Using Options as a Risk Management Tool, Protecting Assets, and Increasing Investment Income

MICHAEL D. COHN

MICHAEL D. COHN
a registered investment advisor, is a senior managing director with Atlantis Asset Management based in New York, NY.
michael.cohn@aam-llc.com
www.aam-llc.com

Equity investors effectively invest in a company's future prospects and earnings potential. The premise is that over time the earnings of that company will grow and that the price of the asset will thus grow in value, compounding investment returns through dividends earned each year and capital gains accruing, as the fundamental performance of the company improves. Thus, equities, like all financial assets, can be said to have a current value (the current price of the stock or bond) and a future value (the instrument's possible price in the future). Investors are therefore paying a current price for the potential to earn their perception of that instrument's future value, a value which will be realized over time and will thus require the investor to wait for it to be realized. For investors seeking to monetize equity's or a bond's future price or prices, markets created a derivative instrument that allows them to avoid waiting for that value to be realized: options.[1] There are many variations in these contracts, with options allowing an investor to reflect the anticipation that the price of the underlying instrument may go up or down, over various time frames and with different expected price performance patterns.

In this article, we start with a brief review of options theory to set the basis for the balance of our discussion which relates to three uses to which one can put these options to work as an important risk management tool.

A BRIEF DISCUSSION OF OPTION PRICING THEORY

The price of any given option is based on a combination of interest rates, time value, volatility, and the difference between the current price and the strike price, defined as the price at which the investor who holds a long option position may, but is not obligated to, buy or sell the stock. The standard pricing model or formula that is the basis for the theoretical price of an option was developed in the 1960s by Fischer Black and Myron Scholes, and is called the Black-Scholes model for short. It has become the de facto standard for pricing derivative instruments. Though it only provides the theoretical price for an option given certain specific assumptions, the formula is also widely used for pricing employee stock options, warrants, and types of convertible securities. Interest rates and time value are the two prime valuation factors subject to fallible assumptions. These are interrelated and in part combine with the value of the "life" of the option, which is measured by how long (days, months, or years) the "contract" exists.

How does one place a value on time? In the case of derivatives or option contracts, the standard measure of interest rates is the three-month U.S. T-bill and/or Eurodollar rate, although there are numerous instances where a longer maturation rate is used, for instance when the life of the instrument extends significantly beyond the most immediate term

future. As an example, one can determine the time value of an option contract by dividing the yearly rate (for example 3% which expressed as a decimal is 0.03), dividing it by 360 (the number of days banks have agreed are in a year), and then multiplying that amount by the number of days in the life of the contract. The value of the interest rate and time value component of the option in dollars is the number just calculated multiplied by the strike price. When an option is purchased, in effect one is paying interest on the dollar value of the underlying equity that doesn't have to be put up as collateral to participate in the appreciation (or decline) in the value of the stock.

For example, XYZ Corporation is trading currently at $52, and a call option with a $50 strike price expiring one month from the time of purchase is bought for $3. The option has an intrinsic value of $2 plus $1 of "premium over parity." The cash needed to purchase the call is $3 versus the $52 paid if the stock was bought. The seller of the option makes the option buyer pay an interest rate on that $49 savings. The seller of that option had to buy the stock to "hedge" selling the calls. In reality one pays the interest cost of the option seller's stock purchase. The potential for price appreciation of the call option is the same had the stock been purchased. One is paying an interest charge on the capital savings.[2]

There is however another component in the valuation of the option: the buyer must be paid for the risk that the price of the stock will not be where it is expected to be between the time when the option was purchased and its maturity. This risk is directly a function of the volatility of the price of the stock and of the difference between the contract or strike price and its current price. Volatility is defined as the standard deviation of the change in value of a financial instrument within a specific time horizon. More simply, it is the relative rate at which the price of a security moves up and down. Volatility is found by calculating the time-weighted standard deviation of daily change in price. If the price of a stock moves up and down rapidly over short time periods, it has high volatility. If the price almost never changes, it has low volatility. The volatility of almost any financial instrument that is quoted at least on a daily basis is calculated and published by many different sources.

An example helps illustrate this interaction. For instance, let us take two stocks both priced at $25; one is a biotech company that has a blockbuster treatment in phase III trials and the other is an electric utility that pays a high dividend. Assume one owned a $30 call option on each one. The biotech company's stock price moves up and down violently based on rumors of how the trials are going or how a competitor's drug is working or not working. The electric utility's stock rarely moves appreciably and mainly follows interest rates. Which stock over a specific time period has the greatest odds of appreciating to $30 and above? The biotech company's stock price moves around the most; therefore it has the highest volatility measure and will have the highest probability of reaching $30 or above, within the given time period. The call options on the biotech company will be priced appreciably higher because of the much higher volatility. As a rule, investors will almost always pay more for the better odds.

Once the concept that options are continually depreciating assets because they are based on interest rates and other measures that decline over time, is understood, the issue becomes how to use these tools to enhance a portfolio strategy.

OPTIONS AS STRATEGY ENHANCERS

Over the last 100 years, the U.S. stock market has provided a return in excess of 10%, with dividends reinvested, for the buy-and-hold investor. Though this fact is well understood, what is not fully perceived is that almost half of those returns come from the reinvestment of an average dividend return of over 4%. Today's dividend yield on the S&P 500 is about 1.7%. An investor today cannot expect the equity returns of the past, going forward, based on the current level of dividend returns. In order to justify the risk of equity investment today a cash flow should be generated to re-create the dividend-compounding effect that has been close to 50% of past stock market returns. Derivative income and hedging strategies are tools that portfolio risk managers use to increase total return and mitigate the risk of the financial markets.

To a majority of investors, the use of options connotes "risk taking," and the use of leverage. Though certain applications of options may in effect meet that perception, the option strategies discussed in this article are methodologies designed to *lower* the risk inherent in holding equity investments. As with any area of investing, risk and complexity can be misunderstood. The attempt here is to shed light on what are viewed as complex devices by means of some real-world examples. We will successively be looking into option-writing strategies as a means of generating additional income,[3] option-buying strategies as a means of hedging downside risk, and a reverse dispersion strategy that has certain advantages over traditional collars.

GENERATING INCOME: CALL OPTION WRITING

As an owner of stock, the strategy of selling selected call options on one's shares is a way to extract the time and interest rate value of the asset while waiting for the opportunity of capital gains to present itself. This technique is called a "covered-call" strategy. Because no additional capital is required to execute this strategy, call options, when sold, pay for the time and the opportunity cost of holding an equity investment. When an option is sold against stock that is held in one's portfolio, money is received from the buyer of the call option, and it will immediately be credited to the seller's cash account balance.

For example, suppose that, on January 3rd, one owns 500 shares of Apple Computer trading at $63 per share. One might sell a February $70 call option against those 500 shares of stock for about $2.50, which is a sale, to someone, of the right to buy the stock at $70 per share anytime before the February expiration date (the 3rd Friday of the month). If the stock closes below $70 a share on the February expiration date, the call option will expire worthless, in which event the stockholder will pocket the premium, $2.50 (representing a 4% return on the $63 Apple stock), and still own the 500 shares of Apple. If the stock closes above $70 per share and the owner of the call option chooses to exercise their right to buy Apple at $70 per share, the stock would have risen from $63 to the sell price of $70, earning the shareholder a $7 profit plus the $2.50 for which the call option was originally sold. The total return in this example would be $7.00 plus $2.50 for a $9.50 gain, representing a 15% return.[4]

Since many investors own more than one stock, this strategy can be applied to many of the equities held in a portfolio of stocks. Of course, results will vary depending on the price of the option and the performance of the stock price.

Each time a call is sold against a stock position, positive cash flow is created and the risk of holding stock is reduced, in part by lowering the total cost of the stock(s) in the portfolio. In the example of Apple (above), selling calls six times (once every two months) over the course of a year would lower the original $63 cost of Apple by $12.50 (assuming a $2.50 premium), to $51.50. This risk-reduction is achieved by accepting a different risk, the risk that the price of the stock will rise above the strike price during the period. This must be carefully examined, particularly for a taxable investor, as the tax circumstances surrounding the transaction vary.

In practice, ½% to 1% per month in income might be generated selling covered calls on a portfolio of stocks (given that at least two thirds of the equities held in a portfolio are optionable).

Let us return to what happens if the price of the stock appreciates beyond the strike price. If the owner doesn't want to sell the stock for various reasons (i.e., low cost basis) the call can be bought back before expiration and another one sold with a longer expiration or a higher strike price. For example, suppose one owns 100 shares of XYZ Corporation trading at $52, then sells a $55 call option against the stock position. At option expiration, the stock price of XYZ Corporation has climbed to $56. If one does not want to sell the stock, the $55 call option can be bought back (covered) and a $55 or $60 call option expiring in the next month can be sold to replace it. A program of selling call options on stock positions, when applied correctly, can create additional income and offset portfolio costs such as management fees, transaction costs, and margin interest, thus enhancing overall net portfolio returns.

A number of stock market studies conclude that over 90% of stock market gains can be attributed to fewer than 5% of the trading days.[5] Taking out those few high return days, the market's tendency is to tread water 95% of the time. A good case is made for letting time work for a portfolio by continually collecting interest and volatility premiums.

HEDGING DOWNSIDE RISK: LONG PUT OPTION STRATEGIES

Options can be purchased to hedge the risk of a stock, or the market in general, from falling in price. Put options, when purchased, give the buyer the right to sell the underlying stock or basket of stocks at any time before expiration of the contract at a predetermined (strike) price. Owning put options effectively "hedges" an investment by putting a floor on an investment's value. This is the equivalent of buying insurance on a financial asset. Put options can be purchased on and will effectively hedge stocks, stock indexes, stock sectors, commodities, and bonds.

When the value of a concentrated position in a single equity comprises a majority of the net worth of a trust, corporation, or individual, the possibility of a single event dissipating a large percentage of the value is greatly increased. A method of mitigating concentrated equity risk is a combination of both selling a call and buying a put at the same time. Both the sold call and the purchased

put can be executed at the same price effectively making this a cashless hedge.[6] It is called a zero-cost collar. This strategy not only reduces the risk of owning a concentrated equity position, but also avoids the taxable event that would occur if the stock were sold.

Such a transaction can be structured to allow for varying degrees of upside participation as well as downside protection. As long as the investor leaves at least 10% upside and 10% downside risk on each side of the transaction (sale of calls and purchase of puts), currently the IRS will not consider the transaction a "constructive sale" for tax purposes. Guidelines can and do change frequently. Always consult a tax advisor before effecting transactions on low cost basis assets.

For example, the former CEO of XYZ Corporation, who just retired, owns 100,000 shares of XYZ currently trading at $35 per share. He or she could simultaneously buy a long-term (LEAP) put option with a strike price of $30 ($5 below the stock price which is more than 10%) and sell a call option with the strike price of $40 ($5 above the stock price which is more than 10%) for the same price. Because the value of the call option sold is the same as the purchased put option no money is exchanged (costless). The stock is now collared. If the price of the stock goes above $40 the call option can be bought back so the stock does not have to be relinquished, and if the stock price goes below $30 the put option can be sold thereby getting back in cash the value which is "lost" with the stock trading below $30. If the stock is between $30 and $40 at expiration both contracts expire worthless and the stock position can be collared again. Once the position is hedged (collared), the value at the lower limit of the collar is like cash, and the stock can be used as collateral to diversify into other market sectors and asset classes, thus effectively spreading out risk and taking advantage of other investment opportunities.

REVERSE-DISPERSION STRATEGY

Another variation of the collar technique, called a "reverse-dispersion" strategy, can be applied to whole portfolios of stocks. This hybrid of the collar strategy might be appropriate if an investor is concerned about preservation of wealth but still wishes to participate in the capital gains potential of the equity market.

The basis of the strategy is that prices of the options on individual stocks are generally higher than the prices of the options on whole indexes. Using this pricing discrepancy as a hedging device, one would sell the calls on each stock in a portfolio and use the proceeds generated by these sales to purchase the puts on an index that might, as closely as possible, mirror the performance of the stocks within the portfolio. Currently there are many index and sector exchange-traded funds with options, making it easier to hedge a wider universe of portfolio variations.

To put this hedging method into practice, the portfolio manager would look at the asset allocation of the portfolio by market sector. The performance of all of the stocks in the account that might belong to, for example, the energy sector would be back-tested for their performance as a group, over at least two or three years. One would compare this performance to an oil or energy index's performance that has option contracts listed on them. In the case of energy stocks one might reference the AMEX Oil Index or the three different energy sector exchange-traded funds. As long as there is at least an 80% correlation of the performance between the owned basket of energy stocks and the corresponding index or ETF, the reverse-dispersion strategy can work.

In most cases a diversified portfolio of stocks will closely (within 80%) correlate to a broad basket index such as the S&P or Russell broad-based indexes. Once the appropriate correlation has been established one would sell out of the money (a strike price higher than the current stock price) calls on each one of the stocks within the portfolio, then one would buy out-of-the-money puts on the broad-based index using the proceeds of the call sales. Offsetting the cost of buying protective index puts with the cash generated by selling the higher volatility calls on the individual components can create a hedged portfolio for little or no cost.

While this strategy is not a perfect hedge because of the imperfect correlation factor (there are methods of eliminating higher percentages of risk, yet they are expensive and still leave the possibility of a negative return), the efficiency increases with larger portfolios because as more stocks are owned the correlation factor becomes higher. As a general rule a portfolio of 30 or more stocks equally weighted across eight or more market sectors will correlate highly to a broad-based index.

To understand the varying degrees of effectiveness, if one has an 80% correlation factor, then there is an 80% chance of the hedge working as planned. One must also understand that, in the case of a calculated 80% probability (correlation), there is an *equal* 20% chance of the hedge performing either better or worse than originally planned. The 80% rule in the context of investment probabilities can generally be a good bet.

The reverse-dispersion strategy will have an appeal to charities, foundations, and similar trusts because of the low cost downside protection to the asset base. When the general market depreciates the portfolio of an ongoing charity or foundation that relies on multiple benefactors, both the loss of an appreciable portion of the asset base and the resulting diminishing contributions can be devastating to the operations of their respective beneficiaries. Once an asset base is significantly diminished, the performance required for the assets to appreciate to the prior level becomes unrealistic without taking undue investment risk.

While most of these strategies can be executed by any individual with experience and knowledge of option theory, they do require that a certain amount of added attention be paid to the execution and maintenance of option positions. There are now six competing option exchanges that post competing prices for a large portion of option products, making the efficiency of these techniques greater because of the narrower pricing spreads. For larger portfolios it makes sense to have a professional portfolio or risk manager with related experience handle the specifics. When seeking a costless collar transaction it becomes very important to hire a professional risk manager or field competing offers from the various derivatives desks that have proliferated since these transactions have become popular. The costless collar will usually be the most cost efficient, versus executing an asset swap, because of the competitive bid process, especially if the transaction can be executed on a major options exchange.

For tax-advantaged accounts such as retirement accounts (IRAs, 401ks), private foundations, charities, and charitable remainder trusts these strategies are quite effective for preserving wealth, lowering total volatility, and generating income. The only caveat is that, when using the costless collar strategy in a tax-advantaged account, the collared stock cannot be used as collateral because margin is disallowed in those types of accounts. For taxable accounts, option income is currently treated as current income and stock gains are subject to capital gains rules which are dependent upon the holding period and cost basis of the stock. An accountant should be consulted to discuss all relevant tax implications.

For certain marital trusts (e.g., QTIPs), the income-generating strategy can be especially useful both to the income beneficiary and the remaindermen. Typically, to generate current income, investments with a high current yield are employed at the expense of growth and capital gains for the remaindermen. Using the covered call strategy a high income can be generated and the potential for capital gains maintained by permitting the entire portfolio to be invested in equities, eliminating the trade-off of interests. In considering this strategy, however, attention must be given to governing law allocations between income and principal (e.g., sections 403 and 414 of the Uniform Principal and Income Act).

Exchange-traded options were created in the 1970s to make the implementation of these techniques more accessible to a wider universe of investors. These are just a few examples of the strategies that might be used as part of an overall risk management and diversification strategy. Derivatives can be utilized to manage the overall risk of virtually any investment portfolio, and given the recent amendments to the trust accounting guidelines with respect to derivatives, to a majority of trusts.

CONCLUSION

Risk management is a discipline today that goes well beyond the ideas that diversification and large cap investing satisfy the "prudent man" requirements of a trust advisor's responsibilities. The application of these and other techniques to control systematic risk and add to the compounded returns of both taxable and tax-advantaged portfolios, can be invaluable as part of any thoughtful investment plan.

ENDNOTES

[1]For a more detailed discussion of the nature of options, see Merrill and Thorley [1996] or Vine [2005], among other numerous possible sources.

[2]In practice, there is somewhat more to this simple calculation, as the rate of dividend paid by the underlying company also plays a role, as the buyer of the option does not get to receive that dividend, while the holder of the stock does.

[3]Note, however that this strategy may not be tax-efficient.

[4]Note that the investor would still have the "option" of buying back the option originally sold, which might or might not give rise to a realized loss depending upon the extent to which the price of the stock has risen above the $70 strike price.

[5]H. Nejat Seyhun, the Chairman of Finance at the University of Michigan School of Business Administration, analyzed the 7,802 trading days for the 30 years from 1963 to 1993. A mere 90 days over 30 years contained 95% of all the market gains. That is an average of 3 days per year. Similarly, the SEI Corporation performed a study in 1993 for the 10-year period from 1980-1989. The 40 trading days with the biggest gains accounted for 88% of the total gains for that period which was

over 227%. See Brunel [2002] for a more detailed discussion of this kind of experiment.

[6]See Welch [2001, 2002, 2003] for more detailed discussions of this issue. Also, Gordon [2001] and Gordon and Rosen [2001] provide additional useful insights.

REFERENCES

Brunel, Jean L.P. *Integrated Wealth Management: The New Direction for Portfolio Managers.* New York: Institutional Investor Books, 2002, pp. 212-214.

Gordon, Robert N. "Hedging Low-Cost Basis Stock." AIMR Conference Proceedings: *Investment Counseling for Private Clients III*, March 27-28, 2001, pp. 39-44.

Gordon, Robert N., and Jan Rosen. *Wall Street Secrets for Tax-Efficient Investing: From Tax Pain to Investment Gain*. Princeton, NJ: Bloomberg Press, 2001, pp. 208-209.

Merrill, Craig, and Steven Thorley. "Time Diversification: Perspectives from Option Pricing Theory." *Financial Analysts Journal*, May/June 1996, pp. 13-19.

Vine, Simon. *Options: Trading Strategies and Risk Management*. Hoboken, NJ: John Wiley & Sons, 2005.

Welch, Scott D. "Diversifying Concentrated Holdings." AIMR Conference Proceedings: *Investment Counseling for Private Clients III*, March 27-28 2001, pp. 30-35 and 42-44.

——. "Comparing Financial and Charitable Techniques for Disposing of Low Basis Stock." *The Journal of Wealth Management*, Spring 2002, pp. 37-46.

——. "Analyzing Alternative Hedging Strategies." *The Journal of Wealth Management*, Summer 2003, pp. 8-17.