Puts and calls offer investors a number of opportunities beyond the simple strategies discussed in this chapter. We will briefly examine some combinations of options that can be written or purchased, and consider the use of spreads.

### Combinations of Options

Options can be mixed together in numerous ways. The typical combinations are a straddle, a strip, and a strap. A **straddle** is a combination of a put and a call on the same stock with the same exercise date and exercise price. A purchaser of a straddle believes that the underlying stock price is highly volatile and may go either up or down. Buying the straddle eliminates the need to call the market correctly. The buyer of the straddle can exercise each part separately, and therefore can profit from a large enough move either way. However, the price of the stock must rise or fall enough to equal the premium on both a put and a call; therefore, the straddle buyer must be confident that the underlying stock has a good chance of moving sharply in at least one direction.

Straddles can also be sold (written). As is always true about the two sides in an option contract, the seller believes that the underlying stock price will exhibit small volatility but could go up or down. Like the purchaser, the writer does not forecast a likely movement in one direction rather than the other.

A **strip** is a combination of two puts and a call on the same security, again with the same expiration date and exercise price. In this case, the purchaser believes the probability of a price decline exceeds the probability of a price rise and therefore wants two puts (but also wants some protection in the opposite direction). The seller obviously believes the opposite.

A **strap** is similar to a strip but combines two calls with a put. Here, of course, the purchaser believes the probability of a price increase exceeds that for a price decrease, and again, the writer expects the opposite.

### Spreads

Rather than being only the buyer or the seller of various combinations of puts and calls, an investor can be both simultaneously by means of a spread. A **spread** is defined as the purchase and sale of an equivalent option varying in only one respect. Its purpose is to reduce risk in an option position, and it is a popular practice.

The two basic spreads are the **money spread** and the **time spread**. A money spread involves the purchase of a call option at one exercise price and the sale of the same-
maturity option, but with a different exercise price. For example, an investor could buy an IBM January 80 call and sell an IBM January 90 call.

A time spread involves the purchase and sale of options that are identical except for expiration dates. For example, an investor could buy an IBM January 90 call and sell an IBM April 90 call.

Investors use particular spread strategies, depending on whether they are bullish or bearish.

Example 19A-2
Assume you are bullish about IBM but wish to reduce the risk involved in options. IBM is selling for $84, with four-month call options available at exercise prices of $90 and $80 for $3 and $8, respectively. A bullish money spread consists of buying the $80 call and selling the $90 call. Your net cost is now $5, which is the maximum you could lose if the calls expire worthless because IBM’s price dropped sharply. If IBM rises, you purchase the $90 call to offset the $90 call sold, resulting in a loss. However, your $80 call will be worth at least the price of the stock minus the exercise price of $80, and when this is netted against your loss on the $90 transaction, you will have a net gain. In effect, you give up some potential profit (what could have been earned on the $80 call alone) to reduce your risk (by reducing your net cost) if the stock price declines.

Appendix 19-B
WARRANTS

The definition of a warrant is very similar to that of the call option. A warrant is an option to purchase, within a specified time period, a stated number of shares of common stock at a specified price. The following are important differences between calls and warrants:

1. Warrants are issued by corporations, whereas puts and calls are created by investors (whether individuals or institutions).
2. Warrants typically have maturities of at least several years, whereas listed calls expire within nine months.
3. Warrant terms are not standardized—each warrant is unique.

Warrants are most often issued attached to bonds as a “sweetener,” allowing the corporate issuer to obtain a lower interest rate (i.e., financing cost). The warrants can be detached and sold separately. In effect, a purchaser of bonds with detachable warrants is buying a package of securities.

Warrants are sometimes issued in conjunction with an acquisition or reorganization. They may also be issued during a new stock sale as partial compensation to the underwriters or as part of a common stock offering to investors.

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32 This is particularly true of companies with small capitalizations.
The attractiveness of warrants to investors declined with the proliferation of alternative equity-derivative securities, including not only puts and calls but also financial futures and futures options (both of which are explained in Chapter 20). By the early 1980s, however, the popularity of warrants was once again increasing, primarily in connection with bond issues. Larger and better capitalized companies, such as American Express and MCI Communications, began issuing warrants.

**Characteristics of Warrants**

A warrant provides the owner with an exercisable option on the underlying common stock of the issuer—that is, a claim on the equity. However, the warrant holder receives no dividends and has no voting rights.

All conditions of a warrant are specified at issuance. Although the issuer may set any expiration date, typically it is 3 to 10 years. In a number of cases, the expiration date can be extended. Warrants often provide for a one-to-one ratio in conversion, allowing the holder to purchase a number of common shares equal to the number of warrants converted. However, any conversion rate can be specified by the company, and fractional shares may be involved. The exercise price, defined as the per-share amount to be paid by the warrant holder on exercise, is also specified at issuance. It always exceeds the market price of the stock at the time the warrant is issued.

**Example 19B-1**

Pier 1 Imports, Inc., a specialty retailer of imported home furnishings and related items, issued a warrant as part of a 20-year debenture offering (a good example of a sweetener). Each $1,000 11.5 percent debenture carried 42 warrants with it, exercisable at $22 cash per share on a one-to-one basis.

Some warrants contain provisions under which the corporate issuer can call the warrant or alter the expiration date if certain conditions transpire.

**Example 19B-2**

The Pier 1 warrants were callable anytime for $18. The expiration date could be accelerated by up to two years if the common closed at or above $40 for 10 consecutive trading days.

**Why Buy Warrants?**

Warrants offer investors a cheaper way to speculate on a particular common stock because the purchase of a given number of warrants is always cheaper than the purchase of a corresponding number of common stock shares. Therefore, investors can establish a given equity position for a considerably smaller capital investment through the use of warrants.

Investors trade warrants on the exchanges and over the counter exactly as they would common stock. They call their broker, usually trade in round lots, and pay normal brokerage commissions. Most investors never exercise warrants but simply buy and sell them in pursuit of capital gains.

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33 A few warrants are perpetual (i.e., they never expire).
34 Warrant conversions are usually adjusted automatically for any stock dividends or splits.
35 *The Value Line Convertible Survey*, which is separate from the *Investment Survey*, is an excellent source of information on warrants, convertibles, and puts and calls.
36 Prior to 1970, the NYSE had not permitted the trading of warrants for many years.
Investors are interested in warrants primarily because of their speculative appeal. Warrants provide leverage opportunities. Leverage produces larger percentage gains (and also losses) than the underlying common stock for given fluctuations in the price of the common.

Example 19B-3

On one observation date, the Pier 1 common stock traded at $18.25 and the warrant traded at $5.75. Because an investor would have to pay $22 to exercise this warrant and receive a share of stock, no one would be willing to do so at that time. Nevertheless, investors were willing to pay $5.75 per warrant to speculate on future price movements. Assume, for example, the stock doubled in price to $36.50 per share (100 percent appreciation). The warrant at that point would be worth a minimum of $14.50 ($36.50 minus the $22 exercise price). This would represent a gain of $8.75 per warrant, or 152 percent appreciation. In fact, this warrant would probably sell for more than $14.50, because of increased investor interest, resulting in an even larger appreciation percentage relative to the common.

This example demonstrates the leverage potential possible from a warrant. Other things being equal, the warrant price will appreciate more percentage-wise than the common stock price for a given increase in the common. (Accordingly, if the stock price declines, the percentage decline of the warrant price will often be greater.)

The primary disadvantage of warrants is that, like puts and calls, they are wasting assets. Unless the price of the stock rises enough to make exercise worthwhile, the price of the warrant will decline over time and the warrant eventually will expire worthless.

Valuing Warrants

As is true for every financial asset, a warrant has value because of an expected future return of some type. In the case of warrants, because no dividends are paid, the expected return must be realized in the form of capital appreciation, or price change. Warrant valuation, therefore, involves an understanding of the price range in which a warrant may trade.

Investments Intuition

Because warrants, like options, are equity-derivative securities, warrant prices must fluctuate within certain boundaries because the warrant price must bear a relationship with the price of the underlying stock. Otherwise, arbitrageurs would buy one security while simultaneously selling the other and earn a profit. For example, if a warrant could be exercised for one share of stock at $10 per share and the stock was selling for $20 per share, the warrant could not sell for less than $10. If it did, it would pay arbitrageurs to purchase the warrant and exercise it, in effect buying the stock for less than $20 per share.

Warrants fluctuate in price between a minimum and maximum value, similar to options. The maximum value of a warrant is the price of the underlying common stock. The price of a warrant, which is a claim on the common stock, can never exceed the price of the stock itself because no return beyond the value of the stock is possible. In fact, most warrant prices never reach their maximum value because warrants are an expiring asset—their time value decreases as they approach maturity.

37 For simplicity, this discussion assumes a one-to-one purchase ratio between the warrant and the common.
The minimum value of a warrant is the difference between the market price of the common and the warrant’s exercise price, if this spread is positive. This difference must hold, at least approximately, or arbitrageurs could purchase the warrant, exercise it immediately, and sell the common stock received, thereby earning a profit. If the spread is negative (the exercise price exceeds the market price), the minimum price (MP) of the warrant is zero. Thus,

\[ MP = \begin{cases} 0, & \text{if } CMP < EP \\ (CMP - EP) \times N, & \text{if } CMP > EP \end{cases} \]  

(19B-1)

where

- \( MP \) = minimum price of a warrant
- \( CMP \) = current market price of the stock
- \( EP \) = the exercise price of the warrant
- \( N \) = number of common shares received per warrant exercised

Equation 19B-1 is often referred to as the theoretical (calculated) value of a warrant because it produces the intrinsic value of a warrant. In actuality, warrants typically sell above this calculated value. The amount in excess of the formula value is referred to as the premium. The premium can be calculated by rearranging Equation 19B-1 into 19B-2.

\[ \text{Premium} = \text{Market price of the warrant} - \text{Minimum price of the warrant} \]  

(19B-2)

Example 19B-4
Returning to the Pier 1 Imports warrants, we find that the following calculations can be made, using the prices previously cited as an example.

Minimum price for Pier 1 warrants = $0 because CMP < EP

The minimum price would have to be considered zero because the current market price was less than the exercise price (obviously, the price cannot be negative).

The premium would be calculated as

Premium for Pier 1 warrants = $5.75 - $0 = $5.75

On the observation date, the Pier 1 Imports warrant was selling for a premium of $5.75 above its minimum price. Investors were willing to pay this because the warrant was selling at slightly less than one-third the price of the common and the maximum loss was relatively small (i.e., $5.75 per warrant). As shown earlier, the potential return could be large because of the leverage involved.

Some warrants, of course, are in the money—the stock price exceeds the exercise price.

Example 19B-5
Tyco Toys issued a warrant with an exercise price of $16.50. On one observation date, the price of the common was $20.25, and the price of the warrant was $7.88. Therefore, the minimum price of the warrant was $3.75, and it was selling for a premium of $7.88 - $3.75, or $4.13.

Figure 19B-1 shows the relationships that exist among the market price of the warrant, the warrant, the minimum (theoretical) price as given by Equation 19B-1, the
maximum price of the warrant, and the premium. The minimum price line starts at EP, the exercise price of the warrant. The minimum price of the warrant rises (becomes positive) as the price of the stock exceeds the exercise price. Notice that as the price of the common stock continues to increase, the size of the premium decreases, a phenomenon illustrated in Figure 19B-1. Finally, note the line representing the maximum price for the warrant. Why is this drawn at a 45-degree angle?

**The Speculative Value of a Warrant**

What determines the premium investors will pay for a warrant, that is, its speculative value? Because investors typically purchase warrants to speculate on the underlying common stock, some obvious factors will affect the premium, or speculative potential, of the warrant. These include the following:

1. **Remaining warrant life.** Clearly, other things being equal, the longer the remaining life of a warrant, the more valuable it is. A warrant that currently is unattractive to exercise may become attractive six months, two years, or eight years from now as a result of appreciation in the common. Most investors are well advised not to purchase a warrant with less than three years remaining to maturity.
2. **Price volatility of the common.** Other things being equal, the more volatile the price of the underlying common, the more likely the warrant is to appreciate during a given time period. Investors are willing to pay larger premiums for such a warrant.
3. **The dividend on the underlying common.** Because warrant holders receive no dividends, an inverse relationship exists between the warrant premium and the expected dividend on the common.
4. **The potential leverage of the warrant.** As previously explained, warrant prices rise (and decline) faster, in percentage terms, than the price of the stock. Some warrants have greater leverage possibilities than others and therefore command larger premiums.

In connection with the leverage potential of the warrant, notice in Figure 19B-1 that the premium becomes smaller as the price of the stock rises. Why? As the stock price increases, the leverage potential decreases. In other words, the ability of the warrant to magnify percentage gains on the amount invested decreases as the price of the stock rises.
Example 19B-6 Consider the following examples for the Pier 1 Imports warrant, assuming the same stock price of $18.25 and the same warrant price of $5.75 as previously used.

- Stock price doubles from $18.25 to $36.50. 100% gain
- Theoretical value of warrant rises $5.75 to $14.50. 152% gain
- Stock price rises an additional 50% from $36.50 to $54.75. 50% gain
- Theoretical value of warrant rises from $14.50 to $32.75. 126% gain
- Stock price rises an additional 25% from $54.75 to $68.44. 25% gain
- Theoretical value of warrant rises from $32.75 to $46.44. 42% gain

$54.75 - 22 = $32.75 theoretical value; $32.75 - 14.50/14.50 = 126% gain.