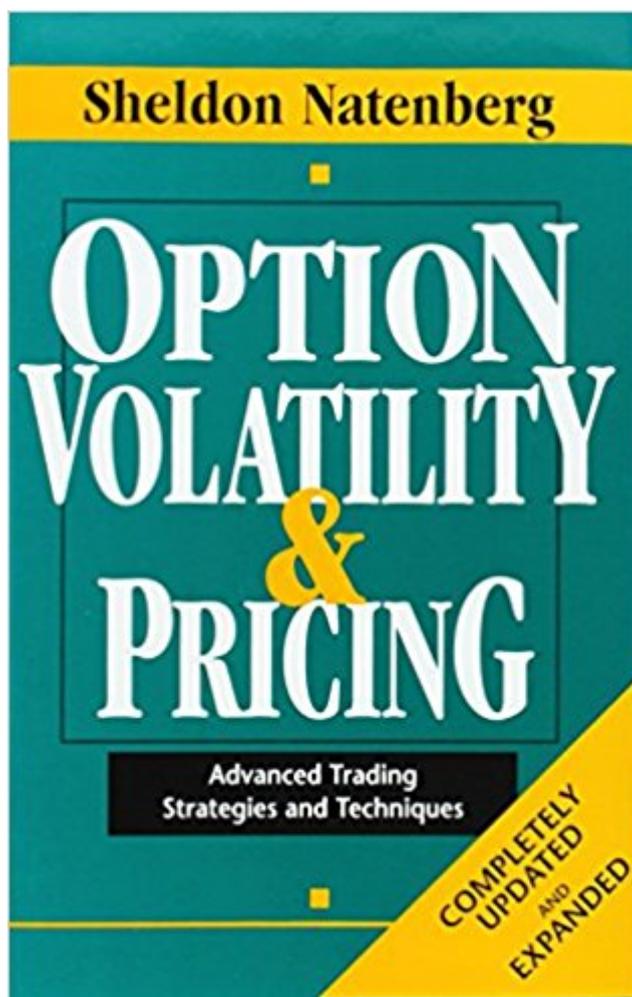


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# Option Volatility & Pricing: Advanced Trading Strategies And Techniques



## Synopsis

One of the most widely read books among active option traders around the world, *Option Volatility & Pricing* has been completely updated to reflect the most current developments and trends in option products and trading strategies. Featuring: Pricing models Volatility considerations Basic and advanced trading strategies Risk management techniques And more! Written in a clear, easy-to-understand fashion, *Option Volatility & Pricing* points out the key concepts essential to successful trading. Drawing on his experience as a professional trader, author Sheldon Natenberg examines both the theory and reality of option trading. He presents the foundations of option theory explaining how this theory can be used to identify and exploit trading opportunities. *Option Volatility & Pricing* teaches you to use a wide variety of trading strategies and shows you how to select the strategy that best fits your view of market conditions and individual risk tolerance. New sections include: Expanded coverage of stock option Strategies for stock index futures and options A broader, more in-depth discussion volatility Analysis of volatility skews Intermarket spreading with options

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## Customer Reviews

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In terms of content this book was outstanding. It provided great examples for a beginner learning options for the first time. I have taken a few option courses before and his strategies, techniques

and terminologies were helpful. They were a little on the beginner side but as a market risk professional I will not that against him as he described the book as the "first book that new professional traders are given to learn the trading strategies and risk management techniques required for success in option markets." Given that it was outstanding. Now the reasons for the 1 rating: Simply put, the book is filled with basic 101 mistakes: 1) Simple mathematical errors such as multiplication versus addition occur throughout the book's example 2) It appears he overwrote examples (from the previous book?) with new numbers but he only partially updated the example at times. For instance: he will have 3 positions with a strike price of: 70, 75 & 80 and out of now where he ends up using 70, 75 & 65 for his three strikes. 3) He has several typos in which he states one thing twice and then the direct opposite a second later (usually the example is wrong). 4) The quantity of errors is surreal as makes you question the integrity of the book as a whole. 5) I would not say it is "advanced strategies and techniques" but beginner to intermediate strategies and techniques. While I found this book to be a good resource (since I placed the emphasis on the ideas and terms, not the examples), I would not recommend it as your first book (which he described it as). Based on the reviews of the 1st Edition, I would say buy that book as it may be the best book for options. If he spent the time and provided good examples, I would give this book 5 stars and say it was a must have for ever collection. But the errors occur too often and they break down at a basic level. For a basic book that is heavily flawed, I saw it should only be rated a 1. If I did not have prior experience in options (academic courses and professional experience), I would be confused. Fortunately, most of the mistakes that he makes are quite obvious and you should be able to correct them on your own even if you are learning it for your first time. Overall, I say buy the 1st edition and avoid this book like a plague. Overall, if he would have read the book over, he should have been able to easily catch his mistakes. It's a shame he did not take the time to review the book to make sure it was written correctly. I've very disappointed in Sheldon Natenberg as his first edition was consider the bible of options (still is). 2nd Edition was a complete failure.

This is the best book that I have read on the theoretical pricing model. It is well-written, the figures and tables reinforce the text, and the math is as simple as possible considering the complexity of the Black, Sholes, Merton model (model). Nevertheless, I have given the book only three stars because it does not confirm or compare its theoretical values with market data. Also, the book contains careless errors that should not exist after two editions. Although my comments concentrate on the book's faults, I still strongly recommend it to serious traders who want to advance their understanding of options. The book fails to connect theory with reality. All the example

trades, figures and tables are hypothetical. Option prices and the volatility that they imply (IV) are derived from the model. The book does not appear to use any market data. My specific comments point out discrepancies between the book's hypothetical / theoretical findings and my observations of real market conditions. About a third of the book contains superfluous information that may not interest retail traders. This material includes lengthy discussions of arbitrage, market makers, synthetic conversions, and the effects of interest rates and dividends on option prices. I read and studied this material, but it has not influenced my trading.

Page 228, Risk Considerations - Chapter 13 introduces and defines the concept of "theoretical edge" which is repeated throughout the book. The vague definition should be simplified and expressed in more concrete terms. It states, "theoretical edge" is the average profit resulting from a strategy, assuming that the trader's assessment of market conditions is correct. Based on the data used to construct the spreads in this chapter, theoretical edge appears to be nothing more than the difference between an option's theoretical and market price.

Page 260, Using Synthetics in a Spreading Strategy - Instead of buying a long straddle: 1 June 100 call and 1 June 100 put, one could trade the synthetic equivalent: 2 June 100 calls and short 100 shares of the underlying stock. Here and elsewhere the text does not give practical advantages (e.g. risk vs reward) of using one versus the other.

Pages 265 - 292, Option Arbitrage - Chapter 15 claims that "conversions and reversals are common strategies" (page 276), but towards the end of the chapter (page 288) Natenberg concedes that only an arbitrage trader who has low transaction costs and immediate access to the markets is likely to profit from conversions and reversals. Since the book seems inconsistent, I made simulated trades of conversions and reversals of the S&P 500 ETF (SPY) and held them until expiration. While risks were extremely low, the profits would not even cover the commissions. For example, on October 12, 2016 the SPY was trading at \$213.82 and a 1 contract conversion would cost \$21,396.00 (1 Oct 214 Put @ 1.82, -1 Oct 214 Call @ 1.68 and 100 SPY @ 213.82). At expiration, the conversion lost \$2.50 (\$2.50 profit - \$5.00 commissions). Yields from other synthetic equivalents (boxes and rolls) were no better. While professional traders may profit from option arbitrage, retail traders who have limited funds and must pay commissions should avoid them.

Pages 293 - 321, Early Exercise of American Options - According to Chapter 16, the decision to hold or exercise an option depends primarily on dividends and interest rates. The hypothetical trades assume that the stock pays a dividend before the option expires and interest rates are 6%. Presumably, if a stock does not pay a dividend and interest rates are near 0, none of this applies. The stock price is assumed to drop by the dividend

amount on the same date that the dividend is paid. In practice, a stock's price can drop on the X dividend date and then recover or drop further when the dividend is paid. I have personally seen this happen with Verizon (VZ) and AT&T (T). Unless the stock is paying a special, unscheduled dividend, I believe that the market will price the dividend into the stock making the adjustments described in this chapter unnecessary.

Page 358, Maximum Gamma, Theta and Vega - Figure 18-10 illustrates that "Increasing the interest rate can cause the vega of a stock option to decline as time increases." The vega values are plotted on three curves corresponding to interest rates that are assumed to stay fixed at 0%, 10% and 20% for up to 4 years. At first, vega increases for all the interest rates and after about 10 months vega declines but only if interest rates are at 20%. This figure, like others, makes extreme assumptions about interest rates just to illustrate a point. In the past 10 years, US interest rates have ranged from about 0% to 5.25%. Most of the theoretical examples in this book assume interest rate range from 6% to 20%. These rates are high even when compared to the 3% rate in 1994 when the first edition of this book was published. It seems odd that Natenberg devotes so much his book to the effects of interest rates, when they have very little effect on the short-term options that are actively traded. He admits as much towards the end of his book when he states, "Because most actively traded options tend to be short term, with expirations of less than one year, interest rates would have to change dramatically to have an impact on any but the most deeply in-the-money options." (page 467, 3rd paragraph).

Page 359, Binomial Option Pricing - The Cox-Ross-Rubinstein model was developed in the late 1970s as a "method of explaining basic option pricing theory to students without using advanced mathematics." While this model (like the slide rule) may have been useful 40-50 years ago, it has no practical value today. Most trading platforms can instantly calculate an option's theoretical value.

Page 381, Volatility Revisited - Most of the figures in Chapter 20 illustrate that the implied volatilities (IV) trend from high to low going from short-term to long-term options (e.g., Figures 20-12, 20-13, 20-14, 20-18, 20-20 and 20-21). In contrast, I have observed that IV often runs in the opposite direction (i.e., short-term options have a lower IV than long-term options). Events such as earnings, acquisitions, mergers, stock buy-backs, elections and world events can trigger an IV surge at any expiration month that immediately follows the event. Implied volatility eventually reverts to a mean value, but it can stay below the mean for months and then suddenly jump above the mean and drop back in a few days. In my opinion, IV does not trend, but moves randomly above and below its moving average. Surprisingly, Natenberg does not discuss whether technical analyses could be applied to IV. To distinguish expensive options (with a high IV)

from cheap ones (with a low IV), I use an *Implied Volatility Stochastic Oscillator* that plots the current implied volatility level as a percentage of its 52-week range.

Page 412, Position Analysis - To simplify a complicated spread of puts, calls and the underlying stock, Natenberg converts the puts to their synthetic equivalents. For example, 19 March 65 puts are converted to 19 March 65 calls and short 1900 shares of the underlying stock. This type of conversion is valid only for puts and calls that have a delta of .50. The puts that are being converted, however, have different strikes and different deltas.

Page 432, Some Thoughts on Market Making - The text assesses the risks of a mixed collection of options that a market maker might accumulate over time; it states, "We will also assume that the implied volatility for June changes at 75 percent of the rate of change in April and the implied volatility for August changes at 50 percent of the rate of change in April." Later on page 501 (1st paragraph) when discussing shifting the volatility, the text states, "When the underlying price rises, implied volatility tends to fall; when the underlying price falls, implied volatility tends to rise." In my opinion, the daily fluctuations in IV are random and frequently do not conform to projections that are based on a theoretical model. Although IV reverts to a mean, this reversion only becomes apparent in weekly or monthly charts. Over a period of days, IV stays mostly below its mean and makes brief surges above its mean. My point here is that IV is unpredictable over a 3 to 4 month time span. In my opinion, market data do not confirm these assumptions on IV rate of change and assertions that IV rises when the stock price falls or IV falls when the stock price rises.

Chart 1 (attached to these comments) plots the daily price and IV of the Dow Jones Industrials (DIA) from March through October 2016. Note that price and IV do not correlate: price trends up while IV does not trend; price stays within one standard deviation of its linear regression while IV frequently moves more than one standard deviation above and below its linear regression; price remains predominantly above its 120 day moving average while IV remains predominantly below its 120 day moving average. My point here is that other than distinguishing cheap from expensive options, the theoretical model does not project the month to month changes and trends in IV.

Page 471, Volatility is Constant over the Life of the Option - Figures 23.3, 23.4 and 23.5 and the text state that at-the-money options decrease in value when volatility falls and increase in value when volatility rises. This relationship may be valid for the option's theoretical value, but not for the market price. An option's market price implies a volatility (IV) that does not correlate with the historical volatility (V) of the underlying asset. Chart 2 (attached to these comments) plots the daily IV and V of Eli Lilly Corporation (LLY) from April to November 21, 2016.

The upper chart shows that IV surged upward from August to November while V stayed range-bound. The lower chart shows that from May to November IV values were 1.2 X to 3 X higher than V. Since expensive options have a high IV, and cheap options have a low IV, these charts suggest that LLY options became increasingly expensive from May to November even though the volatility of the LLY stock stayed flat.

Page 507, Implied Distributions

This section claims that an infinite number of butterfly spreads would have the same maximum value as just one spread. It states, "At expiration, the 95/100/105 butterfly (i.e. buy a 95 call, sell two 100 calls, buy a 105 call) will have a maximum value of 5.00. An infinite number of butterfly spreads at five point intervals would likewise have a value of exactly 5.00. Later (page 508) Natenberg invites the reader "to confirm that all the butterfly values do indeed sum to 5.00. Charts 3 and 4 (attached to these comments) plot butterfly spreads of the Nasdaq Index (QQQ) at 118.37. Chart 3 plots 2 butterfly spreads at .50 expiration intervals, and Chart 4 plots 4 butterfly spreads at the same expiration intervals. Using market values, my Tradestation platform calculated that the 2 butterfly spread would have a maximum value of \$260.00 while the 4 butterfly spread would have a maximum value of \$190.00. Perhaps if I had used the option's theoretical values, as Natenberg presumably did, my butterflies would have confirmed "that all the butterfly values indeed sum to [the same value]. However, I think that Natenberg would have better served his readers if he had pointed out the significant difference between spreads constructed from options' theoretical versus market values.

Careless Errors

Page 172, The text incorrectly shows that both a long and short strangle have a positive gamma, negative theta and positive vega. The short strangle should have negative gamma, positive theta and negative vega.

Page 189, Figures 11-22 and 11.23, The figures incorrectly state that for both a long and short calendar spread the trader would buy a long term and sell a short term option. For the short calendar spread, the trader would sell the long term option and buy the short term option.

Page 206, Figure 11-33, In short and long straddles the same number of puts and calls are sold or bought. Two of the six straddles in this figure sells more calls than puts, and one straddle buys more puts than calls.

Page 260, 5th paragraph, The example of a bull put spread incorrectly buys and sells the same number of contracts of the same option. In other words, the spread does not exist.

Page 329, 1st paragraph, The text states, "By comparing implied volatility with expected volatility over the life of the option, the hedger ought to be able to make a sensible determination as to whether he wants to buy or sell options. What is "expected

volatility. The term is not defined in the glossary or appear in the index. Page 343, Figure 18.7, The number of occurrences used to calculate the average stock value should be 60 not 153. Page 359, Binomial Option Pricing, The 2nd paragraph states that one of the advantages of binomial option pricing is that you can assume "there are no interest or dividend considerations". Interest and dividends are considered in the formulas and figures presented throughout this chapter. Page 412, The table in the middle of the page shows that 38 (19+19) March 65 puts were synthetically converted to 0 March 65 calls and 0 underlying stock. This is not possible. Page 447, 2nd paragraph, The price-weighted index value which was initially 100 should be 150. Pages 469 and 470, Figures 23-3 and 23-4. These figures supposedly illustrate how changes in price affect volatility; however, the axes are not labeled, and it's not apparent what the charts are plotting. Page 471 last paragraph and Figure 23-5 The text states, "When the price of the underlying remaining generally between 95 and 105, options with exercise prices of 95, 100, and 105 are worth more than the Black-Scholes value in a rising-volatility market and less than the Black-Scholes value in a falling-volatility market." All the option values in Figure 23-5 and perhaps the entire book were calculated from the Black-Scholes formula. In this case, it is not clear how option values that are calculated with the Black-Scholes formula could be "worth more than the Black-Scholes formula". Page 502, Figure 24.14, The text in this figure should state: declining skew not "investment skew, and increasing skew not "demand skew. Chart 1, Dow Jones Industrial Average (DIA), Daily Price vs Implied Volatility Chart 2, Eli Lilly Corporation (LLY), Daily Implied Volatility (IV) vs Historic Volatility (Volatility Standard Deviation VSD) Chart 3, Nasdaq Index (QQQ), Maximum Profit of 2 Butterfly Spreads at .50 Expiration Intervals Chart 4, Nasdaq Index (QQQ), Maximum Profit of 4 Butterfly Spreads at .50 Expiration Intervals

This book is for serious option traders. If you are just a guy at home that wants to learn a bit about options and don't have at least a bit of a math background then this book is not for you. However, if you have an extensive math background you will find this book fairly easy. I have a degree in mathematics and knew nothing about options before this book, so it was confusing at first. After learning the basics from other resources and resorting back to this I find that there is great information in here. I do not believe this book is completely out-dated... The pricing theories and spreading strategies are up to date and he clearly says (multiple times) that the average trader will have a hard time market making or creating arbitrage opportunities. That does not mean it's

out-dated, it just means that you shouldn't try to trade like an arbitrage trader... Simple...BTW - for the one star comments that say they don't need to use Greeks to be successful trading options, you might as well just trade the underlying because option Greeks have so much to offer. If you are trading options without paying attention to Implied Volatility or the Greeks you are trading blind. If you are profitable this way then you're most likely making your money directionally, in which case you are much better off trading the underlying. You may have been very lucky if you are profitable trading options without paying attention to IV or Greeks... OR if you are very good at predicting the market direction then IV may have eaten way some of your profits. I highly recommend this book.

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