PART I

The Basics of Option Greeks

CHAPTER 1

The Basics

To understand how options work, one needs first to understand what an option is. An option is a contract that gives its owner the right to buy or the right to sell a fixed quantity of an underlying security at a specific price within a certain time constraint. There are two types of options: calls and puts. A call gives the owner of the option the right to buy the underlying security. A put gives the owner of the option the right to sell the underlying security. As in any transaction, there are two parties to an option contract—a buyer and a seller.

Contractual Rights and Obligations

The option buyer is the party who owns the right inherent in the contract. The buyer is referred to as having a long position and may also be called the holder, or owner, of the option. The right doesn't last forever. At some point the option will expire. At expiration, the owner may exercise the right or, if the option has no value to the holder, let it expire without exercising it. But he need not hold the option until expiration. Options are transferable—they can be traded intraday in much the same way as stock is traded. Because it's uncertain what the underlying stock price of the option will be at expiration, much of the time this right has value before it expires. The uncertainty of stock prices, after all, is the raison d'être of the option market.

A long position in an option contract, however, is fundamentally different from a long position in a stock. Owning corporate stock affords the shareholder ownership rights, which may include the right to vote in corporate affairs and the right to receive dividends. Owning an option represents strictly the right either to buy the stock or to sell it, depending

on whether it's a call or a put. Option holders do not receive dividends that would be paid to the shareholders of the underlying stock, nor do they have voting rights. The corporation has no knowledge of the parties to the option contract. The contract is created by the buyer and seller of the option and made available by being listed on an exchange.

The party to the contract who is referred to as the option seller, also called the option writer, has a short position in the option. Instead of having a right to take a position in the underlying stock, as the buyer does, the seller incurs an obligation to potentially either buy or sell the stock. When a trader who is long an option exercises, a trader with a short position gets *assigned*. Assignment means the trader with the short option position is called on to fulfill the obligation that was established when the contract was sold.

Shorting an option is fundamentally different from shorting a stock. Corporations have a quantifiable number of outstanding shares available for trading, which must be borrowed to create a short position, but establishing a short position in an option does not require borrowing; the contract is simply created. The strategy of shorting stock is implemented statistically far less frequently than simply buying stock, but that is not at all the case with options. For every open long-option contract, there is an open short-option contract—they are equally common.

Opening and Closing

Traders' option orders are either opening or closing transactions. When traders with no position in a particular option buy the option, they buy to open. If, in the future, the traders wish to eliminate the position by selling the option they own, the traders enter a sell to close order—they are closing the position. Likewise, if traders with no position in a particular option want to sell an option, thereby creating a short position, the traders execute a sell-to-open transaction. When the traders cover the short position by buying back the option, the traders enter a buy-to-close order.

Open Interest and Volume

Traders use many types of market data to make trading decisions. Two items that are often studied but sometimes misunderstood are volume and open interest. Volume, as the name implies, is the total number of contracts traded during a time period. Often, volume is stated on a one-day basis, but could be stated per week, month, year, or otherwise. Once a new period

(day) begins, volume begins again at zero. Open interest is the number of contracts that have been created and remain outstanding. Open interest is a running total.

When an option is first listed, there are no open contracts. If Trader A opens a long position in a newly listed option by buying a one-lot, or one contract, from Trader B, who by selling is also opening a position, a contract is created. One contract traded, so the volume is one. Since both parties opened a position and one contract was created, the open interest in this particular option is one contract as well. If, later that day, Trader B closes his short position by buying one contract from Trader C, who had no position to start with, the volume is now two contracts for that day, but open interest is still one. Only one contract exists; it was traded twice. If the next day, Trader C buys her contract back from Trader A, that day's volume is one and the open interest is now zero.

The Options Clearing Corporation

Remember when Wimpy would tell Popeye, "I'll gladly pay you Tuesday for a hamburger today." Did Popeye ever get paid for those burgers? In a contract, it's very important for each party to hold up his end of the bargain—especially when there is money at stake. How does a trader know the party on the other side of an option contract will in fact do that? That's where the Options Clearing Corporation (OCC) comes into play.

The OCC ultimately guarantees every options trade. In 2010, that was almost 3.9 billion listed-options contracts. The OCC accomplishes this through many clearing members. Here's how it works: When Trader X buys an option through a broker, the broker submits the trade information to its clearing firm. The trader on the other side of this transaction, Trader Y, who is probably a market maker, submits the trade to his clearing firm. The two clearing firms (one representing Trader X's buy, the other representing Trader Y's sell) each submit the trade information to the OCC, which "matches up" the trade.

If Trader Y buys back the option to close the position, how does that affect Trader X if he wants to exercise it? It doesn't. The OCC, acting as an intermediary, assigns one of its clearing members with a customer that is short the option in question to deliver the stock to Trader X's clearing firm, which in turn delivers the stock to Trader X. The clearing member then assigns one of its customers who is short the option. The clearing member will assign the trader either randomly or first in, first out.

Effectively, the OCC is the ultimate counterparty to both the exercise and the assignment.

Standardized Contracts

Exchange-listed options contracts are standardized, meaning the terms of the contract, or the contract specifications, conform to a customary structure. Standardization makes the terms of the contracts intuitive to the experienced user.

To understand the contract specifications in a typical equity option, consider an example:

Buy 1 IBM December 170 call at 5.00

Quantity

In this example, one contract is being purchased. More could have been purchased, but not less—options cannot be traded in fractional units.

Option Series, Option Class, and Contract Size

All calls or puts of the same class, the same expiration month, and the same strike price are called an *option series*. For example, the IBM December 170 calls are a series. Options series are displayed in an option chain on an online broker's user interface. An option chain is a full or partial list of the options that are listed on an underlying.

Option class means a group of options that represent the same underlying. Here, the option class is denoted by the symbol IBM—the contract represents rights on International Business Machines Corp. (IBM) shares. Buying one contract usually gives the holder the right to buy or to sell 100 shares of the underlying stock. This number is referred to as *contract size.* Though this is usually the case, there are times when the contract size is something other than 100 shares of a stock. This situation may occur after certain types of stock splits, spin-offs, or stock dividends, for example. In the minority of cases in which the one contract represents rights on something besides 100 shares, there may be more than one class of options listed on a stock.

A fairly unusual example was presented by the Ford Motor Company options in the summer of 2000. In June 2000, Ford spun off Visteon Corporation. Then, in August 2000, Ford offered shareholders a choice of

converting their shares into (a) new shares of Ford plus $20 cash per share, (b) new Ford stock plus fractional shares with an aggregate value of $20, or (c) new Ford stock plus a combination of more new Ford stock and cash. There were three classes of options listed on Ford after both of these changes: F represented 100 shares of the new Ford stock; XFO represented 100 shares of Ford plus $20 per share ($2,000) plus cash in lieu of $1.24; and FOD represented 100 shares of new Ford, 13 shares of Visteon, and $2,001.24.

Sometimes these changes can get complicated. If there is ever a question as to what the underlying is for an option class, the authority is the OCC. A lot of time, money, and stress can be saved by calling the OCC at 888-OPTIONS and clarifying the matter.

Expiration Month

Options expire on the Saturday following the third Friday of the stated month, which in this case is December. The final trading day for an option is commonly the day before expiration—here, the third Friday of December. There are usually at least four months listed for trading on an option class. There may be a total of six months if Long-Term Equity AnticiPation Securities® or LEAPS® are listed on the class. LEAPS can have one year to about two-and-a-half years until expiration. Some underlyings have one-week options called Weeklys℠ listed on them.

Strike Price

The price at which the option holder owns the right to buy or to sell the underlying is called the strike price, or exercise price. In this example, the holder owns the right to buy the stock at $170 per share. There is method to the madness regarding how strike prices are listed. Strike prices are generally listed in $1, $2.50, $5, or $10 increments, depending on the value of the strikes and the liquidity of the options.

The relationship of the strike price to the stock price is important in pricing options. For calls, if the stock price is above the strike price, the call is in-the-money (ITM). If the stock and the strike prices are close, the call is at-the-money (ATM). If the stock price is below the strike price the call is out-of-the-money (OTM). This relationship is just the opposite for puts. If the stock price is below the strike price, the put is in-the-money. If the stock price and the strike price are about the same, the put is at-the-money. And, if the stock price is above the put strike, it is out-of-the-money.

Option Type

There are two types of options: calls and puts. Calls give the holder the right to buy the underlying and the writer the obligation to sell the underlying. Puts give the holder the right to sell the underlying and the writer the obligation to buy the underlying.

Premium

The price of an option is called its premium. The premium of this option is $5. Like stock prices, option premiums are stated in dollars and cents per share. Since the option represents 100 shares of IBM, the buyer of this option will pay $500 when the transaction occurs. Certain types of spreads may be quoted in fractions of a penny.

An option's premium is made up of two parts: intrinsic value and time value. Intrinsic value is the amount by which the option is in-the-money. For example, if IBM stock were trading at 171.30, this 170-strike call would be in-the-money by 1.30. It has 1.30 of intrinsic value. The remaining 3.70 of its $5 premium would be time value.

$$\text{Time value} = \text{Total Option Premium} - \text{Intrinsic Value}$$

Options that are out-of-the-money have no intrinsic value. Their values consist only of time premium. Sometimes options have no time value left. Options that consist of only intrinsic value are trading at what traders call *parity*. Time value is sometimes called *premium over parity*.

Exercise Style

One contract specification that is not specifically shown here is the exercise style. There are two main exercise styles: American and European. American-exercise options can be exercised, and therefore assigned, anytime after the contract is entered into until either the trader closes the position or it expires. European-exercise options can be exercised and assigned only at expiration. Exchange-listed equity options are all American-exercise style. Other kinds of options are commonly European exercise. Whether an option is American or European has nothing to with the country in which it's listed.

ETFs, Indexes, and HOLDRs

So far, we've focused on equity options—options on individual stocks. But investors have other choices for trading securities options. Options on baskets of stocks can be traded, too. This can be accomplished using options on exchange-traded funds (ETFs), index options, or options on holding company depositary receipts (HOLDRs).

ETF Options

Exchange-traded funds are vehicles that represent ownership in a fund or investment trust. This fund is made up of a basket of an underlying index's securities—usually equities. The contract specifications of ETF options are similar to those of equity options. Let's look at an example.

One actively traded optionable ETF is the Standard & Poor's Depositary Receipts (SPDRs or Spiders). Spider shares and options trade under the symbol SPY. Exercising one SPY call gives the exerciser a long position of 100 shares of Spiders at the strike price of the option. Expiration for ETF options typically falls on the same day as for equity options—the Saturday following the third Friday of the month. The last trading day is the Friday before. ETF options are American exercise. Traders of ETFs should be aware of the relationship between the price of the ETF shares and the value of the underlying index. For example, the stated value of the Spiders is about one tenth the stated value of the S&P 500. The PowerShares QQQ ETF, representing the Nasdaq 100, is about one fortieth the stated value of the Nasdaq 100.

Index Options

Trading options on the Spiders ETF is a convenient way to trade the Standard & Poor's (S&P) 500. But it's not the only way. There are other option contracts listed on the S&P 500. The SPX is one of the major ones. The SPX is an index option contract. There are some very important differences between ETF options like SPY and index options like SPX.

The first difference is the underlying. The underlying for ETF options is 100 shares of the ETF. The underlying for index options is the numerical value of the index. So if the S&P 500 is at 1303.50, the underlying for SPX options is 1303.50. When an SPX call option is exercised, instead of getting 100 shares of something, the exerciser gets the ITM cash value of the option

times $100. Again, with SPX at 1303.50, if a 1300 call is exercised, the exerciser gets $350—that's 1303.50 minus 1300, times $100. This is called *cash settlement.*

Many index options are European, which means no early exercise. At expiration, any long ITM options in a trader's inventory result in an account credit; any short ITMs result in a debit of the ITM value times $100. The settlement process for determining whether a European-style index option is in-the-money at expiration is a little different, too. Often, these indexes are a.m. settled. A.m.-settled index options will have actual expiration on the conventional Saturday following the third Friday of the month. But the final trading day is the Thursday before the expiration day. The final settlement value of the index is determined by the opening prices of the components of the index on Friday morning.

HOLDR Options

Like ETFs, holding company depositary receipts also represent ownership in a basket of stocks. The main difference is that investors owning HOLDRs retain the ownership rights of the individual stocks in the fund, such as the right to vote shares and the right to receive dividends. Options on HOLDRs, for all intents and purposes, function much like options on ETFs.

Strategies and At-Expiration Diagrams

One of the great strengths of options is that there are so many different ways to use them. There are simple, straightforward strategies like buying a call. And there are complex spreads with creative names like jelly roll, guts, and iron butterfly. A spread is a strategy that involves combining an option with one or more other options or stock. Each component of the spread is referred to as a leg. Each spread has its own unique risk and reward characteristics that make it appropriate for certain market outlooks.

Throughout this book, many different spreads will be discussed in depth. For now, it's important to understand that all spreads are made up of a combination of four basic option positions: buy call, sell call, buy put, and sell put. Understanding complex option strategies requires understanding these basic positions and their common, practical uses. When learning options, it's helpful to see what the option's payout is if it is held until expiration.

Buy Call

Why buy the right to buy the stock when you can simply buy the stock? All option strategies have trade-offs, and the long call is no different. Whether the stock or the call is preferable depends greatly on the trader's forecast and motivations.

Consider a long call example:

Buy 1 INTC June 22.50 call at 0.85.

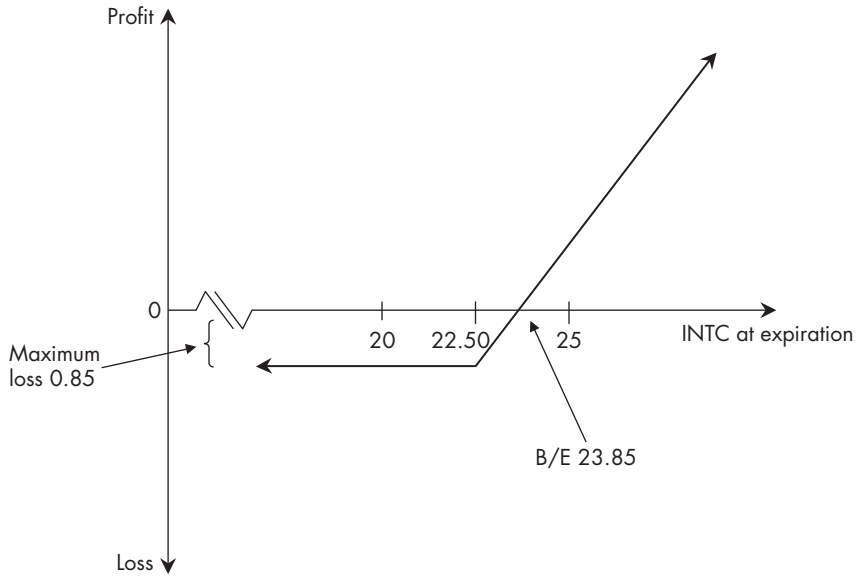
In this example, a trader is bullish on Intel (INTC). He believes Intel will rise at least 20 percent, from $22.25 per share to around $27 by June expiration, about two months from now. He is concerned, however, about downside risk and wants to limit his exposure. Instead of buying 100 shares of Intel at $22.25—a total investment of $2,225—the trader buys 1 INTC June 22.50 call at 0.85, for a total of $85.

The trader is paying 0.85 for the right to buy 100 shares of Intel at $22.50 per share. If Intel is trading below the strike price of $22.50 at expiration, the call will expire and the total premium of 0.85 will be lost. Why? The trader will not exercise the right to buy the stock at a $22.50 if he can buy it cheaper in the market. Therefore, if Intel is below $22.50 at expiration, this call will expire with no value.

However, if the stock is trading above the strike price at expiration, the call can be exercised, in which case the trader may purchase the stock below its trading price. Here, the call has value to the trader. The higher the stock, the more the call is worth. For the trade to be profitable, at expiration the stock must be trading above the trader's break-even price. The break-even price for a long call is the strike price plus the premium paid—in this example, $23.35 per share. The point here is that if the call is exercised, the effective purchase price of the stock upon exercise is $23.35. The stock is literally bought at the strike price, which is $22.50, but the premium of 0.85 that the trader has paid must be taken into account. Exhibit 1.1 illustrates this example.

Exhibit 1.1 is an at-expiration diagram for the Intel 22.50 call. It shows the profit and loss, or P&(L), of the option if it is held until expiration. The X-axis represents the prices at which INTC could be trading at expiration. The Y-axis represents the associated profit or loss on the position. The at-expiration diagram of any long call position will always have this same hockey-stick shape, regardless of the stock or strike. There is always a limit of loss, represented by the horizontal line, which in this case is drawn at −0.85.

EXHIBIT 1.1 Long Intel call.



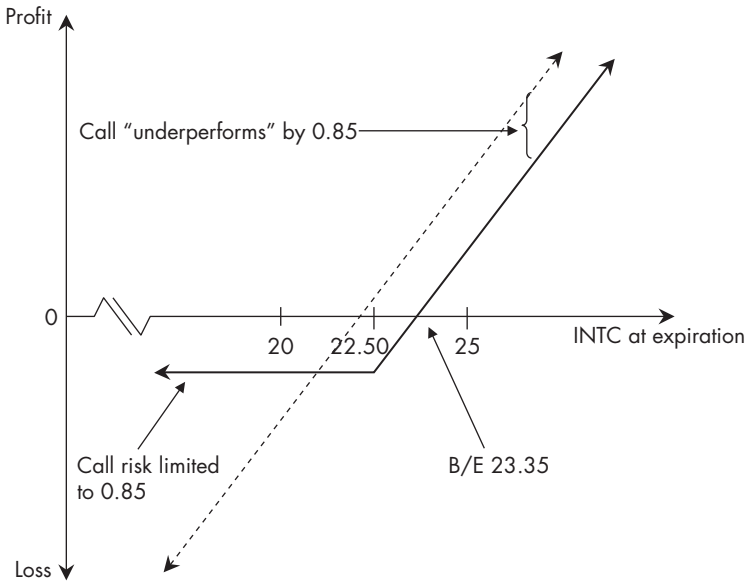
And there is always a line extending upward and to the right, which represents effectively a long stock position stemming from the strike.

The trade-offs between a long stock position and a long call position are shown in Exhibit 1.2.

The thin dotted line represents owning 100 shares of Intel at $22.25. Profits are unlimited, but the risk is substantial—the stock *can* go to zero. Herein lies the trade-off. The long call has unlimited profit potential with limited risk. Whenever an option is purchased, the most that can be lost is the premium paid for the option. But the benefit of reduced risk comes at a cost. If the stock is above the strike at expiration, the call will always underperform the stock by the amount of the premium.

Because of this trade-off, conservative traders will sometimes buy a call rather than the associated stock and sometimes buy the stock rather than the call. Buying a call can be considered more conservative when the volatility of the stock is expected to rise. Traders are willing to risk a comparatively small premium when a large price decline is feared possible. Instead, in an interest-bearing vehicle, they harbor the capital that would otherwise have been used to purchase the stock. The cost of this protection is acceptable to the trader if high-enough price advances are anticipated. In terms of percentage, much

EXHIBIT 1.2 Long Intel call vs. long Intel stock.



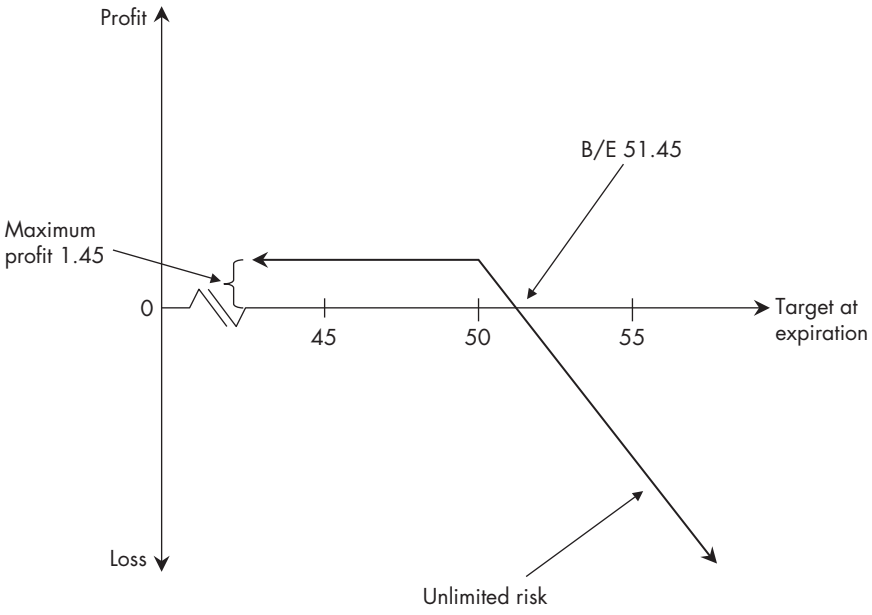
higher returns *and losses* are possible with the long call. If the stock is trading at $27 at expiration, as the trader in this example expected, the trader reaps a 429 percent profit on the $0.85 investment ([$27 − 23.35] / $0.85). If Intel is below the strike price at expiration, the trader loses 100 percent.

This makes call buying an excellent speculative alternative. Those willing to accept bigger risk can further increase returns by purchasing more calls. In this example, around 26 Intel calls—representing the rights on 2,600 shares—can be purchased at 85 cents for the cost of 100 shares at $22.25. This is the kind of leverage that allows for either a lower cash outlay than buying the stock—reducing risk—or the same cash outlay as buying the stock but with much greater exposure—creating risk in pursuit of higher returns.

Sell Call

Selling a call creates the obligation to sell the stock at the strike price. Why is a trader willing to accept this obligation? The answer is option premium. If the position is held until expiration without getting assigned, the entire premium represents a profit for the trader. If assignment occurs, the trader

EXHIBIT 1.3 Naked Target call.



will be obliged to sell stock at the strike price. If the trader does not have a long position in the underlying stock (a naked call), a short stock position will be created. Otherwise, if stock is owned (a covered call), that stock is sold. Whether the trader has a profit or a loss depends on the movement of the stock price and how the short call position was constructed.

Consider a naked call example:

Sell 1 TGT October 50 call at 1.45

In this example, Target Corporation (TGT) is trading at $49.42. A trader, Sam, believes Target will continue to be trading below $50 by October expiration, about two months from now. Sam sells 1 Target two-month 50 call at 1.45, opening a short position in that series. Exhibit 1.3 will help explain the expected payout of this naked call position if it is held until expiration.

If TGT is trading below the exercise price of 50, the call will expire worthless. Sam keeps the 1.45 premium, and the obligation to sell the stock ceases to exist. If Target is trading above the strike price, the call will be in-the-money. The higher the stock is above the strike price, the more

intrinsic value the call will have. As a seller, Sam wants the call to have little or no intrinsic value at expiration. If the stock is below the break-even price at expiration, Sam will still have a profit. Here, the break-even price is $51.45—the strike price plus the call premium. Above the break-even, Sam has a loss. Since stock prices can rise to infinity (although, for the record, I have never seen this happen), the naked call position has unlimited risk of loss.

Because a short stock position may be created, a naked call position must be done in a margin account. For retail traders, many brokerage firms require different levels of approval for different types of option strategies. Because the naked call position has unlimited risk, establishing it will generally require the highest level of approval—and a high margin requirement.

Another tactical consideration is what Sam's objective was when he entered the trade. His goal was to profit from the stock's being below $50 during this two-month period—not to short the stock. Because equity options are American exercise and can be exercised/assigned any time from the moment the call is sold until expiration, a short stock position cannot always be avoided. If assigned, the short stock position will extend Sam's period of risk—because stock doesn't expire. Here, he will pay one commission shorting the stock when assignment occurs and one more when he *buys back* the unwanted position. Many traders choose to close the naked call position before expiration rather than risk assignment.

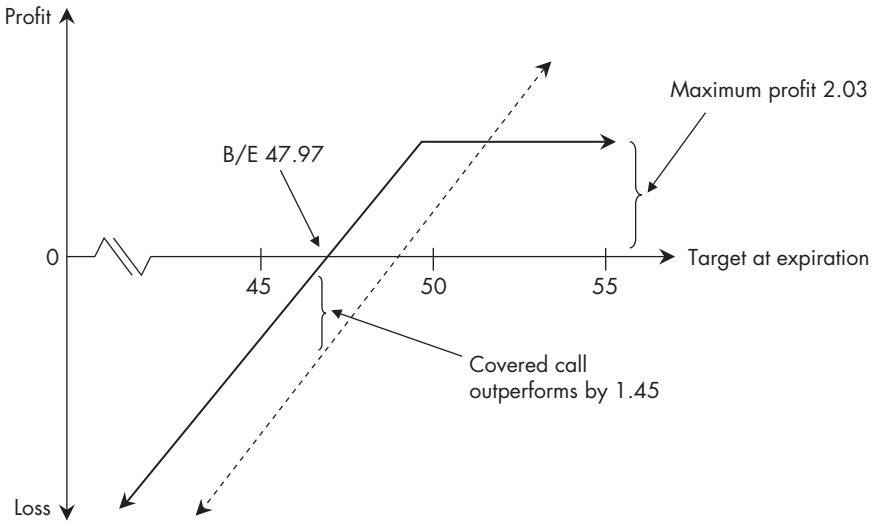
It is important to understand the fundamental difference between buying calls and selling calls. Buying a call option offers limited risk and unlimited reward. Selling a naked call option, however, has limited reward—the call premium—and unlimited risk. This naked call position is not so much bearish as *not bullish*. If Sam thought the stock was going to zero, he would have chosen a different strategy.

Now consider a covered call example:

Buy 100 shares TGT at $49.42
Sell 1 TGT October 50 call at 1.45

Unlimited and *risk* are two words that don't sit well together with many traders. For that reason, traders often prefer to sell calls as part of a spread. But since spreads are strategies that involve multiple components, they have different risk characteristics from an outright option. Perhaps the most commonly used call-selling spread strategy is the covered call (sometimes called a *covered write* or a *buy-write*). While selling a call naked is a way to

EXHIBIT 1.4 Target covered call.



take advantage of a "not bullish" forecast, the covered call achieves a different set of objectives.

After studying Target Corporation, another trader, Isabel, has a neutral to slightly bullish forecast. With Target at $49.42, she believes the stock will be range-bound between $47 and $51.50 over the next two months, ending with October expiration. Isabel buys 100 shares of Target at $49.42 and sells 1 TGT October 50 call at 1.45. The implications for the covered-call strategy are twofold: Isabel must be content to own the stock at current levels, and—since she sold the right to buy the stock at $50, that is, a 50 call, to another party—she must be willing to sell the stock if the price rises to or through $50 per share. Exhibit 1.4 shows how this covered call performs if it is held until the call expires.

The solid kinked line represents the covered call position, and the thin, straight dotted line represents owning the stock outright. At the expiration of the call option, if Target is trading below $50 per share—the strike price—the call expires and Isabel is left with a long position of 100 shares *plus* $1.45 per share of expired-option premium. Below the strike, the buy-write always outperforms simply owning the stock by the amount of the premium. The call premium provides limited downside protection; the stock Isabel owns can decline $1.45 in value to $47.97 before the trade is a loser. In the unlikely event the stock collapses and becomes worthless, this

limited downside protection is not so comforting. Ultimately, Isabel has $47.97 per share at risk.

The trade-off comes if Target is above $50 at expiration. Here, assignment will likely occur, in which case the stock will be sold. The call can be assigned before expiration, too, causing the stock to be *called away* early. Because the covered call involves this obligation to sell the sock at the strike price, upside potential is limited. In this case, Isabel's profit potential is $2.03. The stock can rise from $49.42 to $50—a $0.58 profit—plus $1.45 of option premium.

Isabel does not want the stock to decline too much. Below $47.97, the trade is a loser. If the stock rises too much, the stock is sold prematurely and upside opportunity is lost. Limited reward and unlimited risk. (Technically, the risk is not unlimited—the stock can only go to zero. But if the stock drops from $49.42 to zero in a short time, the risk will certainly feel unlimited.) The covered call strategy is for a neutral to moderately bullish outlook.

Sell Put

Selling a put has many similarities to the covered call strategy. We'll discuss the two positions and highlight the likenesses. Chapter 6 will detail the nuts and bolts of why these similarities exist.

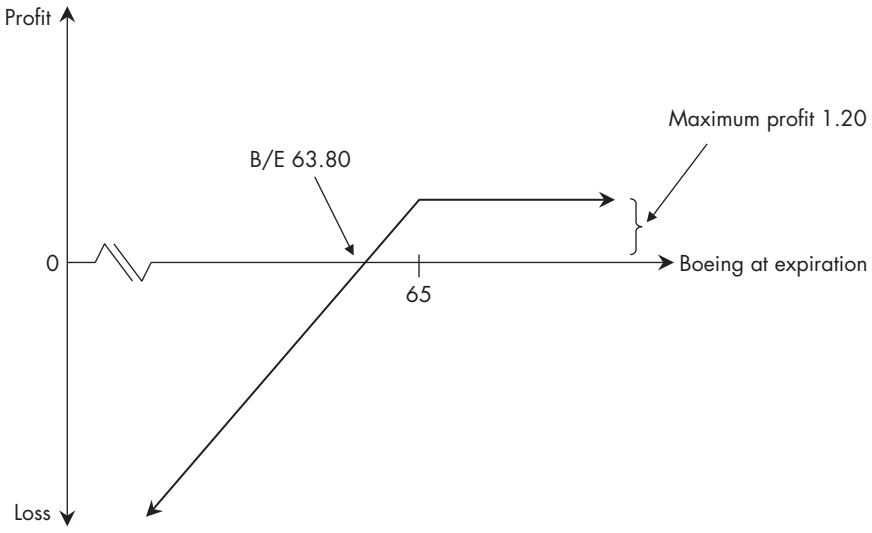
Consider an example of selling a put:

Sell 1 BA January 65 put at 1.20

In this example, trader Sam is neutral to moderately bullish on Boeing (BA) between now and January expiration. He is not bullish enough to buy BA at the current market price of $69.77 per share. But if the shares dropped below $65, he'd gladly scoop some up. Sam sells 1 BA January 65 put at 1.20. The at-expiration diagram in Exhibit 1.5 shows the P&(L) of this trade if it is held until expiration.

At the expiration of this option, if Boeing is above $65, the put expires and Sam retains the premium of $1.20. The obligation to buy stock expires with the option. Below the strike, put owners will be inclined to exercise their option to sell the stock at $65. Therefore, those short the put, as Sam is in this example, can expect assignment. The break-even price for the position is $63.80. That is the strike price minus the option premium. If assigned, this is the effective purchase price of the stock. The obligation to buy at $65 is fulfilled, but the $1.20 premium collected makes the purchase effectively $63.80. Here, again, there is limited profit

EXHIBIT 1.5 Boeing short put.



opportunity ($1.20 if the stock is above the strike price) and seemingly unlimited risk (the risk of potential stock ownership at $63.80) if Boeing is below the strike price.

Why would a trader short a put and willingly assume this substantial risk with comparatively limited reward? There are a number of motivations that may warrant the short put strategy. In this example, Sam had the twin goals of profiting from a neutral to moderately bullish outlook on Boeing and buying it if it traded below $65. The short put helps him achieve both objectives.

Much like the covered call, if the stock is above the strike at expiration, this trader reaches his maximum profit potential—in this case 1.20. And if the price of Boeing is below the strike at expiration, Sam has ownership of the stock from assignment. Here, a strike price that is lower than the current stock level is used. The stock needs to decline in order for Sam to get assigned and become long the stock. With this strategy, he was able to establish a target price at which he would buy the stock. Why not use a limit order? If the put is assigned, the effective purchase price is $63.80 even if the stock price is above this price. If the put is not assigned, the premium is kept.

A consideration every trader must make before entering the short put position is how the purchase of the stock will be financed in the event the put is assigned. Traders hoping to acquire the stock will often hold enough

cash in their trading account to secure the purchase of the stock. This is called a *cash-secured put.* In this example, Sam would hold $6,380 in his account in addition to the $120 of option premium received. This affords him enough free capital to fund the $6,500 purchase of stock the short put dictates. More speculative traders may be willing to buy the stock on margin, in which case the trader will likely need around 50 percent of the stock's value.

Some traders sell puts without the intent of ever owning the stock. They hope to profit from a low-volatility environment. Just as the short call is a not-bullish stance on the underlying, the short put is a not-bearish play. As long as the underlying is above the strike price at expiration, the option premium is all profit. The trader must actively manage the position for fear of being assigned. Buying the put back to close the position eliminates the risk of assignment.

Buy Put

Buying a put gives the holder the right to sell stock at the strike price. Of course, puts can be a part of a host of different spreads, but this chapter discusses the two most basic and common put-buying strategies: the long put and the protective put. The long put is a way to speculate on a bearish move in the underlying security, and the protective put is a way to protect a long position in the underlying security.

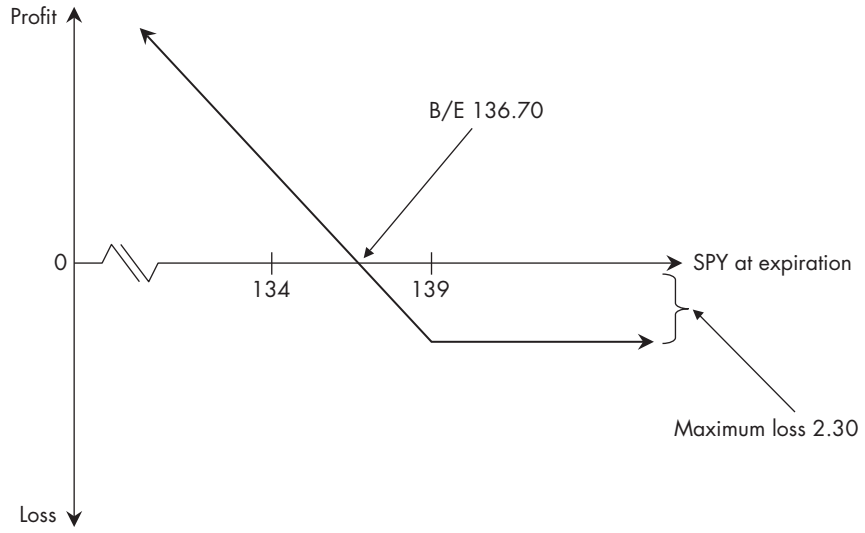
Consider a long put example:

Buy 1 SPY May 139 put at 2.30

In this example, the Spiders have had a good run up to $140.35. Trader Isabel is looking for a 10 percent correction in SPY between now and the end of May, about three months away. She buys 1 SPY May 139 put at 2.30. This put gives her the right to sell 100 shares of SPY at $139 per share. Exhibit 1.6 shows Isabel's P&(L) if the put is held until expiration.

If SPY is above the strike price of 139 at expiration, the put will expire and the entire premium of 2.30 will be lost. If SPY is below the strike price at expiration, the put will have value. It can be exercised, creating a short position in the Spiders at an effective price of $136.70 per share. This price is found by subtracting the premium paid, 2.30, from the strike price, 139. This is the point at which the position breaks even. If SPY is below $136.70 at expiration, Isabel has a profit. Profits will increase on a tick-for-tick basis, with downward movements in SPY down to zero. The long put has limited risk and substantial reward potential.

EXHIBIT 1.6 SPY long put.



An alternative for Isabel is to short the ETF at the current price of $140.35. But a short position in the underlying may not be as attractive to her as a long put. The margin requirements for short stock are significantly higher than for a long put. Put buyers must post only the premium of the put—that is the most that can be lost, after all.

The margin requirement for short stock reflects unlimited loss potential. Margin requirements aside, risk is a very real consideration for a trader deciding between shorting stock and buying a put. If the trader expects high volatility, he or she may be more inclined to limit upside risk while leveraging downside profit potential by buying a put. In general, traders buy options when they expect volatility to increase and sell them when they expect volatility to decrease. This will be a common theme throughout this book.

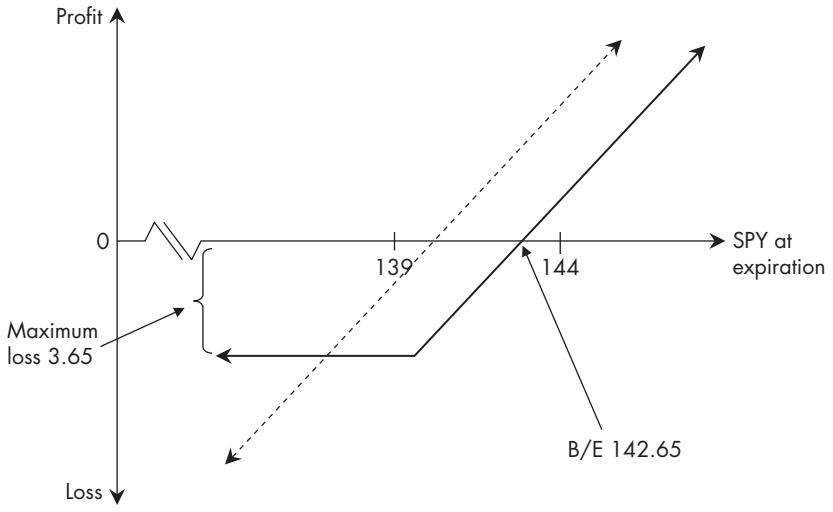
Consider a protective put example:

This is an example of a situation in which volatility is expected to increase.

Own 100 shares SPY at 140.35
Buy 1 SPY May139 put at 2.30

Although Isabel bought a put because she was bearish on the Spiders, a different trader, Kathleen, may buy a put for a different reason—she's bullish

EXHIBIT 1.7 SPY protective put.



but concerned about increasing volatility. In this example, Kathleen has owned 100 shares of Spiders for some time. SPY is currently at $140.35. She is bullish on the market but has concerns about volatility over the next two or three months. She wants to protect her investment. Kathleen buys 1 SPY May 139 put at 2.30. (If Kathleen bought the shares of SPY and the put at the same time, as a spread, the position would be called a married put.)

Kathleen is buying the right to sell the shares she owns at $139. Effectively, it is an insurance policy on this asset. Exhibit 1.7 shows the risk profile of this new position.

The solid kinked line is the protective put (put and stock), and the thin dotted line is the outright position in SPY alone, without the put. The most Kathleen stands to lose with the protective put is $3.65 per share. SPY can decline from $140.35 to $139, creating a loss of $1.35, plus the $2.30 premium spent on the put. If the stock does not fall and the insuring put hence does not come into play, the cost of the put must be recouped to justify its expense. The break-even point is $142.65.

This position implies that Kathleen is still bullish on the Spiders. When traders believe a stock or ETF is going to decline, they sell the shares. Instead, Kathleen sacrifices 1.6 percent of her investment up front by purchasing the put for $2.30. She defers the sale of SPY until the period of perceived risk ends. Her motivation is not to sell the ETF; it is to hedge volatility.

Once the anticipated volatility is no longer a concern, Kathleen has a choice to make. She can let the option run its course, holding it to expiration, at which point it will either expire or be exercised; or she can sell the option before expiration. If the option is out-of-the-money, it may have residual time value prior to expiration that can be recouped. If it is in-the-money, it will have intrinsic value and maybe time value as well. In this situation, Kathleen can look at this spread as two trades—one that has declined in price, the SPY shares, and one that has risen in price, the put. Losses on the ETF shares are to some degree offset by gains on the put.

Measuring Incremental Changes in Factors Affecting Option Prices

At-expiration diagrams are very helpful in learning how a particular option strategy works. They show what the option's price will ultimately be at various prices of the underlying. There is, however, a caveat when using at-expiration diagrams. According to the Options Industry Council, most options are closed before they reach expiration. Traders not planning to hold an option until it expires need to have a way to develop reasonable expectations as to what the option's price will be given changes that can occur in factors affecting the option's price. The tool option traders use to aid them in this process is option greeks.