The price of an option is composed of the following elements: The strike price, the price of the underlying instrument, days to expiration, interest rates and volatility.

If you had to calculate the price of an option, you would have to estimate the volatility variable to use because you don't care what the volatility has been in the past (the historical volatility). You are concerned about what the volatility is going to be in the future (the implied volatility). That will affect the value of the option going forward.

The implied volatility value for a given option is the value that is "backed out" of an option pricing model when you plug in all of the other known variables and is thereby the volatility "implied" by the current market price.

(For a detailed discussion of historical and implied volatility, see "Putting volatility to work," *Active Trader*, April 2001, p. 42.)

Ranking volatility

Relative volatility (RV) ranking is a technique that allows traders to determine whether the current implied volatility for the options of a given stock is high or low on a historical basis.

With RV you can determine the best option trading strategies to employ for a given security. To calculate RV, take all the implied volatility readings for a

BY JAY KAEPEL

given stock's option over the last one to three years and divide them into 10 groups, or deciles. As a simplified example, if you divide 120 observations of implied volatility into 10 equal groups (deciles) of 12, the first 10 observations might range from 9 percent to 15 percent, the second 10 might range from 16 percent to 22 percent, the third might range from 23 percent to 35 percent and so on.

If the current implied volatility is in the highest decile, the RV is 10 (i.e., it is in the highest 10 percent of volatility readings over the period you are reviewing). If the current implied volatility is in the lowest decile, then RV is 1 (i.e., it is in the lowest 10 percent of volatility readings over the period you are reviewing).

With this information, you can objectively determine whether implied option volatility is currently high or low for a given security. This information is used to select the appropriate trading strategy.

Current implied volatility and relative volatility rank

Using relative volatility is based on a simple premise: Relatively low-volatility options result in relatively low option premiums, which present buying opportunities. The opposite is true for high relative volatility.

If RV is low (on a scale of 1 to 10) for a given security, traders should generally focus on buy premium strategies and avoid writing options. Conversely, when RV is high, traders should generally focus on sell premium strategies and avoid buying options.

This simple filtering method is a critical first step in making money in options. The best way to find "good" trades is to first filter out the "bad" trades. Buying premium when volatility is high and selling premium when volatility is low is a low probability approach, as it puts the odds immediately against you. Proper trade selection is the most important factor in trading options profitably in the long run.

Volatility skew

Determining the exact strategy to

employ can be fine-tuned by examining the differences in the implied volatilities of various options for a given stock. Often out-of-the money (OTM) options trade at a much higher or lower implied volatility than at-the-money (ATM) options. These situations create great profit opportunities.

The pattern of the differences between implied volatilities of various options is referred to as the skew, or "smile." OTM options are more "expensive" if the pattern of the skew is upward sloping — in other words, they trade at a higher volatility than ATM options. If the skew is downward sloping, the OTM call options are "cheaper" than ATM options — they trade at a lower volatility. Monitoring the skew provides opportunities for traders to buy "cheap" options and sell "expensive" options.

Next, let's combine this volatility information with market timing.

Market timing

Many traders will purchase options based solely on their outlook for the price of the underlying stock. However, there are potential problems if you buy options just because you are bullish or bearish on a stock:

- No matter how accurate you believe your market timing is, the probability is just 50/50 that the underlying stock will move in the predicted direction between the time an option is purchased and the expiration date.
- A purchased option will lose its entire time premium by expiration and will expire worthless if it is out of the money at expiration.
- If implied option volatility is high at the time the option is purchased, the amount the underlying stock must move in order for the option position to generate a profit increases.
- Traders rarely consider the slip-page from getting filled at a higher price than anticipated and commissions, which constantly eat into a trader's capital, even on profitable trades.

This list of factors lowers the probability of making money on any outright option purchase. It's not that you

should never buy naked calls or puts; you simply need to pick your spots carefully and take advantage of anomalies in implied option volatilities.

Different option strategies are appropriate for overbought and oversold conditions. Traders can use a number of indicators to determine when a given underlying stock is overbought or oversold. Two well-known oscillators are the relative strength index (RSI) and stochastics. These indicators range from 0 to 100, with 50 representing neutral momentum or market movement. The higher the reading, the more overbought the market; the lower the reading, the more oversold the market. (See *Active Trader*, August 2000, p. 82 for detailed information on stochastics, and *Active Trader*, August 2001, p. 88 for detailed information on the RSI.)

Another indicator you can use for options on market indices is the 10-day TRIN (see *Active Trader*, December 2000, p. 88).

The PRO-VEST method

The PRO-VEST option trading method was developed to determine precise criteria in the following key areas: probability, volatility, time to expiration, the skew of implied volatilities and market movement.

"PRO" is for Probability: The PRO-VEST method uses option deltas to measure the probability that a given option will expire "in-the-money." (Delta is the amount an option moves relative to a 1-point move in the underlying market. For example, a call option that rises 50 cents for a 1-point move in the underlying stock has a delta of .50, or 50 percent. A delta of 50 implies there is approximately a 50-percent chance the option will expire in-the-money.)

Always ask the question: Should I buy or sell "in-the-money" or "out-of-the-money" options?

"V" is for Volatility: Look at RV to determine if implied option volatility is high or low on a historical basis. A RV of 1 to 5 suggests options are cheap and premium should be bought. A RV of 6

continued on p. 26



to 10 suggests that options are expensive and premium should be sold.

"E" is for Expiration: How much time is left until expiration of the option (and will the position be helped or hurt by time decay)?

"S" is for Skew: Is there an edge available by spreading (i.e. simultaneously buying cheap options and selling expensive options)? If so, the higher the implied volatility of the option sold vs. the implied volatility of the option bought, the better.

"T" is for Timing: Is the market overbought or oversold? What market conditions should you look for before implementing a given strategy?

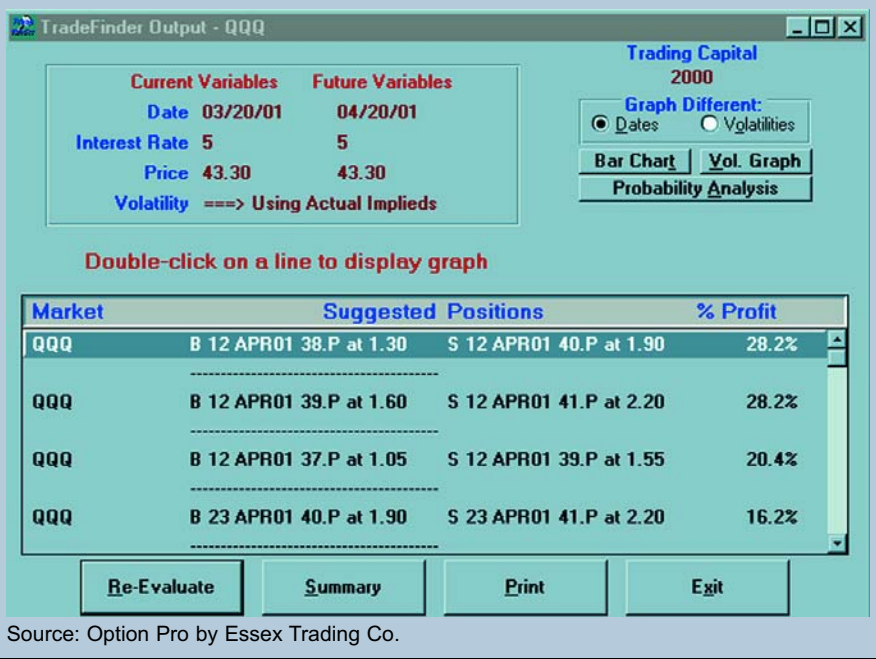
Defining appropriate PRO-VEST factors for options trading strategies creates a structured approach for options trading. We can zero in on trades that generate the highest probability of making money, rather than relying on gut feel or luck. Let's look at one example of the PRO-VEST method to selling a vertical spread.

The short vertical spread

For this position you sell slightly to far out-of-the-money options and buy farther out-of-the-money options. Selling a vertical spread is appropriate if you don't expect the market to move quickly against you. The RV ranking should be greater than 5 — the higher the better.

FIGURE 1 — EXPECTED RETURNS

The TradeFinder software allows you to construct hypothetical option trade scenarios. Here, the most favorable vertical spread would return 28.2 percent.



There are a number of advantages to selling a vertical spread. Time decay works in your favor when you sell OTM options and you can take advantage of volatility disparities between different options. In addition, you can enter a trade with limited risk, rather than the unlimited risk you face when selling options outright. Finally, if RV is extremely high, you can profit from an approach that helps identify overbought and oversold points.

The disadvantage is that profit potential is limited to the difference between the premium received for the option sold and the premium paid for the option bought. In fact, the profit potential is often less than the maximum risk. As a result, you need to monitor this trade closely and cut your loss if the need arises.

The PRO-VEST parameters for a vertical spread are:

Probability: Only sell call options with a delta of 35 (35 percent) or less. Only sell put options with a delta of -35 or more. Sell options at least one strike out-of-the-money. Do not sell in-the-money options.

Volatility: RV is greater than 5 (precluding outright call or put buying).

Expiration: Sell options with less than 45 days until expiration.

Skew: The higher the implied volatility of the option sold vs. the implied volatility of the option bought, the better.

Timing: If the 14-day RSI is greater than 50, sell vertical calls only. If the 14-day RSI is less than 50, sell vertical puts only.

Exiting with a loss

Because short vertical spreads general-

FIGURE 2 — VERTICAL SPREAD PROFILE

The breakeven point for this vertical spread on the QQQs is 39.58.



ly have greater risk than potential reward, you must be prepared to cut losses. Ideally, you should risk no more than the maximum profit potential for the trade to keep your reward-risk ratio at about 1:1. As we will see, this can vary based on market conditions.

Exiting with a profit

When selling a vertical spread you should not hold out for the last dollar. Once your open profit reaches 80 percent or more of your maximum profit potential, you should generally take your profit rather than risk allowing the market to reverse against you prior to expiration.

Trading the QQQs

Let's look at a recent example of selling a vertical spread (a bull put spread) in the QQQs. Our data is from March 20, 2001. Analysis of the QQQs determined the following was the appropriate strategy: Buy 12 April 38 puts @ 1.30, and sell 12 April 40 puts @ 1.90. This trade has a profit potential of \$720 (before commissions).

Figure 1 shows the expected returns over the time to expiration, while Figure 2 shows the breakeven point on the expiration day is approximately 39.58 — below the recent low of 40.56. Based on the historical volatility of the QQQs, the probability of this index trading above 39.58 at option expiration is 76 percent. Thus, at the time this trade is entered, there is a 76-percent probability of profit. Figure 3 shows that the implied volatility is very high, with a relative rank of 10. We enter into this position as a credit spread to sell at a credit of 60 cents or better (Figure 4).

Generally you should risk no more

FIGURE 3 — RELATIVE VOLATILITY

The high relative volatility at the time of the trade suggests these options are expensive and should be sold.



Source: Option Pro by Essex Trading Co.

than your maximum profit potential when selling a vertical spread. However, there may be good reason to give this trade more room to move.

The 10-day TRIN indicator offers some insight into market behavior that we can use to determine the market's course. The 10-day moving average of TRIN pierced the significant 1.50 level for just the eighth time in the last 35 years on March 20, 2001. Looking back at the previous seven signals — which occurred in 1966, 1970, 1974, 1980, 1982, 1987 and 1997 — the S&P 500 index never closed more than 6 percent below the closing price on the day after the signal before beginning a rally. In addition, the previous seven signals were all followed by higher stock prices 12 months later.

As a result, we will exit this trade if the S&P falls more than 6 percent below its close on March 21, 2001 (1,122.14 minus 6 percent yields a stop-loss point of 1,054.81 on the S&P 500 index). This illustrates how the market timing aspect of the PRO-VEST method can influence an individual option trade.

Profits will be taken if the spread narrows to 12 cents or lower. The required capital for a 12-lot trade: \$1,872. The expected profit before commission if the trade is exited with a 12-cent spread: \$576. The after-commission profit will vary depending on how much you pay your broker to execute option trades.

Trade options with an edge

The PRO-VEST method provides a framework for you to evaluate any options strategy, from buying outright calls to selling credit spreads.

The key is to track and determine the relative volatility rankings and select the appropriate strategy to raise the probability of success. Avoid the mistake of paying too high a price for an option solely as a leverage opportunity based on your market indicators.

For more information on the author see p. 4. Questions or comments? [Click here.](#)

A version of this article previously appeared in Active Trader magazine.

FIGURE 4 — ORDER ENTRY

The trade is entered as "credit spread," at a price of .60.

Option Order	Contracts	Class	Month	Strike Price	<input type="radio"/> Call <input checked="" type="radio"/> Put
Open Buy	12	QQQ	April	38	
Option Order	Contracts	Class	Month	Strike Price	<input type="radio"/> Call <input checked="" type="radio"/> Put
Open Sell	12	QQQ	April	40	
<input checked="" type="radio"/> Credit Spread	<input type="radio"/> Market Order	Limit Price	Day/GTC	Instructions	
<input type="radio"/> Debit Spread	<input checked="" type="radio"/> Limit Order	0.60	Day	- None -	<input type="button" value="SUBMIT"/>

Source: www.mrstock.com



Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2	3 FOMC meeting	4	5 LTD: May CME U.S. dollar index options (CME)	6 LTD: May pork belly options (CME); June cocoa options (NYBOT) Employment for April	7
9	10	11	12	13 LTD: May currencies options (CME); May lean hog futures and options (CME); June sugar and coffee options (NYBOT)	14
16 2006 LEAPS conversion LTD: May Goldman Sachs Commodity Index options (CME)	17 PPI for April LTD: June crude oil options (NYMEX)	18 CPI for April LTD: June platinum options (NYMEX)	19	20 LTD: All May equity options; May S&P options (CME); May Nasdaq options (CME); May Dow Jones options (CBOT); June T-bond options (CBOT); June corn, wheat, rice, oats, soybean products, and soybean options (CBOT); June orange juice options (NYBOT)	
23	24	25 LTD: June natural gas, gasoline and heating oil options (NYMEX); June aluminum, copper, silver and gold options (NYMEX)	26 GDP (prelim) for Q1 2005 LTD: May feeder cattle futures and options (CME)	27 LTD: May T-bond options (CBOT); May corn, wheat, rice, oats, soybean, and soybean products options (CBOT)	28
30 Markets closed - Memorial Day	31 2008 LEAPS added	Legend <hr/> CBOT: Chicago Board of Trade GDP: Gross Domestic Product CME: Chicago Mercantile Exchange NYBOT: New York Board of Trade CPI: Consumer Price Index NYMEX: New York Mercantile Exchange FOMC: Federal Open Market Committee PPI: Producer Price Index			

The information on this page is subject to change. Options Trader is not responsible for the accuracy of calendar dates beyond press time.

Event: The 17th Annual Las Vegas Money Show.
Date: May 9-12
Location: Paris & Bally's Resorts; Las Vegas
For more information: Log on to www.intershow.com

Event: Linda Raschke's 9th Annual Trading Seminar
Date: June 10-12
Location: Orlando World Center Marriott Resort & Convention Center
For more information: Contact

Laura Meek at laura@lbrgroup.com or (888) 546-4836.

Event: Expo Trader Brazil International Asset Managers and Traders Conference.
Speakers include John Bollinger, Larry Williams, and Frank Tirado.
Date: June 23-24
Location: Sofitel Hotel, Rio de Janeiro, Brazil
For more information: www.expotrader.com.br/

Event: The Traders Expo Chicago.

Date: July 13-16
Location: Hyatt Regency Chicago
For more information: www.tradersexpo.com or call (800) 970-4355

Event: Fibonacci Trader workshops
Date: July 16-18 (Orlando) and Sept. 11-13 (Denver)
Presenters: Dennis Bolze and Yuri Shramenko.
For more information: Visit www.fibonaccitrader.com.

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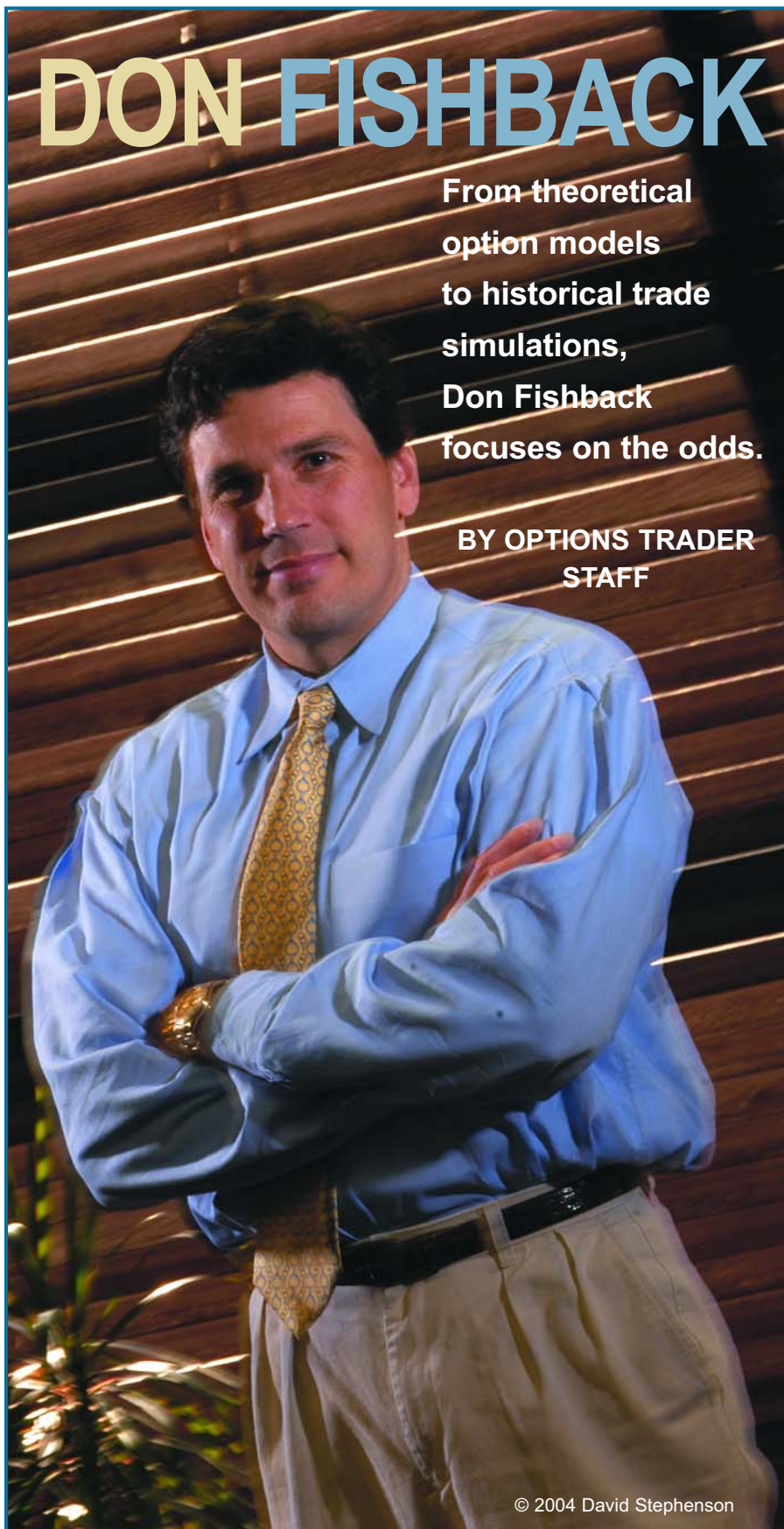
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DON FISHBACK

From theoretical option models to historical trade simulations, Don Fishback focuses on the odds.

BY OPTIONS TRADER STAFF



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Don Fishback is president of Lexington, Ky.-based Fishback Management & Research, Inc., an advisory firm that offers several services and software products for option traders.

Before entering the trading industry, Fishback worked as a land surveyor for a civil engineering firm in the late 70s, working mostly on large industrial and public works projects. But when the hyper-inflation of the late 70s and early 80s submerged the construction industry, he was compelled to look for another line of work.

He landed a position at a commodities brokerage, where he worked for several years. Although it wasn't a dream job, the position did provide a valuable education — albeit in a roundabout way.

"I didn't really enjoy it because it consisted of a lot of sales, and I was more into analysis," Fishback explains. "It was a very small firm, and the research department was basically the commodities section of *The Wall Street Journal*. Every day [the firm] would pass out the commodities section to the brokers and say, "The *Journal* has five guys saying gold is going up, so tell your customers to buy gold. Based on that experience, I developed a real sense of contrary opinion, because I saw what was going on. First, the firm's commissions were outrageously high, which was part of the reason customers were having a hard time making money, but also, the analysts the reporters repeatedly quoted were hardly ever right."

His next stop in the business brought him into the world of option trading. In late 1987 he interviewed with Bernie Schaeffer, head of Schaeffer Investment Research Institute, a firm that focused almost exclusively on option strategies. He joined the company in 1988 and worked there for five years, eventually becoming head of research.

Fishback's ideas about the markets that had begun to form during his brokerage days really took form in his new environment.

"Working with Bernie was a very valuable educational experience," Fishback says. "I had a really contrarian mindset by the time I hooked up with [Schaeffer], and he and I developed an even greater [sense of] contrary opinion."

For whom the bell curve tolls

In 1993 Fishback decided to launch his own career as a trading advisor. A conversation with a broker friend helped initiate a new phase in his research, the one that would dominate his work for years.

"I'd been working with a broker in Chicago by the name of Pete Stolcers, whom I'd met while I was still with Schaeffer Investment Research Institute," he says. "Pete had an idea for a service that involved selling high-probability OEX (*S&P 100 index*) credit spreads that were three strike prices out of the money. The service had a great track record when I was with Schaeffer."

The thing was, although Fishback saw the positive end results of the credit-spread trade, he wasn't exactly sure *why* the strategy worked the way it did. His broker friend helped clue him in.

"Pete said — and I'll never forget these words — 'Don, it has something to do with that bell-curve thing,'" Fishback says, laughing a little.

Fishback promptly began investigating the "bell-curve thing," digging deep into financial journals and his old college math and statistics textbooks. This was the beginning of his journey to rediscovering the ideas that were part of the Black-Scholes option model, particularly the concept of "normal distribution."

"If a distribution of values (*such as prices or price changes over a period of time*) is 'normal,' it takes the shape of a bell curve, and one standard deviation contains approximately two-thirds of all the values in the data set," Fishback explains. "Two standard deviations contains 95 percent of all the numbers in the set. Standard deviation relates directly to probability, which is impor-

tant because, by definition, historical volatility is one standard deviation of an asset's price returns. Quite simply, because of that bell-curve thing, volatility produces a standard deviation, which in turn produces a probability. I had no idea the Black-Scholes model directly implied probability." (For more information on standard deviation, see "Variance and standard deviation," above.)

Fishback says his work essentially amounted to translating the math behind an option-pricing model into more understandable and practicable concepts.

"Basically, I took everything that was in the Black-Scholes model and made it relatively easy to access and decipher," he says. "So, although I originally thought in 1994 I had found the keys to the kingdom, what I really had done was find out about some mathematical formulas that were already there, but were buried [in the model]."

Realizing if he didn't know about the probability implications of Black-Scholes there were probably other people who didn't, Fishback put together a video course explaining the probability and trading implications he had learned. The video became a hot seller and Fishback's new advisory career was well on its way.

Fishback also eventually developed and sold a number of products and services reflecting these ideas, including the ODDS TradeMaster software. His company's main product is www.odds-online.com, an online option analysis software package. Fishback also wrote the book *Options for Beginners* and has produced a number of instructional video series.

However, he notes, early on he ran afoul of the Commodity Futures Trading Commission (CFTC) regarding the marketing of some of his products.

"The advertising [that was done] for those products got me into trouble," he says. "The CFTC did not like it at all."

"There were two issues," Fishback explains. "The performance statistics

for the trading system sold to customers were based on hypothetical back-testing rather than real trades, which the ads did not adequately disclose. I saw the advertising beforehand and did nothing to stop it from being distributed, so I have to take the rap, but I didn't realize you had to use the disclaimer on back-tested results.

"The second thing was the advertising gave the false impression I actually traded the system, and, because of that was one of the great traders that ever lived. I did the analysis, but I didn't actually trade [the system]. But anyway, because of advertising that was done in the mid-90s, [there's information about me] on the CFTC Web site."

Fishback has since settled with the CFTC and moved on.

Fishback spoke with us about the probability concepts he originally learned and how they evolved over the years. He also discussed a new service called Option Mine, which is something of a departure in that it identifies option trades based on a simulated test of actual option price data going back to 1999 — a process that essentially throws theoretical option models out the window and instead reflects past performance.

OT: *What are the trading implications and ideas that came out of the original probability research you did?*

DF: You can use the probability implications in the Black-Scholes model to calculate the probability of profit on an option trade. Let's say you want to buy a straddle (*a position consisting of a call option and a put option with the same strike price and expiration*). You can calculate the breakeven points, calculate the volatility and then ask, "OK, what's the chance this thing will be profitable? 60 percent? 40 percent?"

What I did was reverse the process. Say I want to [find trade opportunities that] win 90 percent of the time. What trades should I take to achieve that probability?

One of the things I found was if you
continued on p. 32



Variance and standard deviation

Variance measures how spread out a group of values are — in other words, how much they vary. Mathematically, variance is the average squared “deviation” (or difference) of each number in the group from the group’s mean value, divided by the number of elements in the group. For example, for the numbers 8, 9 and 10, the mean is 9 and the variance is:

$$\{(8-9)^2 + (9-9)^2 + (10-9)^2\}/3 = (1 + 0 + 1)/3 = .667$$

Now look at the variance of a more widely distributed set of numbers, 2, 9, 16:

$$\{(2-9)^2 + (9-9)^2 + (16-9)^2\}/3 = (49 + 0 + 49)/3 = 32.67$$

The more varied prices, the higher their variance — the more widely distributed they will be. The more varied a market’s price changes from day to day (or week to week, etc.), the more volatile that market is.

A common application of variance in trading is **standard deviation**, which is the square root of variance. The standard deviation of 8, 9, and 10 is: $\sqrt{.667} = .82$; the standard deviation of 2, 9 and 16 is: $\sqrt{32.67} = 5.72$.

sold OEX credit spreads a certain number of strike prices away from the current underlying price, you could achieve that probability. Basically, you could start with the idea of a 90-percent probability trade, plug in the volatility, and the formula would determine the price range the index would trade within with 90-percent accuracy. As a result, you could sell a credit spread outside that price range and the spread automatically has a 90-percent probability of profit. That was the first practical trading application of my research.

OT: *That sounds a little too easy.*

DF: You’re right. You get the probability, but there’s another issue — the profit-loss. We can find a trade that has a certain probability of profit, but that’s all it does.

OT: *Do you mean it doesn’t tell you the potential size of that potential profit or loss?*

DF: Right. The next step is combining probability with risk and reward. Back in 1994, the trading world was risk-reward this and risk-reward that. But if only risk and reward matter, everybody should be buying lottery tickets for a living because that’s the best risk-reward relationship you’re going to get. But that doesn’t work, of course,

because the probability is so awful.

But just as you can’t look at risk and reward in a vacuum, you can’t look at probability in a vacuum. If probability of profit was the most important thing, then we all should be buying T-bills, because that’s as close to 100-percent certainty as you’ll get.

Combining risk and reward with probability gives you the notion of expected return. First, I use the probability formulas to find a trade with a 90-percent probability of profit. Then I have to determine the expected return, or risk and reward, and how to balance it with probability.

I’ll give you a quick little game as an example. Say you have a 90-percent probability of winning, and when you win, you win \$1 and when you lose, you lose \$4. If you play 10 times, you win \$9 and lose \$4 — that leaves you with a profit of \$5. Your expected profit-loss is the profit divided by 10, which gives you 50 cents in this case.

If you have another game with the same 90-percent probability but a \$1 win and a \$20 loss, after playing 10 times you would have won \$9 and lost \$20. You’re \$11 in the hole, which comes out to an expected profit-loss of -\$1.10 — on a game that wins 90 percent of the time.

OT: *So what kind of strategies do these concepts naturally lend themselves to?*

DF: The easy example is, you use volatility to calculate your probability of profit and then you look at the risk and reward, and you can easily evaluate the mathematical expectation of any trade.

OT: *Let’s go over volatility, then, if that’s what’s determining probability of profit.*

DF: In terms of volatility, it doesn’t matter if it’s high or low, as long as it’s one or the other. If it’s low, we do one thing; if it’s high, we do something else.

Volatility does something called revert to the mean, which basically means if it’s high it’s going to drop and if it’s low it’s going to rise. If it’s high and you expect it to drop, the best strategies to use will involve selling options. There are many [kinds of strategies], but the one I prefer is the credit spread.

A credit spread position we recently did was in CV Therapeutics (CVTX). The volatility on CVTX was extremely high and our forecast was for it to drop (see Figure 1). The stock was at \$16.52. We put together a strategy of selling the \$12.50 put and buying the January \$10 put for a \$.50 net credit. We came up with that particular trade because I took the price, \$16, and the one-year historical volatility of the stock and calculated the price levels that had a 90-percent probability of containing price action. The breakeven price for the trade at expiration was \$12 (see Figure 2).

The probability formula gives us the price range for the 90-percent probability threshold, so then we look for the option strikes that coincide with that. We sell the option with the strike price that is close to that [90-percent threshold], and then we simply buy another option of the same kind one strike price further out of the money. In this case, \$12.50 wasn’t exactly 90 percent, but it was pretty close. The position had an 86.8-percent probabili-

ty of making money.

We look at the size of the credit, which is the profit potential, and the margin requirement, which is the maximum risk, and then we compare that probability to the risk and reward, get an expected return, and if that's all OK, we do the trade.

Overall, you can apply the expected-return principles to two types of trading strategies — what I call high-profit strategies and high-probability strategies. The high-probability strategy is essentially what we've just talked about — you look for a stock that has reasonably high volatility.

OT: *Why do you prefer the credit spread in a high-volatility situation?*

DF: As opposed to selling a straddle or strangle, a credit spread is a simple way to sell volatility with limited risk. It has limited reward, but it has limited risk, too.

There are more complicated strategies, but they're inappropriate for individuals because of margin requirements or risk exposure, or, quite frankly, too-high transaction costs — every time you trade you're giving up the bid or the ask.

It's easier for individual traders to be able to put a position on without having to worry about the trade blowing up because the risk is controlled and you haven't given all the potential profit to the market maker and the broker. There are a lot of great strategies out there, but for people to trade off the floor, it's really difficult [to trade them effectively].

OT: *So what kind of trade would be appropriate for a low-volatility situation?*

DF: In a high-volatility situation, if you sell naked options you expose yourself to unlimited risk. So you want to put on a spread to keep the risk from being unlimited.

But if you put on a call spread (the opposite of the previously described put option credit spread) in a low-volatility situation, you cap your profit, which you obviously don't want to do. In a



low-volatility situation you want to buy options, which gives you unlimited profit potential.

Instead of a spread, though, you want to put on a straddle, strangle or backspread. The reverse of a backspread is a ratio spread, a position in which the risk is unlimited, which is why we don't consider it in our high-probability trading.

In our high-profit trading — in low-volatility situations — we're going to trade straddles, strangles and backspreads, but focus mostly on straddles because they're easy to understand and trade and they have low transaction costs.

We look for situations in which volatility is low — for stocks that have gone flat for no fundamental reason and the option prices for which have dropped. In other words, both historical and implied volatility are low. Then we'll look to buy a straddle or strangle with the expectation volatility will return to normal. If it does, we exit the strategy.

We compare two short-term historical volatility numbers to an intermediate historical volatility number: We look at the six- and 10-day historical volatilities compared to the 100-day historical volatility.

OT: *What constitutes high or low volatility in terms of these comparisons?*

DF: It's when both the short-term volatilities are half the 100-day volatility. So, for example, if the 100-day volatility is 20, the six- and 10-day volatilities should both be around 9.

OT: *When is it appropriate to use either historical or implied volatility, or to compare them?*

DF: That's the next thing we do: We compare the implied volatility to the 100-day historical volatility...but some of this has to remain proprietary. That relationship is a key component, [that's all I can say].

Then we put together a list of stocks that meet these criteria and look for the appropriate strategy.

OT: *How do you select time windows, or the length of trades?*

DF: Once you get beyond six months, depending on a stock's expiration cycle, volatility becomes much less predictable. We have a new program called Option Mine that uses every closing bid-ask [price quote] for every option traded since late 1999. It allowed us to go back and, for example, create [simulated] straddles. Today, for instance, we created straddles for Macromedia (MACR) with expirations one month out and two months out.

We created all these straddles for every stock — more than 2,500 — and then we asked, "What are the conditions in terms of implied volatility and historical volatility? We looked at various lengths, and we compared the current implied volatility to its one-year high-low, its two-year high-low, and so on.

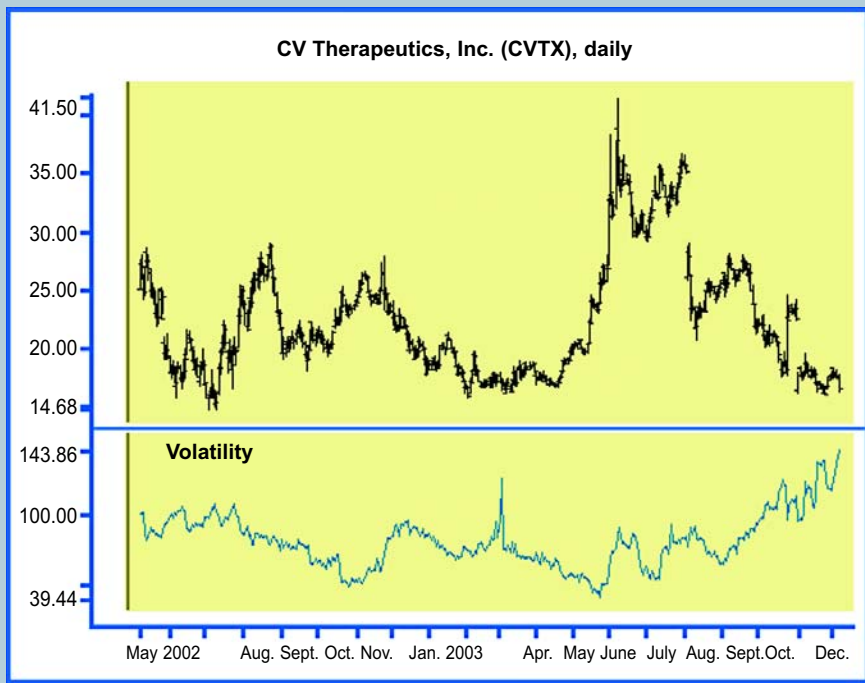
Then we looked at how the current implied volatility compared to the 10-day, 100-day and one-year historical volatilities. Then we searched for all the really profitable straddles to deter-

continued on p. 34



FIGURE 1 — VOLATILITY SETS THE STAGE

The high volatility of CVTX options in late 2003 produced favorable conditions for a credit spread (selling one option and buying a second, more out-of-the-money option), which profits when volatility drops.



Source: ODDS Online (www.oddsonline.com)

mine the conditions — the stats — that would have existed the day you would have put these trades on.

We got all these statistics that are currently available for Macromedia today and we get the Macromedia August straddle. Then we did the same thing for yesterday, then the day before, then the day before that, and so on, all the way back to late 1999.

Why choose August? Getting back to your original question, because there was a consistency of profitability on the three-, four- and five-month options.

We found out some good stuff. I've already told you about the historical volatility parameters that existed — the six- and 10-day historical volatilities both being half the 100-day.

OT: What else did you learn from this process?

DF: Until now we've been forced to make assumptions based on some probability model — not necessarily the Black-Scholes model, but some kind of model. [Option Mine] throws out the bell curve model and determines the actual profitability, or what actually happened when you put on these trades.

I've come full circle. I started out as a broker, did analysis, did the bell-curve thing, realized in 1998 there were flaws in the bell curve, which itself is nothing new. [There are plenty of concepts that] account for flaws in the bell-curve model, such as kurtosis, or "fat tails."

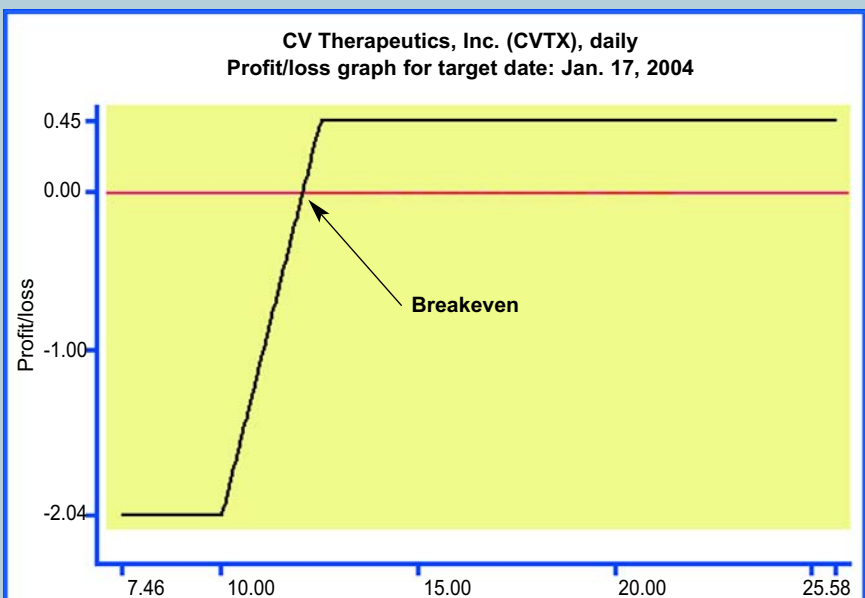
But if you work with these ideas at all, you're still trying to mathematically come up with a solution. Our process works with real option price data to simulate option trades.

OT: After doing the data mining, did you compare the simulations to what a model would have predicted?

DF: Yes. The bottom line is that the bell curve closely enough approximates the distribution of a [stock] index. There are imperfections, but they're not outrageous. However, individual stocks are a different story.

FIGURE 2 — CVTX CREDIT-SPREAD PROFILE

With the stock trading at \$16.52, the credit spread consisted of selling the January \$12.50 put and buying the January \$10 put for a \$.50 credit. The strikes were determined by calculating a range that had a 90-percent probability of containing price action in the stock. The breakeven price for the trade at expiration was \$12.



Source: ODDS Online (www.oddsonline.com)

Let's look at a particular stock — Research in Motion (RIMM). This stock has been around since 1999. We bought the March 45 call and put (a straddle — see Figure 3) in November 2003 because the stock was unusually flat for no fundamental reason (see Figure 4).

Theoretically, using the probabilities of the bell curve, this stock should make a three-standard-deviation move three times over a four-year period, based on 1,150 trading days. Guess what? There have been 16 three standard-deviation moves.

If you buy a straddle, which makes money on a big move, you need to have a move bigger than the option market expects in order for the straddle to profit. If the options are priced with the expectation of a bunch of three-standard-deviation moves, all you'll do is break even. But if a pricing model or the bell curve says you should only expect three of these moves over four years and 16 occur, you can, as a straddle buyer, make money.

OT: So how is that difference between reality and theory explained?

DF: Basically, if you grabbed the top of the bell curve and lifted it up so the curve became taller and narrower, and then flipped up the ends of the curve — that's what the real world is like for most stocks — not all, but most. At the other end of the spectrum, if you looked at an index's bell curve, you would just grab the middle and lift it up a bit.

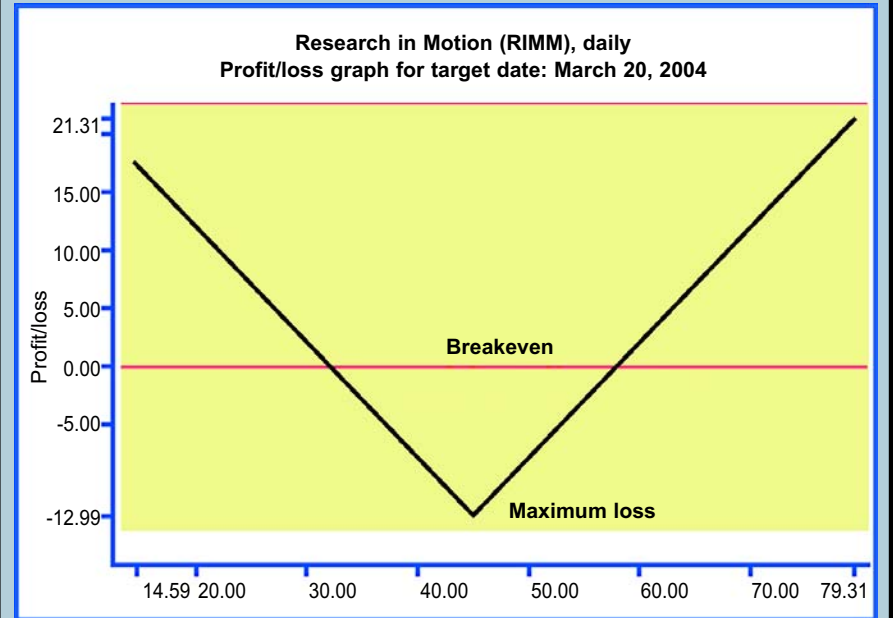
The bottom line is both have many more small moves than the market [models] expect, but individual stocks have those things called fat tails. What I find worthless is trying to mathematically model those. You can get the same [result] by simply looking at what actually happened.

It's made a huge difference in our trading. The bell curve model has flaws, and our goal is to exploit those flaws. ☹

Questions or comments? [Click here.](#)
A version of this article previously appeared in *Active Trader magazine*.

FIGURE 3 — RIMM STRADDLE

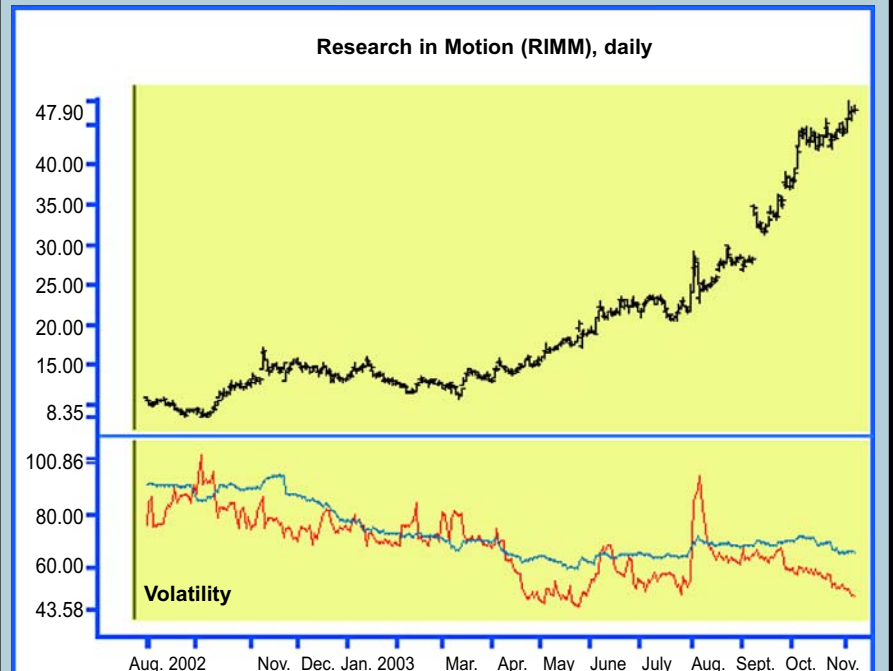
A straddle has limited risk (the costs of the options — a call and a put with the same strike price and expiration) and unlimited profit potential. It requires a surge in volatility to turn a profit.



Source: ODDS Online (www.oddsonline.com)

FIGURE 4 — LOW VOLATILITY SITUATION

In November 2003, both implied (red line, lower panel) and historical (blue line, lower panel) volatility were low in Research in Motion (RIMM), suggesting a possible price move that would make a straddle trade profitable.



Source: ODDS Online (www.oddsonline.com)

The put/call ratio

The put/call ratio compares the volume of put options to the volume of call options traded on the Chicago Board Options Exchange (CBOE). It is used to measure the level of public bullishness or bearishness in the market at a given time.

Put options give the owner the right to sell stock at a certain price for a certain period of time; call options give the owner the right to buy stock at a certain price for a certain time. As a result, public investors and traders tend to buy put options when they think the market will fall, and they buy call options when they expect the market to rise.

The put/call ratio is a contrarian indicator in that it assumes the investing public is usually wrong about what the market will do. That is, when the public is buying an excessive number of puts — which typically happens when the market has already sold off and people are nervous about losing more money — bearish sentiment is at an extreme and the market is likely to establish a bottom. The opposite is true when call volume greatly exceeds put volume.

Put/call ratios can be calculated on individual stocks or any group of stocks. The most common put/call ratio is based on the total CBOE stock and index option volume. Other put/call ratios exist just for stock and S&P 100 index (OEX) options. Because of institutional activity in OEX options, some traders feel the equity put/call ratio most accurately reflects the trading public's sentiment.

Calculation

Regardless of whether index or equity

options are being used, the put/call ratio is calculated by dividing the number of put options traded by the number of call options traded over a specific time period:

$$\text{Put/call ratio} = \frac{\text{put option volume}}{\text{call option volume}}$$

The higher the put/call ratio, the more put options are being traded relative to call options. Figure 1 (below) shows the OEX index with three put/call ratios: (from top to bot-

FIGURE 1 — 10-DAY MOVING AVERAGES OF PUT/CALL RATIOS

The yellow bands highlight two notable differences between the CBOE (total) and equity put/call ratios and the commonly referenced OEX put/call ratio. The put/call ratios shown here have inverted scales.



Source: DecisionPoint.com

tom) the CBOE put/call ratio (total of all index and equity options traded on the CBOE); the equity option put/call ratio (stock options only); and the OEX put/call ratio (S&P 100 options only).

Because the basic put/call data is so volatile, it is commonly smoothed with a moving average (Figure 1 actually shows 10-day moving averages of the different ratios). Also notice the indicators have been inverted in this chart to make them more intuitive. On this chart, high put/call ratios appear as lows on the chart (which makes them look more like oscillator overbought signals, to which they are similar).

Key points

The put/call ratio is typically calculated on a daily basis, but it can be measured on both intraday time frames (see

Online resources

Put/call data on the Web:

The **CBOE** Web site (www.cboe.com) publishes the OEX put/call ratio every day. **Market Tells** (www.astrikos.com) shows intraday updates of the put/call ratio (via Quote.com).

Hamzei Analytics (www.hamzeianalytics.com) is a subscription site that provides various custom put/call ratios, including those on individual stocks.

DecisionPoint software (www.decisionpoint.com) includes put/call ratios on both index and equity options.

Figure 2) and weekly (or longer) time frames as well.

Figure 1 reveals a noticeable difference between the OEX put/call ratio and the CBOE and Equity put/call ratios. For example, in October 2001, the CBOE and equity option ratios both gave exceptionally high (bullish) readings when the market bottomed that month. The OEX put/call ratio did not. Also, the OEX put/call ratio made an extremely high (bullish) reading in September 2000 (which appears as a low point on the inverted chart) while the CBOE and Equity put/call ratios were still at relatively low (bearish) levels, reflecting complacency. The market subsequently sold off.

As with any sentiment indicator, readings should be put into the context of the broader market conditions and not interpreted as automatic buy or sell signals. As Figure 1 suggests, a high put/call ratio does not always indicate a rally, and a low ratio is not always accompanied by a sell-off. It can be used as a tool to assess the mood of the market in a broad sense, but actual price movement must ultimately dictate trading decisions.

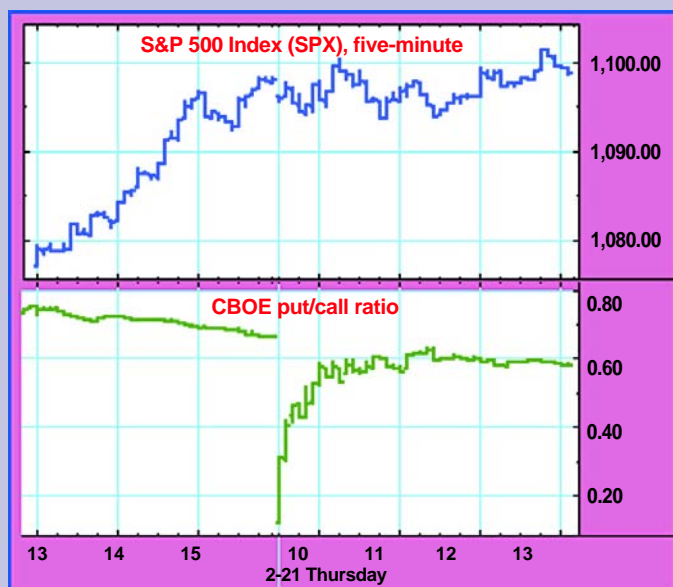
Bottom line

The put/call ratio measures market sentiment by comparing the trading volume of put options to that of call options. It is based on the concept that high levels of put volume (high put/call ratios) reflect extreme bearishness on the part of the investing public, which is considered a contrarian signal and a warning of a potential market bottom. The opposite is true of high call-volume levels (low put/call ratios). 📌

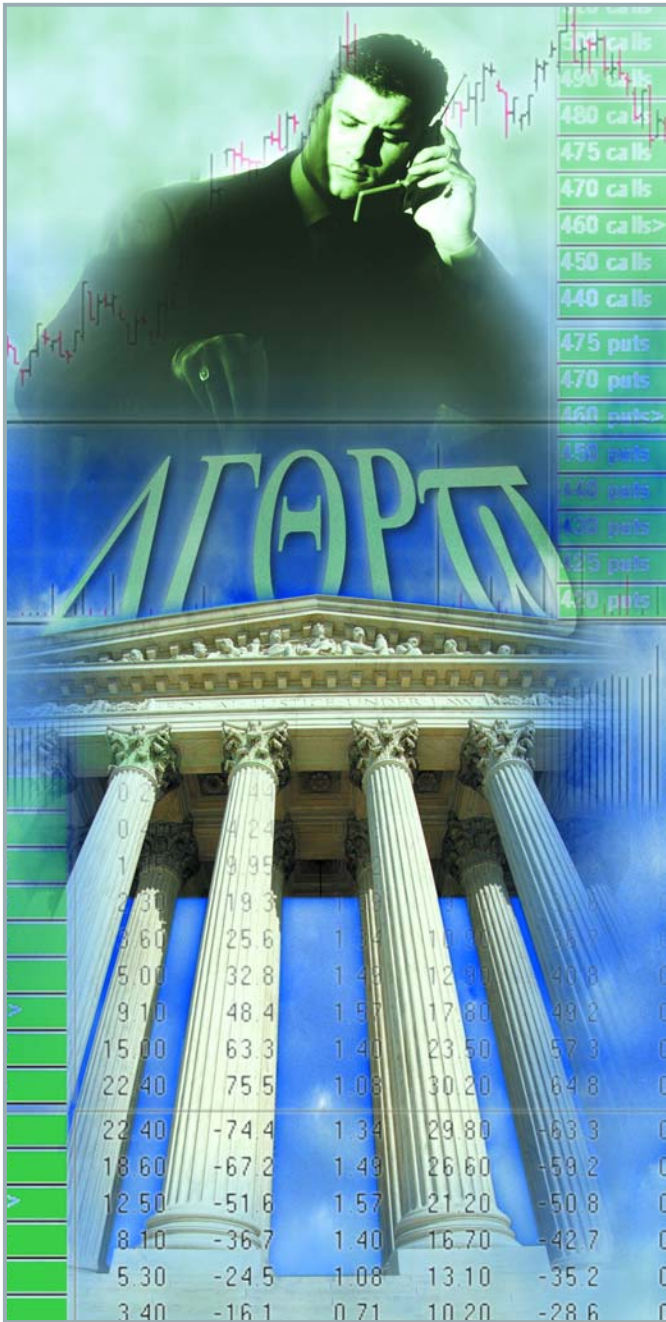
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FIGURE 2 — INTRADAY PUT/CALL RATIO

Put/call ratios are available on intraday data as well as longer time frames.



Source: Quote.com



The option Greeks

Knowing what these calculations represent and how they affect an option's price will give you a better handle on how options behave — as well as a deeper understanding of risk.

BY GUY BOWER

An anyone who has traded options has, at one time or another, wondered why an option responds the way it does to a price move in its underlying market. Sometimes a large rally in a stock will result in only a tiny move in an option; at other times, the underlying market and the option seem to move almost point for point.

The **premium** (price) of an option constantly changes, and every option trader must understand how premium reacts in different scenarios. **Delta** and **gamma** — two of several concepts collectively referred to as option “Greeks” — help explain why option premiums change the way they

do. At first, delta and gamma might seem like marginally important calculations, but they have great relevance in day-to-day trading.

Determining price

Option pricing models (such as Black-Scholes) use several inputs to determine the theoretical value of an option. The most relevant for this discussion are the price of the underlying instrument, **strike** (or **exercise**) **price**, time to expiration, **volatility**, and option type (**put** or **call**). The other elements that determine an option's value are the prevailing interest rate, dividend and whether the option has

American-style or **European-style** exercise. If you're unfamiliar with these terms, refer to the "Options glossary."

Given the number of factors affecting the price of an option, it might appear to be difficult, if not impossible, to determine an option's theoretical value at a given time. For example, suppose a stock rallies 1 percent. How would you expect a call option on this stock to respond to this price move in the underlying asset? This is where delta and gamma come in.

Delta

Delta measures how much an option's price will move relative to a move in the underlying asset price. It is arguably the most important Greek.

Delta can be expressed as a percentage, but it is most commonly displayed in decimal form, ranging from 0 and 1.0. A delta of 1.0 (100 percent) means the option price changes one point for every one-point move in the underlying market. A delta of .5 (50 percent) means the price of the option will move a half-point for every one-point move in the underlying market.

An extremely **out-of-the-money** (OTM) call option has a delta close to zero. The further out of the money you go, the closer option delta gets to zero. Likewise, the more an option is **in the money** (ITM), the closer its delta will be to 1.0. Deep in-the-money call options tend to behave just like the underlying asset (an important characteristic if you're thinking about hedging a position). As a general rule, an **at-the-money** (ATM) option will have a delta of close to 0.5.

Also, the longer an option has until expiration, the higher its delta will be. For example, an OTM 6.50 call (a call option with a strike price of 6.50) with 20 days remaining until expiration will have a slightly higher delta than a 6.50 call with two days left. The difference might not be big for ATM options, but it can be significant for options that are more in or out of the money.

Put option deltas are the same as those of call options except that put deltas are negative (ranging from 0 to -1.0) because put values move in the opposite direction of the underlying market. As the underlying asset price increases, the price of a put option decreases by a multiple of its delta.

An ATM put will have a delta close to -0.5, just as an ATM call's delta will be close to +0.5. Similarly, OTM put deltas approach zero the more out of the money they are, while ITM deltas for put options will approach -1.0.

As the underlying instrument moves up or down, the delta for each option changes. If the underlying market experiences a prolonged free fall, an ATM put option with a delta of -0.5 will become in the money and its delta will move closer to zero. Figure 1 shows the deltas of different S&P 100 index (OEX) options.

Multiple-option delta

You can calculate the delta of a combined options position

by summing the deltas of the individual options.

For example, two long calls with 40 percent (.4) delta each gives the overall position a delta of 80 percent; a long call with a delta of 20 percent and a long put with a delta of -20 percent gives the overall position a delta of zero.

Shorting an option reverses the sign of the delta — i.e., a short call position has a negative delta and a short put position has a positive delta.

The terms "delta positive" and "delta negative" simply refer to the positive or negative delta of the option or option position. "Delta neutral" means an options' position has a delta of zero.

Table 1 shows some of the more popular options strategies and their deltas. A number of more complex strategies, such as ratio spreads, have been left out because their deltas depend on the strike prices of the component options, which can vary.

Gamma

The more in the money a call option is, the greater its delta becomes and the more it will react to changes in the underlying market. This is where gamma enters the discussion.

Gamma is the rate of change of the delta — that is, how much an option's delta changes relative to a change in the underlying instrument. The delta of an option with a gamma of 2 percent will increase by .02 for every one-unit move in the underlying market (i.e., if its delta is .4, a one-point move in the underlying will increase the delta to .42). Like delta, the gamma of a multi-option position is calculated by adding gammas of each component option.

Gamma is highest for at-the-money options (where deltas are close to ± 50 percent). As delta approaches zero or ± 1.0 , gamma decreases — i.e., delta tends not to change very much as options get deeper in or out of the money. Figure 2 shows the deltas and gammas of different S&P 100 index (OEX) options.

The risk of ignoring the Greeks

If an option position's delta never changed, risk would be easy to quantify. However, if a market starts to trend, delta can change dramatically.

In the mid-80s, a U.S.-based clearing firm collapsed after several traders with accounts there put on positions for which the gamma wound up working against them. These traders built up large short positions in OTM gold call options. Because the options' strike prices were far away from the price of gold, their deltas were small. As a result, small ticks up or down in the gold market did not significantly affect the option prices.

However, the gold market soon staged a strong rally and the small deltas suddenly increased. As the market rose, not only did the price of the options increase; the rate at which they changed — the gamma — jumped as well.

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FIGURE 1 — S&P 100 INDEX (OEX) OPTIONS AND DELTAS

Delta represents how much an option's price changes relative to a change in its underlying asset. Each option has its own delta, which means every option will react uniquely to a change in the underlying market. The deltas here are expressed as percentages. Notice that the more out of the money an option is (the higher-strike calls and lower-strike puts), the lower the delta, and vice versa.

Strike price	November		December	
	Premium	Delta	Premium	Delta
510 calls	0.20	1.44	2.35	12.4
500 calls	0.40	4.24	3.90	18.0
490 calls	1.05	9.95	6.00	24.8
480 calls	2.30	19.30	9.10	32.6
475 calls	3.60	25.60	10.90	36.7
470 calls	5.00	32.80	12.90	40.8
460 calls	9.10	48.40	17.80	49.2
450 calls	15.00	63.30	23.50	57.3
440 calls	22.40	75.50	30.20	64.8
475 puts	22.40	-74.4	29.80	-63.3
470 puts	18.60	-67.2	26.60	-59.2
460 puts	12.50	-51.6	21.20	-50.8
450 puts	8.10	-36.7	16.70	-42.7
440 puts	5.30	-24.5	13.10	-35.2
430 puts	3.40	-16.1	10.20	-28.6
425 puts	2.65	-13.0	9.10	-25.6
420 puts	2.10	-10.5	7.90	-22.9

Source: OptionVue5

The deltas got larger, and so did the losses. A few of the traders were unable to meet margin payments, and the firm collapsed. That is gamma at work.

This example shows the importance of understanding what a market is capable of before you put on a position. Depending on circumstances, it may be worthwhile to consider "insurance": Instead of selling naked call options (selling call options without owning the underlying instrument), you could create a "credit spread" by buying a second call with a strike price even further out of the money.

For example, if you sell call options for 50 cents each, it might be possible to look one or two strike prices higher and buy an equal number of calls for 10 cents each. Your net income will drop from 50 cents to 40 cents, but not only will your margin be reduced, so will your losses if the market begins to rally. You must always be prepared for the worst-case scenario — even if it means giving up potential profit.

Delta and gamma in perspective

Understanding delta and gamma means understanding the risk of market movement. While some professional options traders may not be able to tell you their positions' exact deltas and gammas, rest assured they understand how price movement in the underlying market affects their trades.

Perhaps the best way to think about delta and gamma is not as measurements, but as concepts. Consider the delta of an option position, and determine how changes in the underlying market — both large and small — will affect your delta and your profitability. A changing delta simply means a changing risk profile.

As an options trader, you must constantly re-evaluate your risk and make sure it is in line with your trading objectives. Do not be afraid to exit a position because the market has moved in such a way that your delta and gamma have moved against you.

Time decay: Theta

Now let's look at how changes in other factors — primarily

TABLE 1 — OPTION POSITION DELTAS

Summing the deltas of the component options in a multiple-option trade will give you the total position's delta. Here, the "delta biases" of several popular option strategies are shown.

Position	Description	Delta
Long call	Long call	Positive
Long put	Long put	Negative
Long straddle or long strangle	Long call and long put	Neutral
Short straddle or short strangle	Short call and short put	Neutral
Bull call spread	Buy call; sell further out-of-the-money call	Positive
Bear put spread	Buy put; sell further out-of-the-money put	Negative
Short calendar spread (call options)	Sell short-term call; Buy long-term call	Slightly positive
Short calendar spread (put options)	Sell short-term put; buy long-term put	Slightly negative

ly, time and volatility — affect an option. Apart from being interesting information for any option trader, it is essential for understanding an option position's risk. Many option traders design strategies with the sole purpose of taking advantage of time decay.

Someone who buys an option for the first time can find him or herself in the distressing position of losing money despite having correctly forecasted when and which direction a market would move. The reason? The trader had a poor feeling for time (not timing).

Options are referred to as “wasting assets” because they lose value over time, independent of any other factors. *Theta* measures the effect of time on an option's price.

Let's look at the gold futures market, which was trading just below \$320 in early December 2002. If you consider paying \$9.50 for a 320 gold call option, you might say the \$9.50 premium represents the chance the market will go higher and the option will become in the money.

The option, however, has a finite life. As each day passes, the odds that the underlying market price will reach the strike price and move above it decrease. Therefore, the value of the option will decrease as well. Even if gold futures remain at precisely \$320, the value of the option will diminish as time passes. This characteristic is called time decay, the rate of which (usually expressed in points per day) is *theta*.

The time decay curve

The rate of time decay as each day passes does not stay the same. Assuming all other factors in an option's price remain constant (including the underlying price), the rate at which an option will lose value increases as expiration approaches, as shown in Figure 3.

Rather than delve into a theoretical explanation for this behavior, let's approach it from a commonsense perspective. In the gold call option example, the underlying futures are trading at \$319. In early December the Feb. 320 call, which had 70 days until expiration, was trading at \$9.50.

Now consider what might happen as time passes. Assuming all other factors remain the same, would you still

buy the option tomorrow for \$9.50? What about next week? What about in a month? Will it still be worth \$9.50 with, say, one day to expiration? Table 2 shows how the rate of time decay increases as time passes.

Thinking of an option's price as the odds the option will finish in the money helps explain the time-decay process. The reason the 70-day option costs more than the 10-day option is because the longer life of the first option means it has a greater chance of becoming in the money before it expires.

Consider what happens when one day passes. The 70-day option now has 69 days remaining, which means it has lost

FIGURE 2 — DELTA AND GAMMA

S&P 100 index (OEX) options are shown with both their delta and gamma measurements. Gamma represents how much an option's delta changes relative to a change in the underlying asset. In essence, gamma is the delta of the delta. Gamma is highest for at-the-money options — in this case, the options with strike prices of 460.

Strike price	November			December		
	Premium	Delta	Gamma	Premium	Delta	Gamma
510 calls	0.20	1.44	0.16	2.35	12.4	0.47
500 calls	0.40	4.24	0.38	3.90	18.0	0.61
490 calls	1.05	9.95	0.72	6.00	24.8	0.72
480 calls	2.30	19.30	1.09	9.10	32.6	0.80
475 calls	3.60	25.60	1.34	10.90	36.7	0.83
470 calls	5.00	32.80	1.49	12.90	40.8	0.84
460 calls	9.10	48.40	1.57	17.80	49.2	0.84
450 calls	15.00	63.30	1.40	23.50	57.3	0.81
440 calls	22.40	75.50	1.08	30.20	64.8	0.74
475 puts	22.40	-74.4	1.34	29.80	-63.3	0.83
470 puts	18.60	-67.2	1.49	26.60	-59.2	0.84
460 puts	12.50	-51.6	1.57	21.20	-50.8	0.84
450 puts	8.10	-36.7	1.40	16.70	-42.7	0.81
440 puts	5.30	-24.5	1.08	13.10	-35.2	0.74
430 puts	3.40	-16.1	0.71	10.20	-28.6	0.65
425 puts	2.65	-13.0	0.59	9.10	-25.6	0.61
420 puts	2.10	-10.5	0.48	7.90	-22.9	0.56

Source: OptionVue5

1.4 percent of its life span. The 10-day option now has nine days remaining; it has lost 10 percent of its time. It is only logical that the option with the shorter life loses more of its value from one day to the next, because it has lost more of its life.

If all other factors remain constant, a short-term option will always lose its value at a faster rate than a longer-term

continued on p. 42



option. As a general rule of thumb, an option will lose one-third of its time value in the first half of its life and the remaining two-thirds over the rest of its life. Like delta and gamma, the theta for a multiple-option position is calculated by adding the option's individual thetas.

When to place strategies to take advantage of time

Option strategies that take advantage of time decay are those with a net short position — for example, short call, short put, short straddles and strangles and, in some cases, calendar spreads and ratio spreads. Another way of looking at this is short options have positive thetas and long options have negative thetas. So, to construct a strategy that benefits from time decay, the total theta must be positive.

Because time decay increases the closer an option gets to expiration, trading shorter-term options means you will be exposed to a higher rate of time decay (theta). This works to your advantage as an option seller and against you as an option buyer. Therefore, when trading a net short option strategy, the shorter the time period, the better. Conversely, when trading a net long option strategy, it is best to avoid options that are in the last third of their life spans.

Experienced option sellers have a keen understanding of the underlying market and will only sell options so far out of the money there is little chance the strike price will be reached in the life of the trade.

Volatility and vega

Vega (also known as *kappa*) measures the change in option value for a one-percent change in volatility.

Increasing volatility inflates option premium while decreasing volatility lowers option premium. Vega is greatest for at-the-money options, which means a volatility change impacts at-the-money options more than it does in-the-money or out-of-the-money options. Vega also is greater for longer-dated options (those with a longer time to expiration). The vega of a multiple-option position is the sum of the vegas of the individual options.

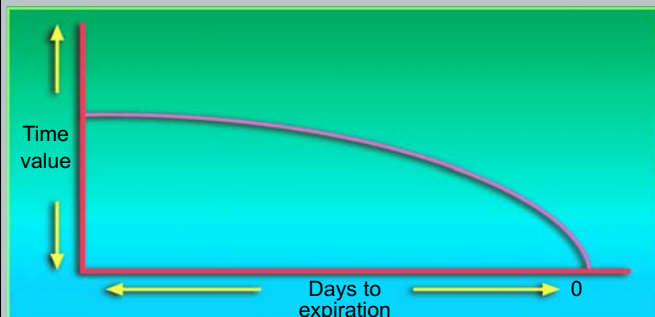
Interest rates and rho

Rho measures the sensitivity of an option to interest rate changes. The interest rate component of an option's price reflects the cost of money (the *cost of carry*) over an option's lifetime, but it is generally not considered a significant component of option pricing, especially for short-term traders. In fact, most traders pay little attention to rho.

The rho for options on leveraged instruments is zero, because they have a marginal cost of carry. Stock call options have a positive rho and puts have a negative rho. A positive rho means an increase in interest rates has a positive impact on the option's price. A negative rho has a negative impact.

FIGURE 3 — TIME DECAY CURVE

Options lose time value at an accelerated rate as expiration approaches. Time decay works to the advantage of short option positions and against long positions.



Source: *Options: A Complete Guide for Investors and Traders*, 2nd edition by Guy Bower

TABLE 2 — TIME IS MONEY

The rate of time decay, theta, is shown here over a span of 70 days. Note the proportionally greater losses in the last two weeks of the option's life.

Time until expiration	Option value	Change in value
70 days	\$9.50	
60 days	\$8.80	-7%
50 days	\$8.00	-9%
40 days	\$7.10	-11%
30 days	\$6.00	-15%
20 days	\$4.90	-18%
10 days	\$3.30	-33%
0 days	\$0.00	-100%

Do the Greeks really matter?

Should you calculate your delta, gamma, theta, vega and rho for all your positions all the time?

In a practical sense, it's not necessary to actually calculate them, because option software will do it for you. However, you should be aware of these measures and be able to interpret them, especially for positions that consist of more than one option.

Remember, all the Greek measurements have a single purpose: to help you understand how the profit and loss of an option position will react to a change in a certain market variable. As such, they are indispensable risk management tools. 📌

For more information on the author see p. 4.

Questions or comments? [Click here](#).

A version of this article previously appeared in *Active Trader magazine*.



Options glossary

Call option: An option that gives the owner the right, but not the obligation, to buy a stock (or futures contract) at a fixed price.

Put option: An option that gives the owner the right, but not the obligation, to sell a stock (or futures contract) at a fixed price.

At the money (ATM): An option whose strike price is identical (or very close) to the current underlying stock (or futures) price.

In the money (ITM): A call option with a strike price below the price of the underlying instrument or a put option with a strike price above the underlying instrument's price.

Out of the money (OTM): A call option with a strike price above the price of the underlying instrument or a put option with a strike price below the underlying instrument's price.

Deep (e.g., deep in-the-money option or deep out-of-the-money option): Call options with strike price that are very far above the current price of the underlying asset and put options with strike prices that are very far below the current price of the underlying asset.

Exercise: To exchange an option for the underlying instrument.

American style: An option that can be exercised at any time until expiration.

European style: An option that can only be exercised at expiration, not before.

Expiration: The last day on which an option can be exercised and exchanged for the underlying instrument (usually the last trading day or one day after).

Intrinsic value: The difference between the strike price of an in-the-money option and the underlying asset price. A call option with a strike price of 22 has 2 points of intrinsic value if the underlying market is trading at 24.

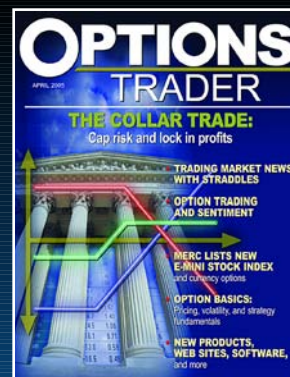
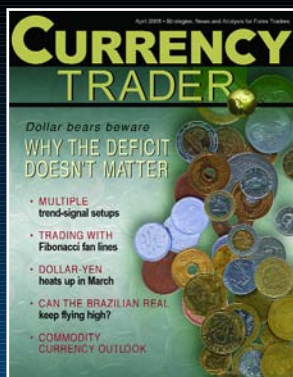
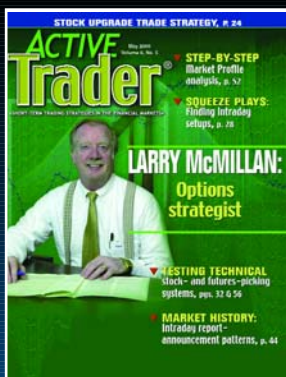
Premium: The price of an option.

Strike ("exercise") price: The price at which an underlying stock is exchanged upon exercise of an option.

Time value: The amount of an option's value that is a function of the time remaining until expiration. As expiration approaches, time value decreases at an accelerated rate, a phenomenon known as "time decay."

Volatility: The level of price movement in a market. Historical ("statistical") volatility measures the price fluctuations (usually calculated as the standard deviation of closing prices) over a certain time period — e.g., the past 20 days. Implied volatility is the current market estimate of future volatility as reflected in the level of option premiums. The higher the implied volatility, the higher the option premium.

Three good tools for targeting customers . . .



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