Equity Derivative Strategies

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Understanding the tax implications of equity derivatives and the application of these instruments for taxable U.S. clients is a challenge worth meeting. Equity derivatives can play a useful role in implementing tax-efficient strategies that maximize after-tax returns. The key is to understand the costs, benefits, and rules for applying each instrument or strategy and then to select the best instrument to accomplish the investor's objectives and minimize the taxes.

Historically, U.S. trust departments that managed money for taxable investors were restricted in their use of derivative securities. Because of such obstacles (some of which are a matter of education more than anything else), derivatives are not the first tool that comes to mind for managing taxable investments, even though they offer advantages for many clients. Derivatives are often perceived as complex in themselves; the roles derivatives can play when taxes are involved add yet another layer of complexity. Equity derivatives, independent of any tax motivation, are used for reducing the risk of holding equities or as efficient substitutes for equities. In both contexts, derivatives have natural applications in tax-related strategies. This presentation discusses the general tax issues facing corporate money managers or high-net-worth individuals with respect to equity derivatives, explains how to use derivatives to maximize after-tax portfolio returns, discusses specific tax-efficient derivative strategies, and provides a case study highlighting tax loss harvesting.[1]

General Tax Issues

Before a discussion of applications of derivatives for enhancing after-tax returns and risk management, a review of the general U.S. tax issues that affect the use of equity derivatives will be helpful. The most common issues are how to distinguish between long-term and short-term capital gains and the dividend received exclusion. More-complex issues involve straddles, stock option transactions, qualified covered calls, Section 1256 contracts, and the wash-sale rule.

[1]I would like to acknowledge the contributions of Michael Dweck, Carmen Greco, Maria Tsu, and Mark A. Zurack in conducting the research and compiling the insights for this presentation.

Capital Gains. For individuals, sales of securities generally result in a long-term capital gain or loss if the securities are owned more than 12 months. A holding period of 12 months or less results in a short-term capital gain or loss. For individuals, net long-term capital gains are taxed up to a federal rate of 20 percent whereas net short-term capital gains (and ordinary income) are generally taxed at the top marginal tax rate of 39.6 percent.

Dividend Received Exclusion. U.S. corporations that hold equity in other U.S. corporations may exclude 70 percent of dividend income from their income tax. One requirement is that the position be held "at risk" for 46 days. The impact of this dividend exclusion is that corporations generally have an incentive to convert as much income into qualified dividends as possible. In this regard, common and preferred stock are preferable to fixed-income securities.

Straddles. The first question to answer when discussing the tax status of a derivative transaction is whether it constitutes a straddle. If a security or a derivative substantially diminishes the risk of loss of another security, this set of securities is considered a straddle position. Straddles include hedging a *stock* with a swap, a long put, or a short "nonqualified" call (qualified versus nonqualified calls are defined in the section "Qualified Covered Calls"). Selling stock index futures or stock index call options or buying index puts against a portfolio that holds more than 70 percent of the market capitalization of the index constitutes a straddle because it basically takes an indexlike portfolio and hedges it.

Straddle situations affect taxable investors in several ways. First, the investor's holding period is either suspended or terminated, which is not necessarily a bad thing if the investor already has long-term capital gains. Second, and most troublesome, is the inability to deduct losses to the extent that the investor has an unrecognized gain. Also, financing charges for straddle positions are not deductible. Instead, for the investor in a straddle situation, the charges are capitalized into the cost basis of the long position. Finally, corporations lose the 70 percent deduction on all qualified dividends for stocks that are part of straddle positions. Only in a few circumstances would a company want to do something that would constitute a straddle; corporations should generally avoid straddles.

Stock Option Transactions. The premium received or paid for stock option transactions is considered a capital item. When a physically settled stock option is exercised or unassigned, the cost basis or sale price can be adjusted by the premium received or paid. Stock options, with the exception of listed index options, are generally not marked to market at year end for tax purposes. The tax treatment of stock options depends on the time to expiration, the type of option, and how it is exercised or assigned.

- *Short-dated options.* Profits on short-dated options are generally considered short-term capital gains, but losses may be considered long term if the option is part of a straddle position.
- *Long-dated options.* For buyers of long-dated options, the tax treatment depends on the holding period. For example, if an investor buys a LEAP (Long-term Equity AnticiPation security—that is, an option that has 18 months, two years, three years, or more to expiration) and holds it to term, the gain on that option will qualify as a long-term gain.
- *Call exercise/assignment.* The cost basis or the sale price (i.e., the strike price) is increased by the amount of premium paid or received. For example, if an investor is short a call and sells the stock through the exercise of the call, the premium is reflected in the selling price of the stock.
- *Put exercise/assignment.* Similarly, the cost basis or sale price of stock is decreased by the amount of the premium paid or received from a put.
- *Cash settlement.* For cash-settled options, such as index options and some OTC options that are never assigned or exercised, the premium paid or received does not become part of the cost basis. Options that are never assigned are treated like a physically settled option that is closed out prior to expiration.

Qualified Covered Calls. Covered call options must meet several criteria to be considered qualified covered calls. First, they must be listed and exchange traded. Second, they must have more than 30 days to expiration. Third, the strike price must be not less than the first available strike price below the closing stock price. For example, if the stock closes at $52, an option with a strike price of $50 is the first call one could sell for it to be considered qualified.

Qualified covered calls can be used to extend the holding period, and they are probably the most widely used instrument for deferring gains. Selling a qualified covered call against a stock results in a capital gain or loss to the call writer, allows the holding period to continue if the call is out of the money, and suspends the holding period if the call is in the money. In the example of selling the call with the $50 strike price, the holding period is suspended. Finally, covered calls also allow for the dividend received exclusion.

Section 1256 Contracts. These contracts include U.S. exchange-traded stock index futures, broad-based index options, and options on index futures, which are all accorded the same tax status as commodity futures. Examples of Section 1256 contracts are S&P 500 Index futures and options, CME (Chicago Mercantile Exchange)–Nikkei futures contracts, and SIMEX–Nikkei futures contracts. The good news is that no matter how long an investor holds these derivatives, any gain or loss on Section 1256 contracts is treated at 60 percent long term and 40 percent short term. Section 1256 contracts provide investors the ability to sell short and obtain partial long-term capital gains tax treatment and to make the holding period irrelevant for long-term and short-term capital gains tax treatment. The bad news is that these derivatives are marked to market every year; therefore, a tax event occurs every year if these positions remain open at year-end. In addition, investors are unable to qualify for 100 percent long-term capital gains tax treatment.

OTC index options are not considered Section 1256 contracts and are treated the same as single-stock options for tax purposes. Therefore, if structured with a term greater than a year and held for a year or more, gains on a long OTC option can be treated as long term. Also, taxes are payable following the year the option is sold rather than marked to market annually as with 1256 contracts.

Wash-Sale Rule. Call options cannot be used to avoid IRS Section 1091, the wash-sale rule, which prevents taxpayers from selling securities at a loss and reacquiring "substantially identical" securities within a 30-day period before or after the loss sale. However, although an investor cannot sell a stock and replace it with a call option, the investor can sell a stock and replace it with a short put under certain restrictions.

A short put represents the right to sell a stock at a fixed price to the writer. If I sell a put, somebody has the right to sell the stock to me at a fixed price. The put arrangement is good news if I have a position with a loss in it and I want to harvest it in order to offset a capital gain. When I sell the underlying stock, I realize my loss, and when I short a put, I give someone the right to sell that stock back to me at a fixed price. If the other investor exercises the put option that I sold and sells the stock back to me, my original stock position will be reestablished.

Investors should keep in mind that selling a put does not violate the wash-sale rule as long as the put option is not deep in the money. Thus, to harvest losses and not be subject to the wash-sale rule, an investor can sell a put and keep the cash in a money market account for the 31 days. This approach is a useful way of harvesting losses.

The premium from the short put can also offset some of the potential opportunity losses if the stock turns around and rides all the way back up. To the extent that the investor believes volatilities are trading well above their historical levels, he or she is, in fact, making a strategic volatility sale on the option premium and will have that protection toward the upside of the stock. On the 32nd day, when the option expires, the investor can take the money out of fixed-income instruments and buy the stock again.

Strategies to Maximize After-Tax Returns

In portfolio management, derivatives are simply one way to maximize after-tax returns for individual investors. Many derivative applications require measurement of asset-class or country risk. Examples are option strategies, structured asset allocation strategies, and risk management. Using derivatives, portfolio managers can efficiently manage portfolio characteristics in terms of turnover and dividend yield, make asset allocation shifts, and achieve synthetic index exposure.

General Portfolio Characteristics. Derivatives can be used to alter the general characteristics of a portfolio—for example, to tilt a taxable investor's portfolio toward low-yield stocks that earn more of their returns from capital than from dividend income. Call options provide economic exposure to a certain stock without earning the dividend yield by paying at expiration the difference between the stock price and the option strike price. If an investor takes a stock that has a high dividend yield, such as a pharmaceutical stock or an oil stock, and replaces it with a LEAP or a long-term call option on the stock, the investor can maximize the long-term capital gains component of total return. In addition, the LEAP, like stock, allows the portfolio to be hedged with index futures or options without creating a straddle position. If the investor holds that position for more than a year, the investor has a long-term capital gain and has received no dividend yield. Depending on what the investor is doing with the money that is not being used to buy the underlying stock, the investor could, if desired, use options to slightly leverage the position in the stock.

Asset Allocation Shifts. Index derivatives can be used to manage asset-class or country allocations. The benefits are that the investor gets the 60/40 capital gains treatment and minimizes transaction costs, including taxes, commissions, the bid–offer spread, and market impact. For example, consider a portfolio manager for a taxable investor who is concerned about the risk of the stock market but does not want to sell stocks because of the taxable gains associated with a sale. To reduce the risk of triggering a taxable sale of stock, the manager can sell index futures or buy an index put option to hedge the portfolio. Instead of selling the investor's large-capitalization U.S. stocks, the manager can sell an appropriate amount of S&P 500 futures contracts against those stocks to reduce the portfolio's equity exposure, or if the manager wants to shift assets from one country to another, the manager can use futures contracts. But the manager has to be careful that the underlying portfolio does not represent more than 70 percent of the capitalization of the index; otherwise, both securities are considered part of a straddle position. Generally, in addition to having a low trading cost per se, futures also have this desirable tax treatment.

Creating Index Exposure. If an investor wants to achieve exposure to a certain index, the investor can choose between index funds, separate accounts, S&P 500 Depositary Receipts (SPDRs), and futures. The choice will depend on the investor's specific needs. **Exhibit 1** provides a comparison of these ways to gain exposure to the S&P 500.

- *Mutual funds.* Index exposure through a mutual fund makes tax loss harvesting difficult because investors' funds are commingled and the investor might have a capital gains distribution.
- *Separate accounts.* Separate accounts make sense for investors who value tax loss harvesting because an account can be customized to fit the investor's needs. Separate accounts also provide the flexibility of reducing turnover by avoiding frequent rebalancing, although infrequent rebalancing results in tracking error. Turnover tends to run 2–5 percent a year for most index funds and up to 20 percent for

Exhibit 1. Characteristics of Various Ways to Own the S&P 500

Category	Mutual Funds	Separate Accounts	SPDRs	Futures
Source of income	Dividends plus capital gains	Dividends plus capital gains	Dividends plus capital gains	Interest income plus capital gains
Taxation	Dividends, ordinary income rate; capital gains, depends on holding period	Dividends, ordinary income rate; capital gains, depends on holding period	Dividends, ordinary income rate; capital gains, depends on holding period	Interest, ordinary income rate; capital gains, 60% long term and 40% short term
When capital gains are realized	When stocks are sold or merged for cash	When stocks are sold or merged for cash	When SPDRs are sold or when stocks are merged for cash	Always recognized in the year position is established
Loss harvesting	Can only be done for all clients; generally not done	Can be customized to fit client needs	Can only be done at the index level	Not possible
Most tax-efficient vehicle when	Fund provides highest pretax return; investor does not need loss harvesting, is confident fund will harvest losses	Investor values loss harvesting	Investor does not want to be affected by the actions of others in the fund	Part of short-term trading strategy that is successful

index funds focused on small-cap stocks. If that level of turnover is still too high for a client and the client's account is managed separately, the manager may decide to avoid trading and tolerate higher tracking error simply to avoid the tax consequences.

SPDRs. Buying and selling S&P 500 exposure through SPDRs is useful for equitizing small and moderate amounts of cash. These securities trade and settle like stock, move generally in concert with the S&P 500, and pay a quarterly dividend. SPDRs represent ownership of a unit investment trust that is designed to track the price performance and dividend yield of the S&P 500. SPDRs (ticker symbol SPY) trade on Amex at a value approximately 1/10th of the S&P 500. Quarterly dividends are paid on the last business day of January, April, July, and October. The quarterly management fees, which are currently about 18.45 basis points a year, are charged to holders of SPDRs by netting the expenses against each quarterly dividend payment. SPDRs can be created in "creation unit" block sizes (50,000 SPDRs) by depositing into the SPDR trust a specified portfolio of stock closely approximating the composition of the S&P 500 and a specified cash amount for accrued dividends and rebalancing. SPDRs can also be redeemed in block sizes of 50,000 for a specific portfolio of stocks and a specified cash amount. The SPDR net asset value, which is computed each business day at the close of trading, represents the aggregate closing market value of the underlying portfolio of securities in the SPDR trust plus any accrued dividends less accumulated trust expenses on a per SPDR basis.

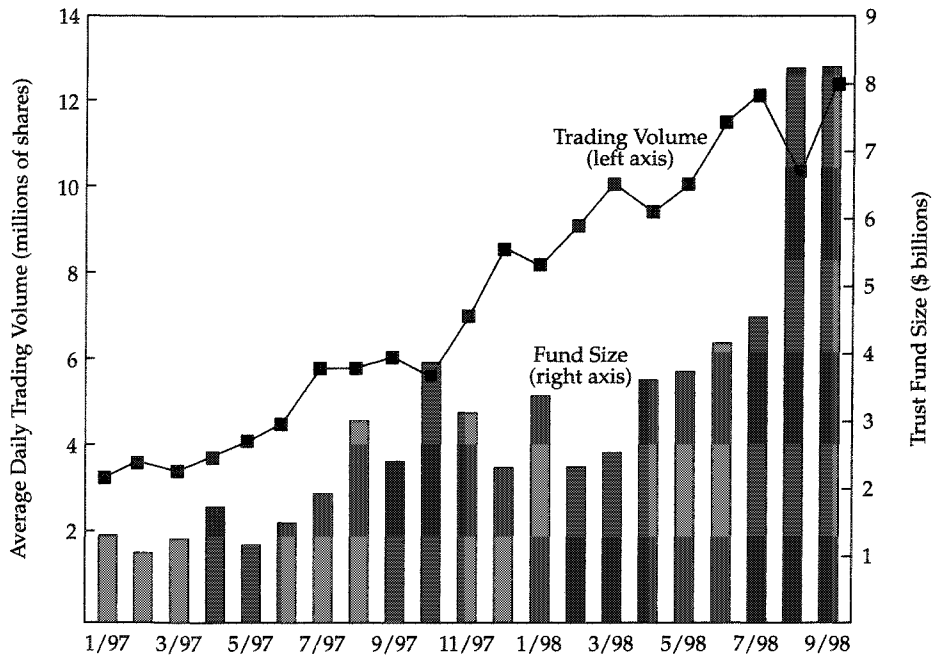
SPDRs have particular tax advantages, especially for investors who want minimal recognition of capital gains. The primary advantage is that capital gains generally occur only when the investor sells the SPDR or when index changes generate capital gains within the fund. So, the recognition of capital gains is totally under the investor's control, whereas if an investor buys an index fund through a mutual fund, capital gains recognition is at the discretion of the mutual fund manager. SPDR dividends are paid quarterly and are taxable.

The stock exchanges and retail brokers are interested in SPDRs because these vehicles offer the exchanges a way to compete with mutual funds. Brokers are looking for an alternative to mutual funds for clients who want to trade intraday. In addition to large-cap indexes, SPDRs are available on midcap indexes and will soon be available on sectors and on the Nasdaq 100 Index. **Figure 1** shows how SPDR trust size and trading volume have grown since January 1997. Outstanding shares as of September 30, 1998, amounted to 79.3 million, with capitalization increasing from $400 million in April 1995 to about $8.1 billion in September 1998.

Interestingly, changes in shares outstanding tend to lag market movements. For example, redemptions tend to exceed purchases following a market decline, which causes outstanding shares to decline, whereas purchases exceed redemptions during a rising market. Average daily trading volume for the third quarter of 1998 was approximately 10.9 million shares, which was more than 10 times the daily volume in 1996.

Synthetic Index Strategies. Investors have three ways of owning an index fund: buying the underlying stock in an index, buying stock index futures contracts and investing in fixed-income securities, or entering into an equity swap and investing in fixed-income securities. Synthetic index strategies provide investors with a payoff that is similar to buying the underlying index but also provide extra benefits, useful applications, and lower costs.

Figure 1. SPDR Market Size and Volume



When an investor buys the underlying stocks in an index, the investor receives the dividends, the capital gains or losses (depending on the ending value of the index), and the return on stock lending. Stock index futures and equity swaps offer means of generating index returns that are both flexible and efficient.

Buying stock index futures and investing in fixed-income securities provides interest income from the fixed-income investments and capital gains or losses minus the futures premium. The futures premium equals the futures price minus the current index value, which is the same as the index value multiplied by the interest rate, minus the dividend yield on the index minus the return on stock lending.

Futures allow an investor to capture some long-term capital gain—60 percent long term and 40 percent short term—on trading profits, but one drawback with futures is that creating the economic equivalent of an S&P 500 index fund involves buying an S&P 500 (or a Russell index) futures contract along with a money market fund investment of the same material value. The money market fund may generate interest income that is taxable, but taxable investors can avoid the taxes by using a money market fund that has some tax relief from, if not federal, at least state, taxes—for example, by investing in a municipal bond money market fund. Because the money market fund pays interest income, the taxable payoff from combining the futures contract with the money market fund may be higher than the dividend yield on an index, so this strategy is not necessarily a perfect substitute for an index fund.

Entering into an equity swap and investing in fixed-income securities is similar to investing in futures contracts. Investors earn interest income from the fixed-income investments, the total return on the specified index (gains plus dividends), less a fixed-rate or floating-rate payment made to the swap counterparty. An investor will generally be indifferent between buying the underlying stocks in an index and entering into a swap when the interest income from the fixed-income investment equals the sum of the fixed- or floating-rate payment plus the return on stock lending.

Synthetic index strategies provide investors with several benefits compared with buying the underlying stocks in the index. These strategies provide investors flexibility, operational ease, lowered transaction costs, opportunities for return enhancement through mispricing, and favorable tax consequences.

Synthetic strategies also have applications beyond achieving index exposure. Investors can use them to equitize cash positions and "transport alpha" to another asset class. An alpha-transport strategy enables a successful manager in one asset class, for example, to transport that skill to another asset class. Synthetic strategies are also helpful during manager transitions, for implementing a global asset allocation strategy, and for creating enhanced index funds.

Tax-Efficient Strategies

Once investors have a strong understanding of deriv-

ative instruments and their applications, portfolio managers can use these instruments to implement tax-efficient strategies that accomplish their clients' objectives. Three common objectives of taxable investors are converting short-term gains into long-term gains, managing market risk, and reestablishing exposure to stocks sold at a loss. Implementing derivative strategies to meet these objectives may address specific issues and provide important benefits, but it also may create certain risks for the investor.

Converting Short-Term Capital Gains. A good strategy to minimize the recognition of short-term and medium-term capital gains is to consider selling call options against the underlying stock position rather than selling the underlying stock and incurring capital gains. For example, suppose an investor is not as bullish now on a stock that he bought nine months ago and would like to reduce the size of his position. The cost basis of the stock is $25, and it is currently trading at $50. The investor can either sell the existing stock, buy a new stock and have a short-term capital gain, or write a nine-month call option with a $52 strike price and receive a $6 option premium.

The key is to sell a *qualified* call option—one that is either at the money or out of the money. Assuming a long-term capital gains tax rate of 20 percent and a short-term capital gains rate of 40 percent, if the investor sells the stock today, he will be left with $40 in after-tax dollars. If the stock moves above $52, the investor will generate a $33 (that is, $52 + $6 – $25) long-term capital gain. The investor's gain on the stock is limited because he has sold the right to own the stock to someone else. If the stock trades below the strike price, the option premium is taxed as a short-term capital gain. If the hedge is established, the stock will have to drop below $39.25 for the investor to be indifferent between the alternatives. Thus, as long as the stock trades above $40, the investor is better off selling that option and deferring the gain. If the investor sells the call option at $6 and then sells the stock at $40, the investor's after-tax proceeds will be approximately $40 (60 percent of the $6 option premium, or $3.60, plus 80 percent of the $15 gain on the stock, or $12, plus the original $25 cost basis of the stock).

Investors often make the mistake of selling nonqualified calls. If a stock closes at $56 on one day and the next day it opens down $2 and is trading at $54, some investors, believing they are not going to affect their holding period, may want to sell a call option with a $55 strike price, but the qualified call option rule is generally based on the stock's previous night's closing price. Investors make this error especially when stocks are having down days; they think they are selling out-of-the-money calls when, in fact, they are not. The options are out of the money at the time, but they are not out of the money based on the rule they are supposed to be following. What the investors end up doing is freezing that holding period.

Investors commit a greater error if they sell a call option that is two strike prices in the money, because not only do they freeze the holding period while the option is in place but they also reset the holding period to zero days at the expiration of the option.

Managing Market Risk. Investors can manage market risk and maintain long-term equity or bond holdings by using index futures and options on stocks, bonds, and indexes. For example, if an investor with substantial capital gains in many securities is concerned about the market and would like to reduce overall market exposure, she can sell stocks to increase her cash holdings, but by doing so, she generates substantial taxable capital gains. Instead, hedging stocks in a taxable portfolio with large gains with options or hedging the overall portfolio with stock index futures are good strategies for managing market risk and reducing tax consequences. The key is to make sure the portfolio and the hedge positions do not create a straddle (unless she is comfortable freezing her holding period). To avoid conflict with the straddle rule, this investor may have to modify her portfolio to make sure that it does not represent more than 70 percent of the market capitalization of the index. An alternative is for the investor to look for a combination of index options or index futures that does not create a straddle. Index futures currently trade on a variety of indexes, including the Russell 1000 or 2000, the DJIA, and the Nasdaq 100, so putting together a basket of index options or index futures that does not violate the straddle rule should not be difficult. Investors also have to be mindful of the different tax treatments of listed and OTC options.

Tax Loss Harvesting. An investor may want to sell a stock at a capital loss to offset a realized gain in her or his portfolio. Once the stock is sold, however, it cannot be repurchased for 31 days (without triggering a wash sale), and the investor may be worried about being out of the equity market during a period when the market is appreciating, missing out on a takeover opportunity, or missing out on a favorable move on a particular stock during the 31-day period. Selling put options is an efficient way to reestablish exposure to such stocks sold at a loss.

If the investor is selling a diversified group of stocks, one strategy is to sell the stocks at a loss and then replace them with an index-based instrument, such as a futures contract or a SPDR, for 31 days. If the investor does not want to "double down," the inves-

tor can sell a put to reestablish some economic exposure to the stocks. The put sale offers two important advantages. First, as long as the put is not deep in the money, it does not violate the wash-sale rule. Second, transaction costs are low because the put and stock sale tend to offset each other and if the put is exercised, the stock position is reestablished.

Consider an investor who owns a $50 stock that has a capital loss. He sells the underlying stock and then sells a put option on that stock with a strike price of $55; assume he receives a $5.30 premium to reestablish exposure to that stock. As long as the stock trades below $55, this investor will end up effectively repurchasing the stock at $49.70 because the option buyer will be happy to exercise the right to sell that stock at $55.

The downside of the strategy is that if the stock plummets to $30, the investor will have to pay $55 for the stock when the option buyer exercises the option, but if the investor had not sold the stock or the put option, the stock would still be worth $30. The consequences on the downside are similar to being in the stock itself.

On the upside, if this stock appreciates significantly by expiration of the option—to $60, $65, or even $70—the investor's put option will expire unexercised. Then, to reestablish the position, he will have to buy that stock in the marketplace for whatever price it is trading for at the end of the 31 days. The investor receives the put premium, however, as some compensation for having taken that risk. This strategy is clearly better than being altogether out of a stock that appreciates significantly.

The structure and timing of such a transaction are illustrated in **Figure 2**. In this illustration, the broker/dealer is taking the other side of the trade, but the investor could also simply sell the put option in the market. The investor has, say, 100,000 shares and sells 30,000 shares in the market and 70,000 shares to the broker/dealer. The transaction implicitly assumes some delta hedging and that the broker/dealer is buying the put option and some of the underlying stock from the investor. By selling the stock to a dealer, the investor gives the dealer a natural hedge for the put option that the dealer bought from the investor. At the end of the transaction, the dealer exercises the put option and the investor can reestablish the stock position. The benefit to the investor of completing this transaction with a broker/dealer is that transaction costs are very low.

Case Study: Tax Loss Harvesting

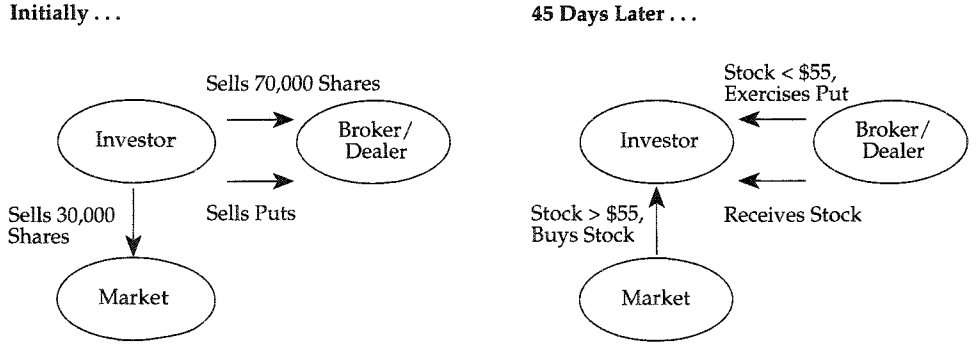
Taxable clients need to select the stocks in their portfolios that are best suited for harvesting losses. To decide among the several strategies available for selecting stocks for harvesting tax losses, the portfolio manager needs to consider the client's objectives and other important issues. The investor may want to harvest tax losses efficiently to offset taxable gains on other assets or to rebalance the portfolio to improve correlation to a benchmark.

Important issues to consider before implementing a harvesting strategy include

- determining the criteria for prioritizing the harvesting process,
- estimating the marginal tax benefit assigned to any realized losses,
- deciding which stocks to replace immediately and which stocks to repurchase 31 days later,
- assessing whether the extent of harvesting will affect the degree of rebalancing needed to improve the correlation to the benchmark, and
- choosing strategies to manage exposure during the 31-day period.

Three strategies are available for prioritizing the tax-loss-harvesting process. Some of my colleagues, Mark Zurack and Maria Tsu, have recently conducted a detailed analysis for a taxable client of the relative merits of these strategies. The strategies yield similar results if almost all of the losses are realized (i.e., if greater than 95 percent of the losses are harvested) but differ in efficiency if the client wants to realize a smaller portion of the losses.

Figure 2. Structure of Put Option Transaction to Reestablish Exposure



Strategy 1 is to harvest stocks if the *marginal benefit exceeds the marginal cost* of transacting. Strategy 1 is applicable if the marginal tax benefit for realized losses is 25 percent of the realized loss and the marginal cost is 1 percent of the notional value of the stock sold (including round-trip commission costs and the market impact of trading).

Strategy 2 involves minimizing transaction costs versus the value of losses realized by harvesting stocks with the *largest percentage loss first* until the desired amount of losses is harvested or a target level of turnover is reached. This strategy can apply whether or not the investor uses put options.

Strategy 3 involves harvesting stocks with the *largest dollar loss first* until the desired amount of losses is harvested or a target level of turnover is reached.

Strategy 3 is less efficient than Strategies 1 or 2. As the comparison in **Table 1** shows, if 95 percent or less of the available losses are harvested, Strategy 2 provides the most efficient means of harvesting. In Strategy 2, an investor can harvest 85 percent of the losses by selling 53 percent of the value of stocks with losses. Thus, the investor will realize the highest percentage of losses among the smallest percentage of stocks. **Figure 3** shows the relationship between the percentage of realized losses and the percentage of stocks with harvested losses for the three strategies. Unless the percentage of available losses exceeds 95 percent, Strategy 2 remains the best tax-loss-harvesting strategy.

Table 1. Percentage of Stocks with Losses Harvested

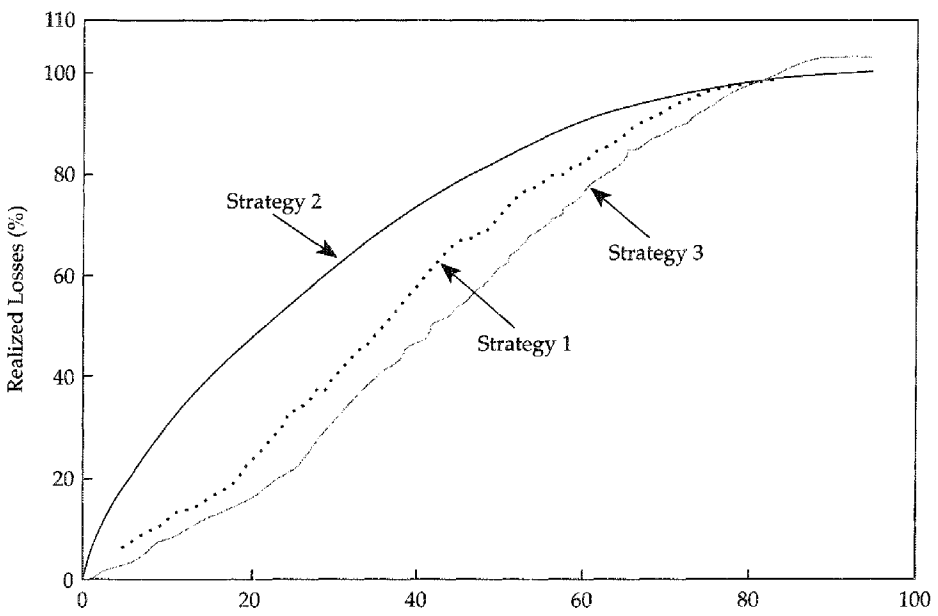
Percent of Losses	Strategy 1 (MB > MC)[a]	Strategy 2 (by % loss)	Strategy 3 (by $ loss)
80	57.7	46.9	64.2
85	63.1	52.9	70.0
90	67.5	60.3	75.4
95	73.9	70.6	80.9
99	87.3	87.2	90.5

[a]Marginal benefit exceeds marginal cost of transacting.

Managing Exposure during the 31-Day Period. At least three approaches exist to mitigate the exposure during the 31-day waiting period needed to avoid a wash sale: holding cash, buying SPDRs, and selling a put option on the stocks to be repurchased in 31 days. Each strategy has distinct advantages and disadvantages.

- *Holding cash.* This approach is quite simple for investors; it involves no transaction costs and no loss of principal if the market declines. But investors will experience a drag on performance if the market rebounds. Holding cash will also earn investors less than selling put options.
- *Buying SPDRs.* This method reduces tracking risk relative to a benchmark and provides market

Figure 3. Performance of Strategies for Harvesting Tax Losses



Note: Indicative pricing as of October 7, 1998.

exposure if the market rebounds. Drawbacks include the transaction costs to buy and sell SPDR shares and the condition that buying SPDRs provides no offset to stock-repurchase costs.

■ *Selling puts.* An investor who follows this approach will obtain an up-front option premium, which lowers the investor's cost basis. Transferring stock to a dealer (as shown in Figure 2) reduces the market impact of selling stock. Complexity and performance lags if the market rises rapidly are major disadvantages of selling puts. In addition, the effective purchase price of reestablishing stock exposure may be above the current market price if the market declines sharply.

Figure 4 demonstrates the payoff from selling puts for a client who wants to sell a put option on a $50 million basket of 300 stocks with a dividend yield of 1.95 percent to be repurchased in 31 days. If the stock falls significantly during the 31-day blackout period, the investor is better off simply liquidating the position. With the current basket price at $100, the client sells a put with a $107 strike price for a premium of $8. **Table 2** indicates that as long as the basket remains below $107, the effective cost of reestablishing the basket of stocks is $99. At prices above $107, the put option expires worthless but the initial premium helps offset the cost to repurchase the stocks.

Table 2. Example Strategy of Selling Puts

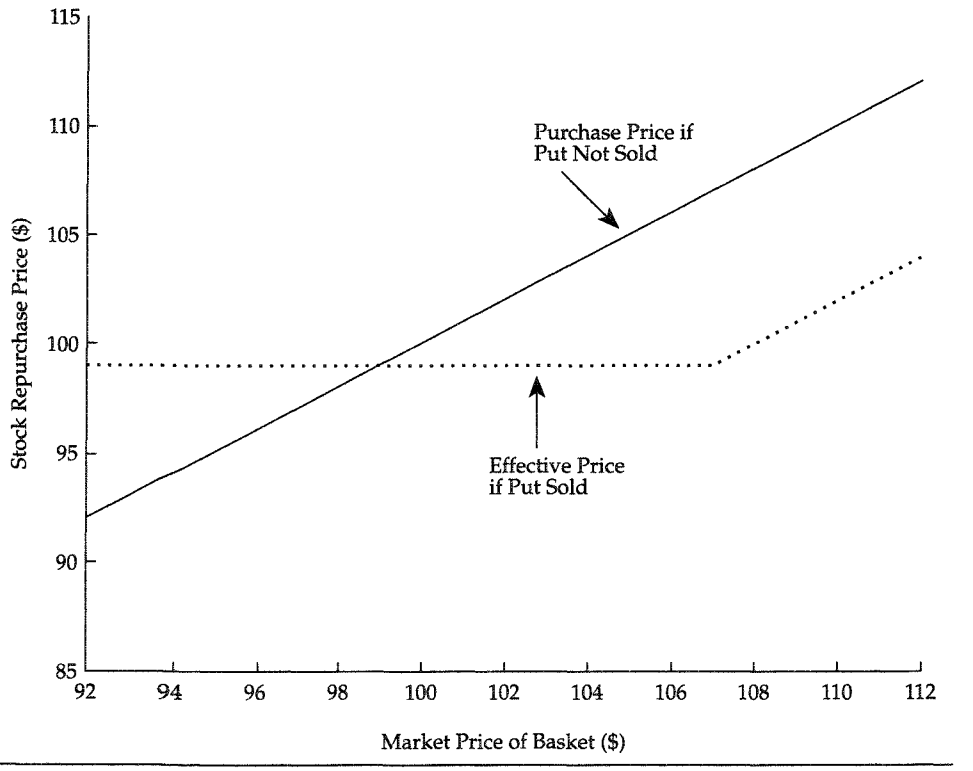
Basket Price	Put Value	Purchase Price	Effective Price
$ 92	$15	$107	$ 99
93	14	107	99
94	13	107	99
95	12	107	99
96	11	107	99
97	10	107	99
98	9	107	99
99	8	107	99
100	7	107	99
101	6	107	99
102	5	107	99
103	4	107	99
104	3	107	99
105	2	107	99
106	1	107	99
107	0	107	99
108	0	108	100
109	0	109	101
110	0	110	102

Note: Indicative pricing as of October 7, 1998.

Conclusion

Equity derivatives are useful instruments for maximizing the after-tax returns of a taxable investor's

Figure 4. Payoff from Selling Puts



portfolio because they offer alternatives to high-dividend stocks, provide a way to implement asset allocation shifts, or allow the creation of synthetic index exposure. Equity derivative strategies can also be used to efficiently convert short-term capital gains into long-term capital gains, reduce the implementation risk as a tax-loss-harvesting strategy by helping investors manage market risk during the 31-day lock-up period associated with avoiding wash sales, and maximize the benefits of tax loss harvesting.

Investors and portfolio managers need to understand the general tax issues surrounding equity derivatives before considering using them. Important considerations are the rules involving straddles, qualified covered calls, and wash sales. Also vital to effective use of equity derivatives is an understanding of what each instrument or strategy can and cannot do; the benefits, risks, and costs of each strategy; and most importantly, the tax implications of alternative strategies.

Question and Answer Session

Joanne M. Hill
Carmen Greco[2]

Question: Are SPDRs considered Section 1256 contracts?

Hill: No. Section 1256 contracts include futures or options that trade on a listed exchange. Section 1256 contracts were initially created to apply to commodities futures contracts. When index options started trading on the Chicago Board Options Exchange, the CBOE wanted to make them comparable in terms of tax treatment to futures index options that trade on the Chicago Mercantile Exchange. Initially, the Section 1256 contracts were brought in to include index options, but for tax purposes, SPDRs are treated like the purchase or sale of a stock. The primary disadvantage of SPDRs is that you pay a commission to purchase one, but if you hold the position a long time, the commission is amortized over a long period of time.

When an investor buys a SPDR, the investor does not receive exactly the same return as the S&P 500. For example, if you mark the SPDR at the end of a month and calculate the tracking error of that SPDR position to the S&P 500 return, the error will be 100–140 basis points. In other words, a portfolio performance report at the end of any month for SPDR positions will not be marked where the S&P 500 closes that month but where the SPDR closes that month. If you accumulate enough SPDR shares, the shares can be converted into units of the trust and you can actually take physical delivery of the trust holdings. Large institutions often arbitrage SPDRs by accumulating a number of units and converting them.

You have to take tracking risk to hedge the market risk of a portfolio that isn't a perfect replica of the benchmark index. So, SPDRs provide the tax advantage but take away the tracking benefit.

SPDRs trade at different prices from the index because they track futures, in the following sense: If the market goes down sharply on the last day of the month, futures will go out cheap and end up selling below where they should. Why? Because traders are in the market hedging since they cannot easily short a stock portfolio. There is a plus tick rule, but investors can sell futures, so futures are trading cheap. The market maker of the SPDRs, who is a specialist on the floor of the exchange, will now adjust the SPDR price based on where the market maker can hedge his or her position in the futures market. So, the market maker is making a market based on the hedging instrument, which is the futures contract. SPDRs will go out a little bit below the index on a big down day or above the index on a big up day. On a big up day, everybody comes in and buys SPDRs because they want to capture that move. So, a potential marking risk is present at the end of a, say, quarterly performance period that introduces some tracking error. That error washes out, however, over an annual period.

Greco: An advantage of SPDRs is that you don't need a plus tick to sell them short. So, when managers are not allowed to use derivative products, many of them use SPDRs for hedging because they don't want any extra paperwork and their charters allow the use of SPDRs. They sell SPDRs short for asset allocation and hedging purposes.

Question: Is shorting a SPDR against a diversified portfolio considered a straddle?

Hill: If that portfolio contains more than 70 percent of the market cap of the S&P 500, then shorting the SPDR constitutes a straddle. The 70 percent rule also applies if you go on the other side—long a SPDR and short a diversified portfolio.

Question: In selling call options to convert short-term capital gains to long-term term capital gains, if you write a $52-strike call and the stock immediately goes through the strike price, are the capital gains on the stock still long term?

Hill: Going through the strike price has no effect as long as the option holder does not exercise the option. But if the option gets deep enough in the money that someone exercises it prior to expiration (12 months), then the other side will be forced to sell the stock. Exercising an option early is irrational (it's never optimal to exercise options early from an option-pricing standpoint), but such things do happen, especially before a dividend payment.

Greco: A physically settled option entails no tax on the option. Options take on the holding-period characteristics of the stock position, so if you enter into a physically settled option, you actually deliver your stock. If the

[2]Carmen Greco, who works with Ms. Hill in the area of equity derivative strategies at Goldman Sachs, joined Ms. Hill for this question and answer session.

stock is held for 12 months and a day, it will trigger a long-term capital gain that is equal to the exit strike price plus a premium. For example, if you sell the $50-strike call for $5 and you have a zero cost basis, you're facing a $55 long-term capital gain, but you can convert long-term gains to short-term gains if you settle the option for cash. To remain flexible, however, you need to be leery of physical settlement. A customized option allows you to stay flexible as long as you don't have restricted stock.

Question: Hedging with put options and short calls (collars) to minimize concentration risk requires liquidity in the security. What other strategies are feasible for relatively illiquid securities?

Greco: Stock borrowing and liquidity are the first things we look at in terms of engaging in a strategy because we do not take a directional view on the stock. We hedge our positions, and that practice is pretty consistent throughout the investment community. If someone can't borrow the stock and the underlying stock has no liquidity, people who take on a counterparty position will not be able to maintain an economically neutral position throughout the life of the trade, so they will not engage in the trade in the first place.

Question: What are some of the risks that one should be wary of in entering into these kinds of contracts?

Hill: First, there is documentation risk. You should make sure that your client is educated about all the features of these derivatives and that your investment advisory agreement clearly authorizes you to engage in options and/or futures transactions. It is one thing if the market falls 50 percent and the client owns a stock portfolio and is not happy. There is not much the client can do about it. But if a client has a loss on a derivative contract, the client will probably look for ways to get out of realizing that loss. And the client might say that you were not authorized to trade derivatives.

Marked-to-market risk tips the scales in favor of trading listed or exchange-traded instruments. Listed markets broadly disseminate closing prices, of course. The possibility always exists that the option market will be disrupted in an emergency situation, but recent revisions in the circuit breakers reduce the likelihood that a closing price cannot be established at the end of each trading day.

Growth in stock option volume has been 20–30 percent in the past three years. Stock options are regularly used as part of corporate buyback programs, hedging single-stock risk, and covered call writing. A good balance exists between buyers and sellers in single-stock options, so options don't contain much hidden risk—as long as you are using options in an unleveraged way. Some kind of leverage test is always a good idea, which does not mean that you should never use leverage. If you are using leverage, however, you have to make sure you are authorized to do so and are not doing it surreptitiously through a derivative.

Question: What approach to recognize which strategies are legitimate would you suggest for investment advisors who are not well practiced in the use of options and derivatives?

Hill: First, try to involve a broad group of people in the organization, including operations, legal, and custody staff. Not everyone needs to know all the nuances of derivatives, but you should identify at least two people in each area of the organization to become knowledgeable about derivatives and then have them go to brokers, exchanges, industry educational organizations, or experts for education. AIMR, the Futures Industry Institute, and the Options Industry Institute regularly run educational programs on derivative strategies. Second, one or two in-house staff—on the trading desk and in research—should specialize in equity or fixed-income derivatives to be a resource to the portfolio managers in helping them with strategies. Another area where you need a derivatives expert is in the risk management group. Start-up costs are involved, but you need people in your organization who spend at least 50 percent of their time on risk management.

Greco: One of the best books on options is the reference book *Options as a Strategic Investment*.[3] It is long on strategies and short on math, and it does a good job of explaining how strategies work, how to implement them, how to get out of them when things go wrong, and (because it is written for the high-net-worth individual) how to optimize returns from a tax standpoint.

Question: Are investment advisory firms or trust companies using derivative strategies to control fee revenue?

Hill: Yes, somewhat, but the practice is not widespread. We have received a number of inquiries about hedging fee income, but fewer than 10 percent of institutions use derivative strategies to control fee revenue.

The logic of such hedging is clear: The fees that many investment management organizations

[3]Lawrence G. McMillan, *Options as a Strategic Investment: A Comparative Analysis of Listed Options Strategies*, 3rd ed. (New York: New York Institute of Finance, 1993).

earn are based on the portfolios they manage. Their fees are sensitive to the gains and losses on equities (and on fixed-income instruments, to some extent, if they are fixed-income managers). And if a firm has sensitivity to the equity market, it can hedge the risk with an index option.

The reason for not using derivative strategies to hedge fee income is that shareholders are buying the stock of public securities management firms precisely for their sensitivity to certain markets. For example, investors buy T. Rowe Price because it is an equity-related firm. If you hedge away the market sensitivity, you change the nature of the firm and investors are no longer buying an equity-related firm.

The transactions that we've done tend to be for financial institutions that are subsidiaries of larger entities, publicly traded entities, or non-publicly-traded entities with budget goals. Most of the cases we have been involved in have been situations in which a firm is midway through the year, is well in excess of its budgeted fee income, and is willing to pay a little amount of the excess of the fee budget or target to make sure those gains will be realized or to hold those gains through the year.