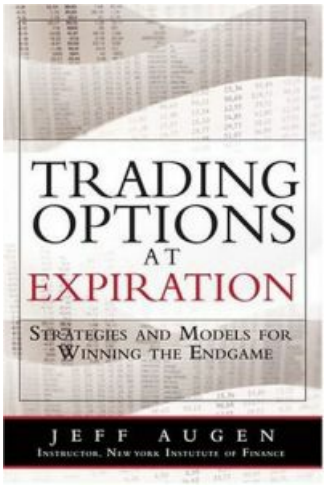

Book Trading Options at Expiration

Strategies and Models for Winning the Endgame

Jeff Augen
FT Press, 2009

Recommendation

Investors commonly use pricing models and formulas to determine the fair value of call options to buy stock and put options to sell stock. But formulaic fair value does not account for all the pricing dynamics that affect options near their expiration dates. That is why the price of an expiring option often diverges from its fair value. This pattern of distorted pricing creates trading opportunities in the options market that are less risky and potentially more rewarding than holding the underlying stock over the long term. Jeff Augen's compact, focused book details strategies for trading options on the third Thursday and Friday of each month, before the options expire that Saturday. He cautions that investors must be aware of collateral funding needs, regulatory requirements, investment minimums and other sophisticated details. Because Augen assumes that the reader has substantial background knowledge, professional traders may have the most to gain from his mathematically rigorous insights. *BooksInShort*, which recommends books, but not investments (the opinions in the summary are those of the author), also suggests this book to amateur investors who are familiar with options and seek the next level of professional information.

Take-Aways

- Buying and selling options as they expire takes precise "minute-by-minute" data, "hard work, focused attention and practice."
- Trading options near expiration is a mathematics-based form of day trading.
- The time remaining to sell an option declines dramatically near the end of the expiration week, which is the third week of each month.
- The market values of expiring options often deviate from their formulaic fair values.
- "Time decay" refers to the decline in the market value of an expiring option as its remaining life span dwindles.
- Expiring options with underlying stock prices that gravitate toward strike prices have the greatest profit potential.
- Perceptions of the volatility of underlying stocks drive the prices of expiring options.
- To craft the best trading strategies for expiring options, work with specific stocks.
- Traders commonly structure trades in the option markets with hedges against losses.
- Hedged option trades are flexible enough to suit a broad spectrum of investors.

Summary

Options, Investment Risk and Price Distortion

Recent history shows that trading in the United States' options markets one or two days each month is less risky than full-time exposure to slumps in the stock market. In 2008, U.S. stock market values crashed to 1997 levels as a worldwide credit crisis unfolded, inspiring a stock selling spree. The market collapse shows the danger of clinging to stocks for the long term, because inflation, devaluation and other costs add to the absolute fall in value.

> "This book describes a very specific type of day trading that depends on understanding the price change behavior of individual stocks during the days preceding expiration."

Trading options entails risk even if you trade only on a few pivotal days each month. The price of an option to buy or sell stock, like the price of the underlying stock, is subject to sudden surges and slumps. The underlying stock price is a major determinant of the price of an option to buy or sell the stock. The expiration date and the

strike price (the price at which a trader exercises the option) are also determinants. Traders typically buy and sell options without exercising them.

> "For option traders, the days preceding expiration represent the very best opportunity."

News about a public company can move its stock price and the price of options to buy or sell that stock. This is especially true when a company announces quarterly financial results shortly before the expiration date for options to buy or sell its stock. Just before a company releases quarterly results, its options prices tend to reflect the market's perceptions of any increased volatility in the price of that stock.

> "Expiration trading focuses only on the underlying mathematics. It does not rely on any financial predictions, company results or market direction."

Structuring trades with hedges against possible losses is a common way to manage the risk of investing in options. In transactions known as ratio trades, for example, buyers will hedge by taking opposite investment positions on the same option contract in a preset ratio. For every three call options to buy a stock in a particular month and at a particular strike price, a hedged trader might also buy one put option to sell the underlying stock in the same month and at the same strike price.

Trading Options near Expiration

Investors can further minimize their risk by trading options near expiration. The most promising time to trade options is the third Thursday and third Friday of each month – the last two trading days before all the call options and put options for each month expire. Investors can profit from distortions in the price of an option just before it expires.

> "Time decay is the overriding dynamic that characterizes the final days before expiration."

Investors can estimate the fair value of options by using one of several pricing formulas with similar variables. The variables in the widely used Black-Scholes pricing model include the strike price of the option, the price of the underlying stock, the expiration date and the risk-free rate of return, which would be a comparable yield on U.S. Treasury securities. Another variable in fair-value formulas is the volatility of the price of the stock underlying the option, expressed statistically in percentage terms: the bigger the percentage, the more volatile the stock price.

> "End of cycle price distortions represent a market inefficiency that cannot easily be exploited by large institutions for reasons related to liquidity and executive efficiency. The trading strategies...in this book scale to hundreds, but not thousands, of contracts."

But the prices that traders pay for expiring options often deviate from their formulaic fair value. No widely used formula for calculating fair value accounts for three market forces that distort the pricing of options in their final days. These three sources of price distortion, or deviation from fair value, are: "implied volatility collapse on the final trading day," "strike price effects" and "rapidly accelerating time delay."

The Volatility Factor

The options market serves as an economic indicator. Uncharacteristic action in the options market frequently takes place prior to a dramatic move in the stock market. Stock market volatility increases the probability that underlying stock prices will touch multiple strike prices and push the paper value of open option trades into profitability ("in the money") or out of profitability ("out of the money").

> "Exploiting expiration-related price distortions is an excellent way to generate profit without suffering the risks associated with constant exposure to the equity markets."

However, the probability of a big move in the price of the underlying stock within the remaining life of an option diminishes minute by minute as expiration nears. This is known as volatility collapse. By the close of trading on expiration Friday (the third Friday), implied volatility for an expiring option normally collapses to zero. (Listed options technically expire after the final minute of the third Saturday each month, long after regular trading closes on Friday.)

> "It makes statistical sense to initiate trades that depend on option price decay late in the day."

Many out-of-the-money options still command a price above zero at the start of expiration Friday because movement in the underlying stock price that day could transform them to in-the-money options. Assuming the price of the underlying stock remains stable, prices for out-of-the-money options gradually will fall to zero by the end of trading on expiration Friday, reflecting the pace of volatility collapse. Diminishing prices for out-of-the-money options reflect, or imply, the rate of collapse in the perceived volatility of the underlying stock price as expiration approaches.

> "Opening and closing the same trade several times can often result in spectacular profits as stock migrates away from and back to a strike price."

Implied volatility collapse on expiration Friday exhibits a pattern that varies with the behavior of the underlying stock. Based on changing market perceptions of the stock, the rate of volatility collapse accelerates and decelerates during the trading session. The shifting speed of volatility collapse provides the opportunity to structure profitable trades on expiration Friday.

Strike Price Effects and Time Decay

Fair-price formulas also do not reflect strike price effects that drive the market value of options near expiration. The best known strike price effect is "pinning," which happens when the price of the underlying stock remains close to, or converges with, the strike price of an option contract on expiration Friday. Many stocks tend to settle near a strike price on expiration Friday.

> "Long positions designed to profit from underlying price changes are best structured after implied volatility stabilizes early in the day."

Time decay is the "overriding dynamic" that affects the prices of expiring options. The term refers to the nonstop decline in the time remaining before an option expires.

The pace of time decay accelerates as the expiration date approaches because option markets are open 6.5 hours each trading day and closed the rest of the time. On the weekend before an option expires, the time remaining declines by almost a third. The time remaining declines again by a similar amount on the night before expiration Friday. That is why at-the-money and near-the-money options usually shed almost a third of their value when the market opens on expiration Friday.

> "In situations where the options market mistakenly underprices risk, tremendous opportunities exist on the long side."

Some investors enter trades on expiration Thursday and hold them overnight to profit from the effects of accelerated time decay. It may be preferable to close a profitable overnight trade when the trading session begins on expiration Friday. Entering new trading positions structured specifically for expiration Friday is generally better than holding onto positions established on expiration Thursday. "Downside risk" always exists but is less likely on expiration day.

Choosing the Right Options to Trade

Options on stocks that gravitate toward strike prices have the greatest likelihood of generating big profits. These include stocks that tend to move toward or stay near strike prices, or to leap from one strike price to another.

> "Generally speaking, strategies that require fewer adjustments and are more stable tend to deliver larger profits than high-risk positions that must be closely watched."

Strike price intervals vary, depending on the price of the underlying stocks. The intervals are $10 for stocks trading at more than $200. So when a stock is worth $250, trading is likely to be active in option contracts with strike prices of $240, $250 and $260. The intervals are $5 for stocks with prices between $25 and $200, and $2.50 for stocks worth $25 or less.

> "Inexpensive out-of-the-money options that have just a few hours left before expiration can triple in value within a few moments if they cross a strike price."

Different types of stock behavior dictate different types of long and short positions in the options market. A short position is particularly promising when a stock increases from one strike price to another before falling and stabilizing. A short position also can produce profits if the underlying stock price tends to hug a strike price.

> "Surprisingly, on expiration Friday, it is often possible to close a profitable trade, reverse strategies and generate a second large profit using the same stock."

Shares of Google stock have tended to loiter near a strike price on expiration Fridays. Analysis of past performance shows that the gap between the closing price of Google stock and the nearest strike price on options to buy it is, on average, tiny compared to the price of the stock. The stock generally stays close to a strike point. This pinning tendency has made Google stock a good candidate for short positions in the options market on expiration Friday. Taking such a position is a conservative bet that option prices will drop during the final trading session before expiration, pushed lower by accelerated time decay and implied volatility collapse.

Several expiration-day measurements are useful in selecting the best options to trade. One is the probability of a stock hitting a strike price at any given minute on expiration Friday. To estimate this probability, calculate the ratio of 1) the number of minutes when a stock was more than $1 from a strike price to 2) the number of minutes when the stock touched a strike price. When this ratio is low, the probability that the stock will cross a strike price during any given minute on expiration Friday is high. Some stocks are far more likely than others to touch strike prices. An analysis of 12 monthly option-expiration periods showed that MasterCard stock hit a strike price about twice as often as Apple stock, 306 times compared with 147 times.

To determine if the pinning effect is present or absent, evaluate the average gap between the closing price of a stock and the nearest strike price. A hedged trade called a "long straddle" can be highly profitable in the absence of pinning effects. For example, with three hours remaining in the trading session on February 15, 2008, MasterCard stock was changing hands for $200 per share. At that time, investors could have bought at-the-money call options for 98 cents each and at-the-money put options for 95 cents each, or $1.93 per straddle. MasterCard closed at $206, and the call options sold for $6.20 each, a 221% gain on the long side of the straddle.

Investors accustomed to intensive day trading may have the best prospects for profitably trading options near expiration. These transactions often involve opening and closing several carefully hedged transactions on the same day. Part of the job is monitoring minute-by-minute changes in the relationship between stock prices and strike prices. Close monitoring of a structured trade, for instance, could reveal the absence or the onset of pinning in the same trading session. During an expiration-day trading session in January 2008, MasterCard stock pinned at a $175 strike price in the final hours after moving well above and below $175 earlier in the day.

Flexible Structures, Mathematical Foundations

The flexibility of the options market has fostered the growth of hedged transactions, including straddles and ratio trades, among many other varieties.

A straddle is designed to produce a profit if the price of the underlying stock moves significantly in either direction, up or down. This structured trade involves buying a call option and a put option on the same stock, at the same strike price and with the same expiration date. If the price of the underlying stock appreciates enough, the trader will earn a profit on a call option that exceeds his or her loss on the put option. Investors also can bet directly on market perceptions of stock volatility by purchasing options to buy or sell a derivative, such as a security representing a stock index.

The ability to take risk and hedge risk differentiates options trading from simple long and short positions in the stock market. Expiring options, in particular, provide special opportunities for investors to leverage pricing dynamics in the final days of trading.

The pricing dynamics of expiration week are mathematically based. So forecasting the growth of a company or the economy is an unnecessary exercise in this context. Traders can earn handsome returns on expiring options to buy or sell a stock without correctly predicting the financial results of the issuer or the general direction of the stock market.

About the Author

Jeff Augen is a private investor and an expert on information technology. He is an instructor at the New York Institute of Finance and the author of *The Option Trader's Workbook, The Volatility Edge in Options Trading* and *Bioinformatics in the Post-Genomic Era.*