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FINANCIAL SERIES

RICHARD LEHMAN

LAWRENCE G. McMILLAN



OPTIONS FOR VOLATILE MARKETS

2

SECOND EDITION

MANAGING **VOLATILITY** AND

PROTECTING AGAINST **CATASTROPHIC RISK**

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Contents

Cover

Series

Title Page

Copyright

Dedication

Preface

*Introduction: The “New Normal” in
Equity Investing*

Chapter 1: Option Basics

What Are Options?

Exercise and Assignment

Positions

How Options Are Traded

Options in Your Account

*Chapter 2: Option Pricing and
Valuation*

Option Premium

Theoretical Value

Time Value

Volatility

Interest Rates

Dividends

Calls versus Puts

Option Skews and Anomalies

Chapter 3: The Basics of Covered Call Writing

Requirements for “Valid” Covered Writes

Risk/Reward of a Covered Write

Calculating Potential Returns

Major Factors Affecting Call-Writing Returns

Covered Writing as an Ongoing Strategy

Summing Up Covered Writing

Chapter 4: Implementing Covered Call Writing

Follow-Up Actions

Behavioral Issues

Differing Approaches

Selecting Calls to Write

Risks

Basic Tax Rules for Options

Summing Up Implementation

Chapter 5: Advanced Call-Writing Techniques

[*Writing Calls on “Hot” Stocks*](#)
[*Tax Deferral Strategies*](#)
[*Covered Writing on Margin*](#)
[*Covered Writing against Securities Other Than Stock*](#)
[*Partial Writing, Mixed Writing, and Ratio Writing*](#)
[*Put Writing*](#)
[*Expiration Games*](#)
[*Option-Stock Arbitrage*](#)

[*Chapter 6: Basic Put Hedging*](#)

[*Put Hedge Basics*](#)
[*Advantages*](#)
[*Disadvantages*](#)
[*Behavioral Implications*](#)
[*Put Hedge versus Covered Call*](#)
[*Hedging against Catastrophic Risk*](#)

[*Chapter 7: Advanced Hedging Strategies*](#)

[*Put Hedge Follow-Ups*](#)
[*Using Put Spreads to Hedge*](#)
[*Collars*](#)
[*Conclusions on Protective Option Strategies*](#)

[*Chapter 8: Options on ETFs*](#)

[*ETFs in a Nutshell*](#)
[*ETF Options*](#)

[***Covered Call Writing on ETFs***](#)
[***Our Put Hedge and Collar Study on SPY***](#)
[***Appendix: Partial List of ETFs with Listed Options***](#)

[***Chapter 9: Volatility and Volatility Derivatives***](#)

[***What Is Volatility?***](#)
[***Using VIX as a Market Indicator***](#)
[***Volatility Futures***](#)
[***Variance Futures***](#)
[***The Behavior of VIX Futures***](#)
[***VIX Options***](#)
[***VIX Option Strategies***](#)
[***The Future***](#)

[***Acknowledgments***](#)

[***About the Authors***](#)

[***Index***](#)

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Other books by the authors

Far From Random—Using Investor Behavior and Trend Analysis to Forecast Market Movement by Richard Lehman (Bloomberg Press, 2009)

McMillan on Options by Lawrence G. McMillan (John Wiley & Sons, 2004)

New Insights on Covered Call Writing—The Powerful Technique that Lowers Risk and Enhances Returns in Stock Investing by Richard Lehman and Lawrence G. McMillan (Bloomberg Press, 2003)

Options as a Strategic Investment, Fourth Edition, by Lawrence G. McMillan (New York Institute of Finance, 2002)

Profit with Options by Lawrence G. McMillan (John Wiley & Sons, 2002)

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Protecting against Catastrophic Risk

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An Imprint of



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Published by John Wiley & Sons, Inc., Hoboken, New Jersey.
Published simultaneously in Canada.

A previous edition of this book, *New Insights on Covered Call Writing: The Powerful Technique That Enhances Return and Lowers Risk in Stock Investing* by Richard Lehman and Lawrence G. McMillan, was published in 2003 by Bloomberg Press.

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Library of Congress Cataloging-in-Publication Data:

Lehman, Richard, 1948-

Options for volatile markets : managing volatility and protecting against catastrophic risk / Richard Lehman, Lawrence G. McMillan. - 2nd ed.

p. cm.—(Bloomberg financial ; 143)

Includes index.

Rev. ed., previously published under title: New insights on covered call writing by Bloomberg Press in 2003.

ISBN 978-1-118-02226-9 (cloth); ISBN 978-1-118-10264-0 (ebk);

ISBN 978-1-118-10265-7 (ebk); ISBN 978-1-118-10266-4 (ebk)

1. Stock options. 2. Investments. I. McMillan, L. G. (Lawrence G.) II. Lehman, Richard, 1948= New insights on covered call writing. III. Title.

HG6042.L44 2011

332.63'228—dc22

2011012023



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*In memory of Roslyn Lehman
January 6, 1928-September 24, 2010*

Preface

Because our previous books covered the gamut on option theory and strategies, one might reasonably ask why we felt the need to publish a new book on the subject at this time. The answer to that is twofold: (1) because there have been material developments within the world of options—new durations, new rules, new volatility instruments, and (2) more important, because there have also been significant changes in the nature of the markets and the environment for securities investing. In the interest of brevity, we referred to the new environment in the title simply as *volatile markets*, but that understates how extensive we feel the changes are. What we are really saying (and we expound further on this subject in the Introduction) is that today's financial markets harbor risk and uncertainties far beyond historically accepted norms, and that it is now more important than ever to manage the risks in investment portfolios on a continual basis. To that end, we still see listed options as the single most effective tool in the financial arsenal for dealing with such risk and volatility.

We still believe covered call writing is an underutilized strategy that offers equity investors a highly effective tool for reducing volatility—much more so than simply relying on security diversification. But we also feel that volatility has become more of a factor in equity investing than ever before and that the downside risks of equity investing have expanded dramatically. These risks, which are an ever-present factor in equities markets, are growing rather than receding, and have reached a level that not only requires a more potent defense against risk than covered call writing by itself, but suggest that equity portfolios should adopt a virtually continuous risk-management strategy. Yet, as we concluded in our earlier work, the mainstream investment

management industry remains sorely lacking in either using options themselves or in aiding investors in using them. The events of 2008 and the “flash crash” of 2010 should have awakened professional managers in a big way to the need to hedge equity portfolios with options, but for a variety of systemic reasons, those changes have been slow to emerge. Our aim with this book is to help both individuals and money management professionals recognize that risk is very definitely a controllable entity.

In 2003, we published *New Insights on Covered Call Writing* because we felt that vast improvements in online tools, data, and discount brokerage services coupled with changes in options availability and reduced transaction costs had significantly changed the landscape for individual investors with regard to writing covered calls in stock portfolios. At the same time, the full-service wire houses were discouraging their reps and clients from using options and professional money managers continued to live in a stock picking world that simply didn't embrace options in a serious way. For the most part, these conditions persist. Yet, had you adopted covered call writing in the beginning of 2004 in a well diversified portfolio, you would not only have significantly reduced your volatility compared to that of the S&P 500 over the ensuing six years, you would also have handily outperformed it. Between the years 2004 and 2009, the S&P Total Return index (S&P 500 with dividends reinvested) returned 13.36 percent, while, according to the CBOE, its Buy-Write index (BXM) returned 20.54 percent for the same period.

The basic practice of covered call writing reduces volatility quite nicely (about one-third according to studies on the BXM index), but more advanced forms of option writing coupled with more powerful hedging strategies such as purchasing puts may be necessary in today's environment. Put hedging satisfies the downside protection requirement,

but can be prohibitively expensive and has other drawbacks. In this book, we discuss variations of both strategies in detail as well as the use of both together to deal with today's markets. Finally, we examine the new vehicles that allow investors to actually trade volatility itself.

The first five chapters in this book represent an updated and condensed version of the basic options and covered call writing content from *New Insights on Covered Call Writing*. (Chapters and are very elementary and are included so those who have never used options before can start from scratch. Those already familiar with options may want to jump in at Chapter for the basics of covered call writing.) Chapter focuses on put hedging and Chapter combines call writing and put hedging into collar strategies. Chapter applies these option strategies to the rapidly growing field of exchange-traded funds (ETFs), and Chapter explains how to utilize the new volatility instruments that are now available.

The book is addressed to the broad audience of equity investors, both individual and professional. We feel that every investor in listed equities, whether managing a portfolio themselves, or paying a broker, money manager, or mutual fund manager to manage it for them, should at least recognize that there are tools available to effectively reduce risk and volatility, and to either learn how to use those tools themselves, or find a professional who does. In particular, we hope, for the sake of millions of hardworking Americans, that the people responsible for pension and retirement assets in this country take note, as trillions of dollars in retirement assets are woefully unhedged against another calamity like 2008 or worse.

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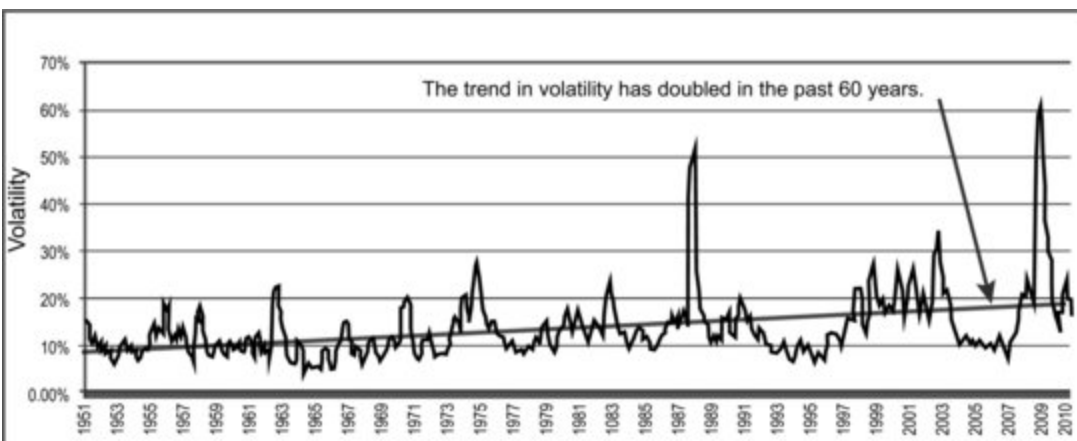
Introduction

The “New Normal” in Equity Investing

Anyone who has invested in stocks over the last several decades would be naïve to ignore the fact that the risks of owning equity investments have increased during that time. A simple look at the time-honored measure of market volatility—a standard statistical measure of the ups and downs in stock prices over time—illustrates that over the last half-century, it has been steadily rising, with the most recent 25 years looking considerably different than the prior 25. And, as we are all too well aware, the volatility experienced in 2008 exceeded that of any previous year on record. [Figure I.1](#) illustrates historical 100-day volatility on the S&P 500 Index daily since the 1950s.

FIGURE I.1 S&P 500 Average Annual 100-day Volatility 1951 to 2010

Data Source: Standard & Poor’s.



To accommodate the huge spikes in volatility during 1987 and 2008, the scale in [Figure I.1](#) is somewhat compressed, so the slope on the trend line may not look like much of a rise. But upon closer scrutiny, one can see that *average volatility is now running at almost double the average volatility of the 1950s*. A similar chart showing the magnitude of daily price moves over the same period would have the same look, and would show that average daily price moves on the S&P index averaged around .5 percent in the 1950s and are now approaching 1 percent per day. Given that the benchmark objective for long term equity returns, however, is still assumed to be in the neighborhood of around 10 percent per year, we face the reality that *we risk 10 percent of our annual expected return on an any single day, and that we are experiencing nearly twice the risk to get the same expected annual return as we received 50 years ago*.

When we use the term *volatile markets* in the book's title, we are alluding to this overall increase in volatility, as well as specific times like 1987 and 2008 when volatility literally went off the charts. In addition, we are talking about more than just the standard definition of volatility, which is little more than a statistical measure of the movement in a stock or in the overall market for a very brief period in history—generally much less than a single year. Clearly, the risks of owning equity securities include hidden dangers in the market that have not been experienced yet, and are therefore not accounted for in any mathematical measure of historical volatility. A classic case of such risk, and one of the contributing factors to the subprime mortgage disaster, was the assumption by the bond rating agencies that subprime mortgages represented safe investments since a nationwide decline in home prices had never occurred in the history of their data. In the extreme, such risks may include other “black swans” (a term popularized by Nassim Nicolas

Taleb in his book of the same name), which are low-probability events with potentially catastrophic results, like market crashes or meltdowns.

Thus, when we say “volatile markets,” we're incorporating risk in the much broader sense than is described by the concept of volatility. Risk is, of course, about the future—not the past. Risk is about things unforeseen, things unquantifiable, and things we cannot even currently imagine. Risk on an individual stock is no longer confined to a bad quarter or a disappointing product launch. It now includes things like corporate malfeasance, business espionage, and stolen technology. Furthermore, as opportunity has become a global phenomenon, so has risk, adding immeasurably to the risks we now assume, and incorporating government policy, currency valuations, geopolitical events, trade wars, sovereign debt issues, global resource use, and international piracy—in parts of the planet that would never even have been on our radar screens a decade or two ago.

Risk also now includes new structural dangers in the makeup of our markets themselves, such as the changing nature of electronic and so-called “high-frequency” trading. We are now at the mercy not only of the actions of thousands of large institutions and millions of people who participate in the equity marketplace, but of private, nonregulated computers that are programmed to flood the market with intentionally bogus order flow in order to scalp a few cents off thousands of trades in time frames we humans can't even conceive. It is particularly unsettling that such computers may actually now account for the majority of trading volume in NYSE-listed stocks, yet no one knows how they will perform under extreme situations, or whether they are capable of actually *creating* an extreme situation themselves.

Life in the “new normal” of equity investing presents new challenges in managing these risks. In professional money management circles, diversification remains the most broadly accepted way of dealing with the long-term risks inherent in individual securities, and (using Modern Portfolio Theory) the risks of different asset classes. These techniques don't actually reduce the risk in individual investments or asset classes. They simply allow you to gain a statistical advantage over risk by spreading your money across enough things that are supposedly noncorrelated with one another (i.e., historically don't move in the same direction). Unfortunately, many investors simply don't have substantial enough assets to achieve a valid statistical level of diversification. Moreover, as demonstrated in 2008, asset classes that may have historically been noncorrelated with each other may end up correlating quite highly with each other during the exact times (i.e., extreme sell-offs) that we most need them to be noncorrelated. Another popular hedging technique, the “long-short” strategy, used primarily by hedge funds, and commonly implemented as a “130/30” approach (where the portfolio is 130 percent long in equity securities and simultaneously short 30 percent in other equities) also failed to provide an adequate overall hedging mechanism in 2008.

Hedging with options does not depend on long-term statistics to work, nor does it require a substantial portfolio to implement. Furthermore, options leave diversification strategies in the dust when it comes to providing the flexibility to allow investors and portfolio managers to tailor a strategy to their own unique risk tolerance and change it over time as conditions warrant.

One of the many advantages we glean from options is that they provide a quantifiable measure of just how much risk the market actually judges there to be in the underlying instrument. There is no way to know just how much risk is

being priced into any particular stock simply by looking at the stock's price alone. For the most part, market-assessed risk simply gets buried in the market price of the security, and that can obscure the true nature and direction of its risk. However, when the stock has options, we can see just how much forward-looking risk is being priced into the security by looking at the price of its options and comparing that price to the theoretical price suggested by the past volatility in the underlying security. In short, the options market handicaps the risks of equities in the same way the odds makers handicap a horse race. A stock that is trading in anticipation of a major news item, such as a drug approval for example, may sell at a price of 15. By itself, this price does not tell us what the expected price *after* the announcement might be—it simply tells us the price at which positive and negative expectations are balanced in terms of supply and demand at the current moment. But, options on that stock can tell us whether the market expects the stock to trade between 13 and 17 following the announcement or between 5 and 25. In this manner, options provide a significant amount of information regarding expected risk on their underlying securities.

The market doesn't always have all the information necessary to reflect the true risk in any security, even when that security has options, but the options do indicate how much risk the general market expects. The importance of this information is that it enables us to use options to offset some or even all of the expected risks in the underlying securities, and therein lies the heart of their advantage. Through a variety of option strategies, which we identify in this book, one can modify the risk in the underlying security in a myriad of ways, whether the objective is to hedge, protect against catastrophic risk, generate income, minimize capital gains tax, or simply enable you to sleep nights.

Stocks and bonds were not created for investors as an alternative to bank accounts. They were created to help corporations raise capital and we just ended up using them that way. The volatility that comes with trading them in the secondary market is not the fault of the issuers—it is a consequence of a secondary market environment and ours to bear if we want to participate in the long-term growth of corporate America. We can keep our money in banks or government securities (and a rapidly growing segment of investors are), but we would have to cut back dramatically the long-term expectation of what our money would earn during our lifetimes. What we need is a way to adjust the risks and rewards of stocks to better suit our individual objectives. Options do just that.

A covered call write alters the risk-reward characteristics of owning the underlying stock by itself. So do put hedges, spreads, collars, and other option strategies. People may complain about the volatility in stocks and the meager returns from bonds these days, but we have the tools to modify the risk/reward characteristics of these vehicles in totally individualized fashion. In essence, options can be used to create a hybrid between a stock and a bond—an investment that retains modest long-term upside but generates income and has less risk. The tool is there. More people simply have to learn how to use it.

To address the “new normal” in equity investing in this book, we re-emphasize the classic volatility-reducing strategy of covered call writing and add new material on other underutilized option strategies such as put hedging and spreading. In addition, we demonstrate how investors can actually trade volatility itself through recently introduced vehicles like VIX and VXX, or employ volatility strategies to hedge an equity portfolio. We also examine the rapidly growing practice of using options with exchange-traded funds (ETFs). It is important to note that we are not

just providing an academic approach here—we use the strategies described in this book in managing actual accounts.

Chapter 1

Option Basics

To understand and implement option strategies effectively, you need to understand not only how stocks and the equity markets work, but what options are, how they function, and what affects their value. The strategy discussions in this book assume you are already familiar with stocks and options, so to refresh you on the basics, we have constructed Chapters 1 and 2 as a review of listed equity options. If you are already familiar with options, you can begin reading about call writing in Chapter 3.

What Are Options?

An *option* is a contract representing the right, for a specified term, to buy or sell a specified security at a specified price. Like stock, they are also standardized so they can trade on formal securities exchanges and are regulated by the Securities and Exchange Commission (SEC).

There are two types of options: *puts* and *calls*.

1. Call option: A contract representing the right for a specified term to *buy* a specified security at a specified price.

2. Put option: A contract representing the right for a specified time to *sell* a specified security at a specified price.

The specified price is known as the *strike*, or *exercise price*; the specified term is determined by the option's *expiration date*; and the specified security is referred to as

the *underlying security*. There are exchange-listed options on a number of securities and even non-securities (such as indexes), but this book is devoted entirely to those on stocks and exchange-traded funds (ETFs). We may refer to both of these in aggregate as *equity options*. A standard equity option represents 100 shares of the underlying stock or ETF. Thus a call option on Disney with a strike price of \$35 that expires in two months gives the buyer the right, anytime during the next two months, to buy 100 shares of Disney at \$35 each.

- **Strike price:** The price at which the underlying security of an option can be purchased or sold by the contract buyer.
- **Expiration:** The date when the terms of an option contract terminate.
- **Underlying security:** The security that an option gives its buyer the right to buy or sell.

An option contract is not issued until a buyer and seller come together in the marketplace. When an exchange initiates trading on a particular option, no contract exists until the first transaction takes place. The option is issued when party A agrees to buy one or more contracts from party B, and additional contracts are issued as other buyers and sellers make deals.

Standardization

Although options contracts are legally binding, you need not call your attorney to draw one up when you want either to buy or to sell. Option contracts are originated and standardized by an independent entity called the Options Clearing Corporation (OCC). To comply with SEC regulations, the OCC files a prospectus for all options on behalf of all the buyers and sellers. It also sets, guarantees, and enforces all contract terms and keeps the master versions of all contracts. You see only a trade confirmation, as you most

often do with stocks. (If you are curious, you can see the OCC prospectus on the Internet at www.optionsclearing.com under Publications.)

- **OCC:** The Options Clearing Corp., an independent entity that acts as the issuer and guarantor for all listed option contracts.

By standardizing contracts, the OCC enables options to be traded in the secondary market (on an exchange), just like a listed stock or bond. In other words, they are *interchangeable*, or *fungible*. When you buy 100 shares of Disney common stock for your account, you know that those shares are exactly the same as any other Disney common shares. Similarly, the OCC guarantees that when you buy a particular Disney call option, your contract has the same terms—that is, it is for the same type of option, on the same underlying stock, with the same strike price and expiration—as all others referred to with the same designation. All options having identical terms are said to be part of the same series and are interchangeable.

- **Class:** All the options of the same type that have the same underlying security. For example, all the call options that exist for Microsoft stock are part of the same option class.
- **Series:** All the options in the same class that also have the same strike price and expiration date. For example, all IBM calls in January with a strike price of 150 are part of the same option series.

Listed options are those that are formally traded on a recognized exchange. *Non-listed*, or *over-the-counter* (OTC), options also exist, but they are not standardized and are used infrequently. For the most part OTC options are only used by institutions. All the options reported through quote services are listed, and options may be listed on more than one exchange. This does not affect the option's interchangeability. Option exchanges generally trade during

the same hours as the underlying stocks plus a few extra minutes at the end of the day (4:02 P.M. Eastern time), except on the Friday before expiration, when they stop trading right at 4 P.M.

The OCC plays another important role: as intermediary between option buyers and sellers. When you buy or sell an option, you are actually dealing directly with the OCC (through your broker), rather than with a particular individual. That means you do not need to worry about the integrity of the transaction or about the other party's ability to pay. Their broker worries about that.

Option Listings

The option exchanges determine what options they will list—in other words, which underlying stocks they will allow options to trade on. Thus IBM, for instance, has no say as to whether options are listed on its shares. Currently, options are available on approximately 2,600 stocks and ETFs, with new listings added every month. The reason that figure is so small compared with the total universe of listed stocks is that only certain stocks meet the exchanges' requirements. Because of the close relationship between options and their underlying securities, primary among the exchanges' criteria are that the underlying stocks be listed and actively traded on a national market. Other requirements concern the number of shares outstanding, the stock's price history, its daily trading volume, the company's assets, and so on. As an example, new options listings are not approved for stocks trading below \$7.50.

Since 100 shares is the standard contract size for a single option, you only need to identify any option by the four items that make it unique: underlying stock; expiration month; strike price; and type. [Table 1.1](#), for example, shows that IBM Jan 150 call designates a call option on IBM shares, expiring in January, with a strike price of 150.

TABLE 1.1 Option Examples

Underlying Security	Expiration Month	Strike Price	Type
Disney	October	35	Put
Home Depot	August	35	Call
IBM	January	150	Call
Intel	April	17.50	Call
Microsoft	July	26	Put

Strike Price

Options on a particular stock are always available for at least several different strike prices above and below the current price of the stock. The number of strikes, which can sometimes rise to 50 or more on a single underlying, depend on the stock's price and volatility (how much the share price has moved historically). A volatile stock such as Research in Motion (RIMM), for example, currently has more than 50 strike prices for the January 2011 expiration month. The option exchanges offer strikes in increments of \$2.50, \$5, or \$10, depending on the price of the underlying stock. Thus, if XYZ is selling for around \$50 a share when options trading on the stock begins, the exchange would typically allow trading (for both puts and calls) on a range of strike prices including, say, \$40, \$45, \$50, \$55, and \$60. On the other hand, if the share price is \$16, you would probably see strike prices of \$15, \$17.50, and \$20. As stocks move, new strike prices are added, although the exchanges generally do not add new strikes during the last few weeks before an expiration.

Depending on the price of the underlying stock at the time, options at various strike prices are said to be *in the money* or *out of the money*. These terms are important to the covered writer (option seller) and will be referred to frequently in the text.

- **In the money (ITM):** Describes a *call* option whose strike price is *below* the current price of the underlying stock or a *put* with a strike *above* the current price. *Example:* When ABC stock is trading at \$43, call options with strike prices of \$40, \$35, and \$30 are all in the money.
- **Out of the money (OTM):** Describes a *call* option whose strike price is *above* the current price of the underlying stock or a *put* with a strike *below* the current price. *Example:* When ABC stock is trading at \$43, call options with strike prices of \$45, \$50, and \$55 are all out of the money.
- **At the money (ATM):** Describes an option that has a strike price equal to (or close to) the current price of the underlying stock. *Example:* A GHI call option with a strike of \$30 is at the money when the stock is trading at or very close to \$30.

Expiration

The most distinctive characteristic of options is their limited life, determined by the expiration date. On that date, they cease to exist, and any value they may have contained up to that point becomes moot. In contrast, when bonds mature, they can no longer be traded but they do make their last interest payment and repay their principal. When options expire, if they are in the money (ITM) by any amount (even \$.01), they are automatically exercised by the Option Clearing Corp. It is important to remember whether you are a buyer or a seller of options.

To keep things standardized, all the options expiring in a particular month do so on the same day: the Saturday following that month's third Friday. Saturday was chosen to give brokers one last morning following the last trading day to reconcile their clients' positions and make sure there are no errors going into expiration. The third Friday of each

month is therefore the last day expiring options can be traded. Expiring options can be bought or sold as usual on this Friday, but trading is frequently heavier than average, as people close out positions before they expire.

There are now options on some stocks and ETFs that expire at the end of each quarter or even each week.

One glance at an option table in the *Wall Street Journal* or on a computer shows that options on different stocks have expirations in different months. It may appear strange to have options on one stock expire in January, February, April, and July while options on the next one expire in January, February, May, and August. Actually, there is logic to this, although it may seem a bit obscure. When options first began trading on formal exchanges in the 1970s, expirations were quarterly. Thus, for every stock, only three-month, six-month, and nine-month options were initially made available. Then, when three months passed and the first option expired, a new nine-month option would be added on to the end. It was done that way because there was not enough volume (liquidity) in the beginning to justify having options expiring every month for individual stocks, and because the quarterly cycle enabled the exchanges to offer option expirations that corresponded to the quarterly earnings calendar of the underlying companies.

So, in the beginning, options were designated to expire in one of the following three quarterly cycles (just to spread them out evenly throughout the year):

- 1.** January-April-July-October.
- 2.** February-May-August-November.
- 3.** March-June-September-December.

Only three of the cycle months would be available at any one time, and when the nearest expiration passed, the next one in the calendar cycle would be added. If ABC options were introduced in cycle #1, they might begin trading with expirations in January, April, and July. On the Monday after