

TAX-EFFICIENT INVESTING IN THEORY AND PRACTICE

White Paper
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Over the last ten years, there has been significant advancement in both the theory and practice of tax management. New investment structures, technology, and a growing recognition of the impact of taxes have helped this niche in the industry to grow rapidly. In a recent survey by Horan [2009], advisors reported that 76 percent of their taxable clients expect them to incorporate tax considerations into the portfolio management process. The survey also indicates that—although most advisors do have a high level of tax awareness in their investment selection and portfolio management activities—only 11 percent of the advisors surveyed report tax-adjusted performance.

Paul Bouchey, CFA
Director of Research

The early academic work on tax-efficient investing centered on the debate between active versus passive. Active managers quoted the maxim that 'you shouldn't let the tail wag the dog' meaning that security selection and market timing considerations should dominate tax considerations in the decision process. In response, passive investing proponents argued that the alpha derived from active management is not big enough to compensate for the increase in taxes, and that the best approach for taxable investors is a capitalization-weighted index with its inherent tax efficiency. Investors have reacted to this debate with a two-pronged strategy: (1) increase the allocation to passive, (2) increase the allocation to hedge funds. For the core of the portfolio they are looking for tax-efficient strategies with low fees and for the satellites they are seeking alpha, regardless of taxes and fees. Traditional long-only active managers, with moderate fees and moderate levels of tax inefficiency, have become less attractive to investors [Welch, 2008].

The primary goal of this paper is to relate tax-management theory to a set of practical solutions for investors. First, I begin with an overview of basic tax-management tactics, including techniques, investment vehicles, and tax-efficiency measurements. Next, I discuss more advanced tax-management strategies related to asset allocation, asset location, and portfolio structure. I propose that tax-efficient portfolio management has evolved through several phases: from the traditional style box approach, to core-satellite investing, to overlay portfolio management.

Then I review the early literature on tax-efficient investing and simulate the benefit to returns from careful tax management. In conclusion, I compare those predictions with actual results realized over the last twelve years by Parametric across many thousands of client accounts. The long track record, and the breadth of accounts that Parametric has managed, makes this data set invaluable when assessing whether the benefits promised by theory are evident in practice.

TAX-MANAGEMENT TACTICS

Some investment accounts are largely exempt from taxation including: company or employee retirement accounts, pension plans, endowments, and foundations. These accounts are typically larger than taxable accounts and tend to receive more attention from the investment management community. Thus, most investment strategies are tailored to the institutional investor with little or no attention paid to tax efficiency. The ratio of tax exempt and taxable assets in a strategy can be a useful indicator of the manager's focus on taxes.

A study by Wotherspoon and Longmeier [2006] of investment manager performance demonstrated that, for the typical active manager, taxes reduce investment returns by 2 percent per year on average. This is due primarily to frequent trading and the resulting short-term capital gains taxes. Earlier studies by Jeffrey and Arnott [1993] and Dickson, Shoven, and Sialm [2002] found similar results. For most managers, their alpha does not cover their tax bill. Advisors that are helping clients reach specific wealth or return goals must acknowledge the role that taxes play in eroding returns.

Active tax management is more than just realizing losses; it is paying attention to the trade-off between risk, return, and taxes whenever an investment decision is made and whenever assets go through a transition. Examples of decisions that have a taxable

component include when to sell an investment, changing benchmarks, changing managers, charitable gifting, and rebalancing the asset allocation.

Techniques

There are five basic tax-management techniques used by investment managers to increase the tax efficiency of a portfolio. These are the building blocks for a comprehensive tax-management strategy.

- (1) **Defer the realization of gains.** This is the bread and butter of tax management. The government only taxes an investment gain if the asset is sold; the tax liability is deferred as long as you hold the asset. This is equivalent to receiving a zero interest loan from the government. The increase in the value of the investment has created a tax liability, but you can defer the payment of that liability indefinitely and allow that money to continue to compound over time. Because the cost basis of assets in an estate is reset at the taxpayer's death, in some cases the "loan" will never be repaid.
- (2) **Manage the holding period.** Capital gains from the sale of a security are taxed as ordinary income unless the investment is held for longer than 12 months, and thus qualifies for a lower tax rate. Dividends are also taxed as ordinary income, but can qualify for a lower tax rate if the security is held for longer than 61 days.
- (3) **Harvest losses.** Selling a security whose price has fallen below its purchase price (the market value is below the cost basis) results in a realized tax loss. These losses may be used by the tax payer to offset realized capital gains. While many investors only harvest losses in December, this activity can be much more valuable if it is done throughout the year.
- (4) **Pay attention to tax lots.** Most managers that pay attention to taxes will use highest in, first out (HIFO) tax-lot accounting whenever a security is sold. This will reduce the tax impact of the sale and improve after-tax returns. In some cases, identifying specific tax lots can improve tax efficiency. For example, an investor with a tax-loss carry forward may find it beneficial to accelerate gains. Investors who need to generate cash flow from their investments or have charitable giving plans will benefit from a manager who pays close attention to tax lots.
- (5) **Avoid wash sales.** When a security is repurchased within 30 days of its sale, any loss realized cannot be used to shelter gains. Instead the loss is added to the basis of the new shares. This negates the benefit of loss harvesting. Policing wash sales is particularly challenging when constructing multiple manager portfolios.

In 2010, there is a rare opportunity to take advantage of the 2011 anticipated increase in tax rates. Portfolios that are highly appreciated can be sold and have the gains taxed at the current 15 percent tax rate. This makes future loss harvesting more likely and creates the opportunity to shelter short-term capital gains that will be taxed at the new 40 percent tax rate.

Investment Vehicles

The vehicle used to access an investment strategy has important consequences for a taxable investor:

- **Mutual Funds.** Interest, dividends, and realized capital gains of a portfolio are distributed pro-rata to mutual fund holders each year via the IRS 1099 form. Mutual fund managers can actively harvest losses, but those losses may only be used within the fund or carried forward—they may not be distributed to individual mutual fund holders. Some mutual funds are explicitly tax managed, but for the majority of funds tax management is a secondary consideration at best.
- **Exchange-traded Funds.** ETFs are distinct from mutual funds due to the fact that they trade intra-day and are designed to replicate an index. Because most indexes are capitalization-weighted, they require less turnover and are naturally more tax efficient. ETF managers can also employ tax management techniques to avoid capital gains from being distributed to investors. ETFs are open funds that allow new investment dollars to flow into the fund or be redeemed from the fund. The fund manager may identify specific tax lots to be used in the redemption process—by choosing to deliver low-basis tax lots for delivery, the manager can improve tax efficiency.
- **Partnerships.** Hedge funds typically will use a partnership structure with the manager as the general partner and the investors as limited partners. Taxes incurred within the portfolio flow through to the limited partners through the IRS K1 form. Typically, hedge funds are tax-inefficient due to high levels of turnover. Investors that evaluate hedge funds tend to be more focused on performance and less focused on the frictions caused by high fees and high taxes.
- **Separate Accounts.** The key advantage of a separate account owned by a single tax payer is that it offers the most flexibility. Realized losses can be used to offset gains in other accounts (or from the sale of property, etc.). If the tax payer has other goals or priorities—such as the desire to match gains and losses, to accelerate the realization of gains, to transition assets to another strategy, or to gift specific tax lots to charity—they have the flexibility to do that. In this way, the separate account is the most tax-efficient investment vehicle.

Measuring Tax Efficiency

The terms: “tax efficient”, “tax managed”, and “tax aware” can mean different things depending on the context. Sometimes a strategy with low to moderate turnover is called “tax aware” even though there are no specific tax management techniques used by the manager other than a tendency to hold stocks for a long time. The ability to measure the impact of taxes objectively is the first step in creating a strategy that is more tax efficient.

Below are some frequently used measures of tax efficiency:

- **Turnover.** Most advisors use turnover as a proxy for tax efficiency—the higher the turnover, the less tax efficient. This is a simplistic view which ignores the fact that there is “bad turnover” and “good turnover”. From a tax perspective, bad turnover is the selling of positions that trigger capital gains tax, especially at the higher short-term rate. Good turnover either defers the gain to the longer-term rate, or realizes a capital loss.
- **Unrealized Capital Gains / Loss Carry Forwards.** Funds and other pooled investment vehicles disclose the amount of unrealized capital gains that are embedded in the current portfolio, as well as the amount of realized losses that are available to be carried forward. These measures can give an incoming investor an idea of the potential future tax liabilities: a large unrealized gain means lower after-tax returns in the future, while a large loss carry forward implies that few gains will be distributed in the coming years.
- **After-tax return (pre-liquidation).** In 2002, the SEC adopted a measure that requires mutual funds to present both before and after-tax returns. After-tax returns are calculated using the after-tax equation below. These are “pre-liquidation” returns. If the investor were to liquidate the portfolio and realize all tax liabilities the return would be “post-liquidation”.

$$\begin{aligned} \text{Value}_{\text{AfterTax}} &= \text{InitialValue}(1 + r) \\ &\quad - \text{DivTaxRate}(\text{Dividends}) \\ &\quad - \text{CapGainTaxRate}(\text{NetGainsFromSales}) \end{aligned}$$

- **Tax-efficiency ratio.** The tax efficiency ratio, employed by Morningstar and others, shows how much investment return the investor can keep after paying taxes. The ratio is simply after-tax return divided by pre-tax return. An investor who buys a fund with a tax efficiency ratio of .80 keeps 80 percent of the annual return and gives up 20 percent to taxes.
- **Tax alpha.** Attributing after-tax performance to the tax-management skill of a manager requires an after-tax benchmark. Very few managers report their returns relative to an after-tax benchmark. In the practitioner literature there are several competing frameworks: Stein [1998], Poterba [1999], and Brunel [2000]. The metric “tax alpha” introduced by Stein uses pre-liquidation returns to isolate the value added from tax management. It is defined as the after-tax excess return minus any pre-tax excess return.

$$\alpha_{\text{tax}} = R_{\text{ATport}} - R_{\text{ATbench}} - (R_{\text{PTport}} - R_{\text{PTbench}})$$

The CFA Institute recommends measuring after-tax results on a pre-liquidation basis versus an after-tax benchmark. The basics of tax management should be employed by

all investment managers who invest on behalf of taxable investors, however, these techniques are often ignored or applied only as an afterthought. I will review a number of more advanced tax management strategies in the next section, including asset allocation, portfolio structure, and the special case of a concentrated low-basis position.

TAX-MANAGEMENT STRATEGIES

The purpose of the capital markets is not to provide returns to investors, but rather to provide capital to business and transfer risk to investors. The market is a harsh environment for investors with costs, fees, and taxes all acting to erode returns.

For taxable investors, tactical shifts in the portfolio come at a high cost. There is no question that dramatic market movements create a strong pressure to react, but a portfolio should be designed to withstand the inevitable tempests that come when emotions, competitive pressure, or the need for liquidity are at their height. It is important to remain aware that the industry and its constituents (media, brokerage, and advisory) were built upon investors embracing tactics. Unfortunately, tactical movements of assets can create significant tax liabilities. A focus on the strategic, not tactical, structure of the portfolio should be the primary consideration for the investor. In addition, a long-term view and a sharp focus on the frictions of investing are critical to the success of an investment program.

Asset Allocation and Asset Location

Although determining how much risk to take is the primary driver of asset allocation, a consideration of taxes is also important. From a risk and return perspective, hedge funds appear very attractive and municipal bonds very unattractive—until you consider the effect of taxes. When estimating the risk and return of various asset allocation strategies, advisors should use after-tax returns for the taxable account and pre-tax returns for the tax-deferred account.

When the investor has both taxable and tax-deferred accounts, the question arises of where should assets be located. Often advisors will choose to place bonds, which are taxed primarily at the ordinary income rate, in a tax-deferred retirement account and keep assets that are more amenable to tax management, like equities, in the taxable account. Optimization modeling can be employed to determine an optimal allocation from an after-tax perspective (see Ankrim and Bouchey [2000], and Horan and Zaman [2008]), but in many cases this is not the best approach. An investor's taxable account usually has a much shorter investment horizon, greater liquidity needs, and lower risk tolerance than their retirement account. These differing horizons and risk preferences mean that, for most clients, locating assets in a particular account solely due to its tax characteristics is inappropriate.

Portfolio Structure

Once the asset allocation has been determined, five key questions need to be answered in order to construct the portfolio:

- (1) What is the allocation between active and passive?
- (2) Which investment managers should be employed and at what weights?
- (3) How should the allocation be maintained (rebalancing)?
- (4) What investment vehicles should be used?
- (5) What is the strategy for mitigating taxes?

The excess returns (positive or negative) for a manager are usually large relative to the fees, but fees are known with certainty and can be controlled by the investor. By mixing together low-cost passive management with higher-fee active management, an investor can create a fee structure they are comfortable with. The decision on how much active and passive management to include in the portfolio is a primary one—and often dictated by the investor’s desired level of fees. Taxes, on the other hand, are quite large relative to excess returns. Advisors should, therefore, consider the client’s appetite for taxes as a driver of the active/passive mix.

The traditional “style box” approach is to allocate the portfolio to managers with different investment styles—large cap growth, small cap value, etc.—until the portfolio somewhat resembles the overall market. This approach focuses on hiring specialist managers that are tied closely to their style benchmark. This is an expensive and tax inefficient way to get a return very similar to the market.

The alternative to style box investing is a core/satellite approach. The core of the portfolio is passive and tax-managed. The active “satellite” part of the portfolio is focused on generating alpha, with managers that are free to differ from the index and with return patterns that are less correlated to the market. Stein [2001] shows that by using a core and satellite approach, investors can significantly reduce the cost structure of their portfolio in terms of fees, trading costs, and taxes. These savings may seem small—only a few percent per year—but they compound over time. Quisenberry [2003] suggests that 60 to 80 percent of the portfolio should be allocated to the passive core.

Figure 1: Core/satellite portfolio structure

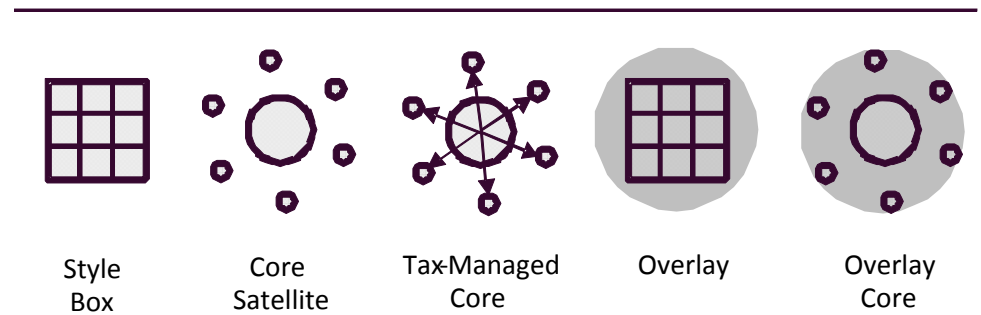


Traditionally, each manager would require a separate account and make their own trading decisions without regard to the tax situation of the client's overall portfolio. The unified managed account (UMA) is a concept that has been adopted by large brokerage firms and banks to streamline the cost and complexity of running thousands of accounts; however, it is now being adopted by independent advisors and multi-family offices who are interested in the tax-management and customization capabilities of a UMA.

In a UMA, the capabilities of the core manager—the ability to provide customized, tax-efficient individual portfolios—is extended across the entire portfolio. Managers deliver their model portfolios to the overlay manager who reviews, optimizes and delivers a customized, tax-efficient solution across the client's entire portfolio. This overlay management capability has important implications for the customization, risk control and tax-efficiency of the portfolio.

The evolution of tax-efficient portfolio management can be thought of in phases (see Figure 2). Moving from a style box to a passive core-and-satellite is the first stage of evolution. This step has been widely adopted by investors, because it reduces the cost structure of the portfolio and improves tax efficiency and risk control. The next step is to implement the core portfolio in a separate account so that gains realized by satellites can be offset by losses realized from the core. Overlay portfolio management is the final phase of evolution. This process brings the active managers into the tax management fold and can be applied to a style box structure or can include a passive core. Typically, the overlay manager also manages the passive core portfolio.

Figure 2: The Evolution of Equity Portfolio Structures for Taxable Investors



In addition to the basic tax management techniques, the overlay manager can also coordinate wash sales across managers, implement manager and asset allocation changes, and apply rebalancing policies to the overall portfolio—all in a tax-efficient manner.

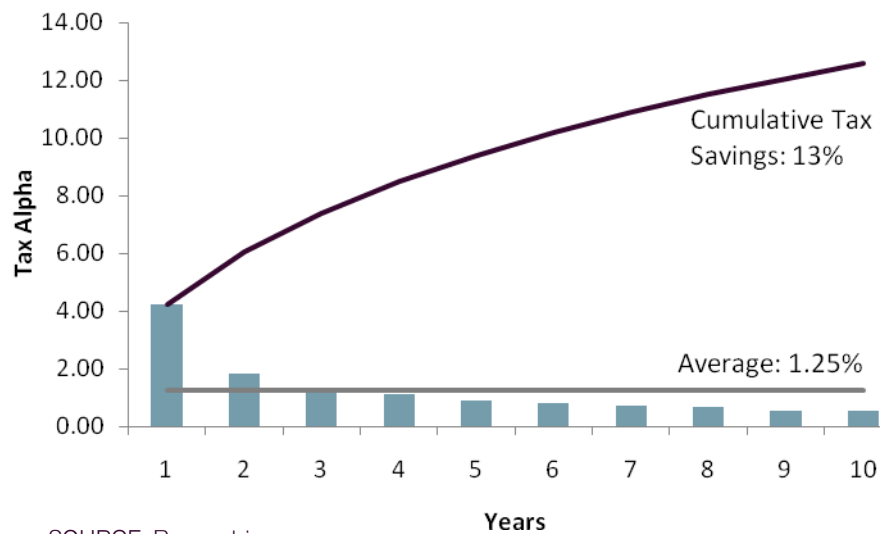
IN THEORY

The academic literature attempts to quantify the value added from actively harvesting losses in a portfolio. Stein and Narasimhan [1999], Arnott, Berkin and Ye [2001], Horvitz and Wilcox [2003], Rogers [2006], and Stein, Bouchev and Vadlamudi [2008]

all have examined the benefits of tax loss harvesting and show that cumulative tax alphas continue to rise over time, though the alpha is largest in the early years when market values are close to cost basis. As discussed above, loss harvesting is only one aspect of active tax management, but it is the aspect that is the easiest to quantify, and thus, it has received most of the attention from the academic community.

The following simulations use the methodology developed in Stein, Bouchey and Vadlamudi [2008]. Figure 3 shows the annual tax alpha over a 10-year horizon, assuming an 8 percent annual market return, 15 percent market volatility, 35 percent stock volatility, and the current highest marginal tax rates of 35 percent and 15 percent.

Figure 3: Tax Alpha Simulation



SOURCE: Parametric

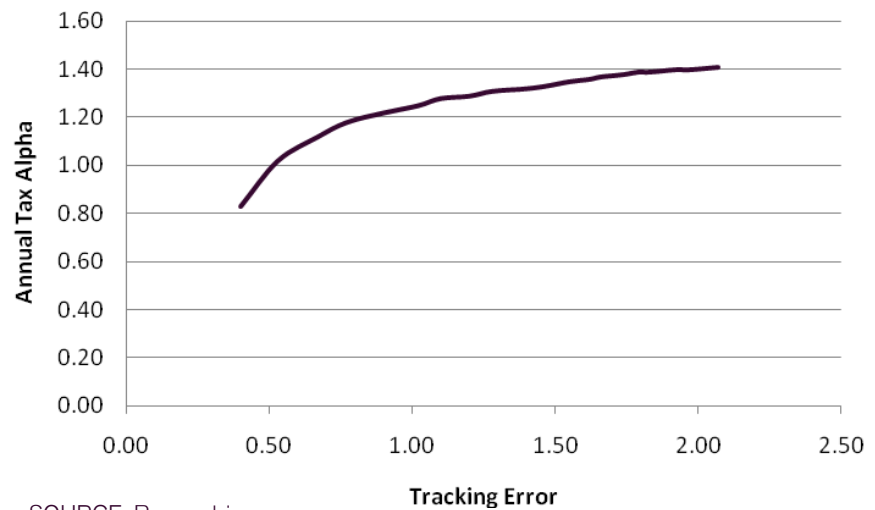
The estimate of tax alpha for a “normal” market environment is 1.25 percent per year, or a cumulative tax savings over 10 years equal to 13 percent of the initial portfolio. As the portfolio appreciates, the magnitude of the tax alpha declines over time. The cumulative benefit continues to increase, but at a decreasing rate.

This assumes that losses realized in the core can be fully utilized by the tax payer in a given year. Fortunately, unused losses can be carried forward to future years. Unfortunately, the tax liability embedded in the portfolio—the “loan” from the government represented by the unrealized gains—also grows over time. Some investors will eventually liquidate and pay the taxes, thus reducing their tax alpha, i.e., earning only the returns on the zero-interest loan from the government. Other investors will either gift low basis securities to charity or get a step up in basis at their death and never pay back the principal.

The most important variable in managing a tax-efficient core portfolio is the level of benchmark-relative risk that a manager must take to harvest losses; most taxable investors are willing to accept some variability of returns relative to the index in order

to capture the tax benefit. Figure 4 shows the relationship between tax alpha and tracking error, with the benefit increasing sharply at first then leveling off after about 1 percent tracking error.

Figure 4: Tax Alpha Versus Tracking Error



SOURCE: Parametric

The simulation assumptions about returns, volatility, and tax rates have an impact on the estimated tax alpha. Figure 5 shows two different tax environments: the current highest marginal tax rates and the higher tax rates that will occur in 2011 if the tax cuts enacted in 2001 and 2003 expire due to a sunset provision in the law. Each column displays a different market environment (10-year annualized returns of 4, 8, and 14 percent) and each row displays a different risk environment (average stock volatility of 25, 35, and 55 percent).

Figure 5: Tax Alphas in Different Environments

Capital Gain Rates:	Current Tax Rate			December 31, 2010 Sunset Tax Rate		
	15% Long, 35% Short			20% Long, 39.6% Short		
	10 Year Return:	4%	8%	14%	4%	8%
	Bear	Normal	Bull	Bear	Normal	Bull
High Volatility (55%)	2.4%	2.2%	2.0%	2.8%	2.6%	2.2%
Normal Volatility (35%)	1.5%	1.3%	1.0%	1.7%	1.4%	1.1%
Low Volatility (25%)	1.3%	1.0%	0.8%	1.5%	1.1%	0.9%

SOURCE: Parametric

Tax alpha increases in lower return markets, higher volatility markets, and higher tax rate environments. These simulations and the theoretical results from the academic

literature tell us that careful tax management can improve after-tax returns by 1 to 3 percent on average; with much of the benefit coming in early years. In practice, we have found these estimates to be close to our actual experience across many thousands of client accounts. The average tax alpha across our tax-managed core accounts has been approximately 2 percent per year over the last twelve years.

For overlay accounts, Stein and McIntire [2003] predicted 0.6 percent per year of tax alpha; in practice Parametric has garnered 1.4 percent per year over the last seven years across hundreds of accounts in our overlay composite. The next section of the paper delves into the practical details of tax-efficient investing, examines how the strategy has performed, and also looks at some special use cases.

IN PRACTICE

Tax-Managed Methodology

Managing a taxable portfolio is a complex process that involves paying attention to taxes at the asset class, portfolio structure, and security level. In this section, I discuss the security-level process for a passive core portfolio. The theory is actually quite straightforward: avoid selling stocks at a gain, sell stocks that are at a loss. In practice, there are a number of complications.

The primary complication during implementation is the wash sale rule, which negates the tax value of a realized loss if the stock is purchased within 31 days before or after the sale. There are several strategies that allow a portfolio to be managed tax efficiently, while still complying with the wash sale rule. The simplest strategy is to simply hold cash for 31 days and then buy back the same security. The problem with this approach is that it leads to large performance differences between the portfolio and the benchmark. Many investors engage in this type of transaction each December, which some have theorized is the cause of the turn-of-the-year return anomaly observed in the markets. Gordon [2001] describes a more complicated strategy that employs options to create a forward sale. However, this is impractical for all except the largest accounts.

Instead of holding cash or using options, replacement stocks can be used. Sell Coke to harvest a loss, buy Pepsi to maintain a similar exposure in the portfolio. It is difficult to find pairs for all stocks, but if we use a risk model as a framework for classifying stocks and estimating their return behavior the problem becomes tractable. For example, Microsoft may not have an exact analogy the way that Coke does, but we can use a risk model to identify other large cap US software companies with similar valuation, momentum, and volatility characteristics.

A typical risk model will have more than 50 variables to consider, so finding the correct trades that will balance the portfolio versus the index and harvest losses requires a mathematical optimization model. An example structure is shown below.

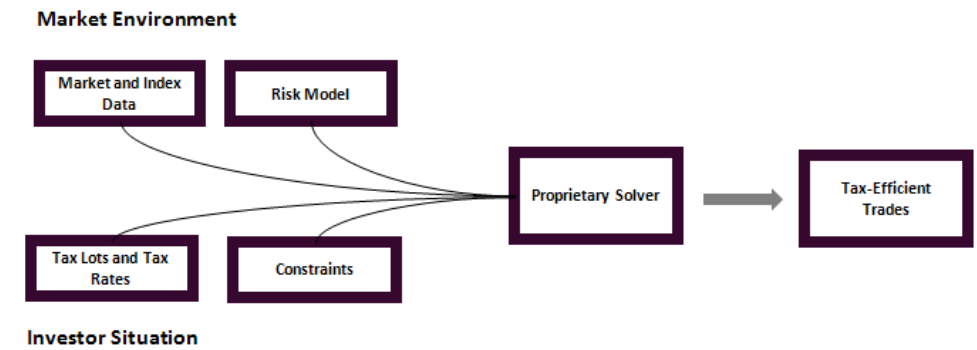
Find the optimal trades that:

- Maximize realized losses
- Minimize realized gains
- Minimize tracking error risk (estimated using a risk model)

- Minimize trading costs
- Satisfy all constraints:
 - Bounds on industry, sector, and country tilts
 - Bounds on stock tilts
 - Client restrictions
 - Corporate action restrictions
 - Wash sale restrictions
 - Turnover limits
 - Cash limits

This mathematical algorithm, or “solver”, is a decision model that takes the market environment and the investor’s situation into account. Portfolio managers run the solver, adjust parameters to test variations, and finalize the trades. The conceptual framework is shown in Figure 6.

Figure 6: Conceptual Framework



As an example, consider a recent trade made in a \$2 million dollar tax-efficient core separate account: 50 tax lots were sold to harvest losses and 40 securities were bought to control risk for a one-way turnover of 10 percent. Figure 7 shows the tax and risk results from the trade that was generated by portfolio managers using the optimization model.

Figure 7: Example Loss Harvesting Trade

	Initial Unrealized	Final Unrealized	Realized
Short Gains	\$120,000	\$120,000	-
Long Gains	\$245,000	\$242,000	\$3,000
Short Losses	(\$48,000)	(\$6,000)	(\$42,000)
Long Losses	-	-	-
Net			(\$39,000)
Tax Benefit*			\$14,250

- Control Risk:
- Cash reduced from 1.5% to 0.8%
 - Predicted tracking error reduced from 1.2% to 0.98%
 - Financials underweight reduced from 0.4% to 0.2%
 - Value overweight reduced from 3.1% to 2.0%
 - All other industry, sector, country, currency, fundamental factor, and client constraints satisfied.

*Assumes highest federal marginal tax rates

SOURCE: Parametric

At the end of the year, the investor will be able to offset \$39,000 in gains realized elsewhere with the losses realized by this trade in the core portfolio. This is equivalent to 0.71 percent tax alpha captured, while at the same time tightening up benchmark-relative risk. This particular trade was quite valuable, but over a long horizon what value has been generated through these techniques? To get the full benefit implied by the simulations, loss harvesting needs to be done throughout the year, not just as housekeeping in December.

What's it worth?

Figure 8 shows the composite tax alpha and pre-tax excess returns for Parametric's composite of tax-managed accounts benchmarked to the Russell 1000, S&P 500, and MSCI EAFE indices. All accounts that were funded in cash and had no restrictions are included in these composites: 824 separate accounts as of 12/31/2009.

It is clear that bear markets enhance tax alpha: 2000, 2001, 2002 and 2008 all had negative market returns and large tax alphas. However, there is another factor that drives tax alpha: cross-sectional volatility (see Figure 9). Both 1998 and 2003 were +30 percent markets; the former was driven by large cap technology stocks, while the latter was a broad-based recovery with all stocks up uniformly. The greater the dispersion of returns between stocks, the greater the potential tax alpha.

Instead of measuring the volatility of a time series of returns, cross-sectional volatility is the weighted standard deviation of stock returns within a given time period. This provides a measure of the dispersion of stock returns within the market—in essence, the width of the spread between the best and worst performing stocks. The periods 1998-2002 and 2008-2009 had high cross-sectional volatility (with greater opportunities for loss harvesting and higher tax alpha), while 2004-2006 was a distinctly low volatility period with less opportunity for realizing losses. Also, many accounts during this period had few losses available due to the 30 percent market appreciation experienced in 2003. The spread between market value and cost basis, combined with the low volatility, meant very few losses were available for harvesting. The average tax alpha over this ten year period was 2 percent, which is in line with what the theory predicts.

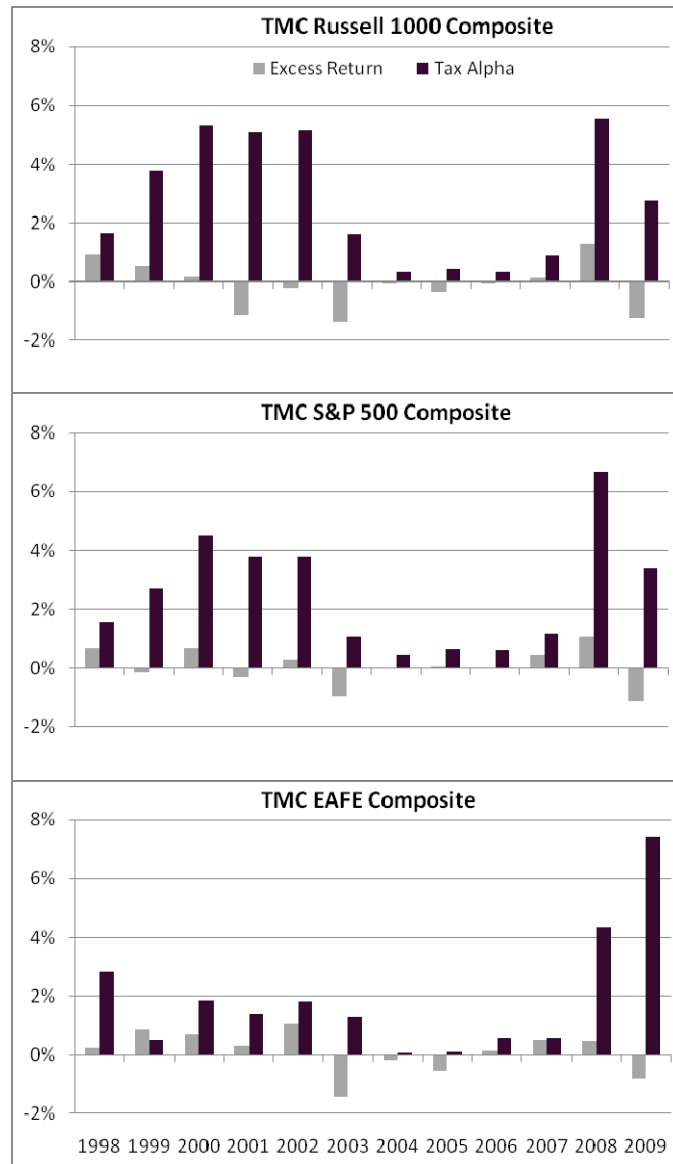
It is also interesting to look at the pattern of pre-tax excess returns. To realize the tax benefit described above, the portfolio manager must step away from the index by selling stocks that have gone down and holding onto stocks that have gone up. This can create a momentum bias in the portfolio that must be carefully controlled. For example, in the first part of 2008 many financial stocks were at a loss including AIG, Citigroup, Bank of America, Wells Fargo and others. These were prime candidates for loss harvesting and tended to be sold out of the portfolio or held at less than the benchmark weight. The overall weight of financials and banking stocks was controlled, but certain individual stocks were underweight. These stocks did even worse in the last half of 2008 and their relative underweight in the portfolio caused as much as a 1 percent excess return on average across the composites.

As volatility and cross-sectional volatility increased over the course of 2008 we tightened our risk controls on the portfolios; but, when financial stocks bounced sharply back in March and April of 2009, our portfolios underperformed the

benchmark. In momentum markets, when winners keep winning or losers keep losing, a tax-managed portfolio will tend to outperform. In reversal markets, where stocks that were loss harvested bounce back suddenly, the strategy lags. Over the course of a full market cycle, these excess returns tend to cancel out.

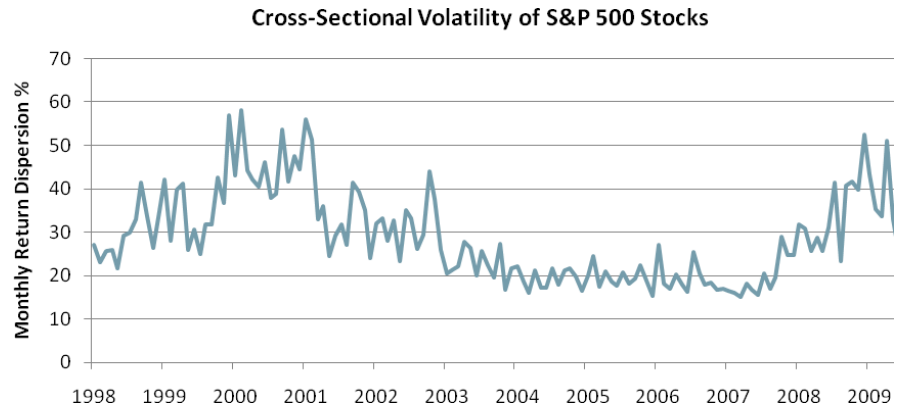
It is also interesting to note that the tax alpha appeared to be strong in the early years, then declined in 2004. Many of the portfolios were highly appreciated and unable to generate significant loss harvesting opportunities, especially those accounts inceptioned in 1998. This is predicted by the theoretical simulations. In the simulations we assume a steady growing market environment and volatile underlying stock returns. The market crash in 2008 showed that the assumption that tax alpha always decreases over time is not necessarily true.

Figure 8: Parametric Tax-Managed Core Composites, Pre-Tax and After-Tax



SOURCE: Parametric, Russell, MSCI, and Standard and Poors.

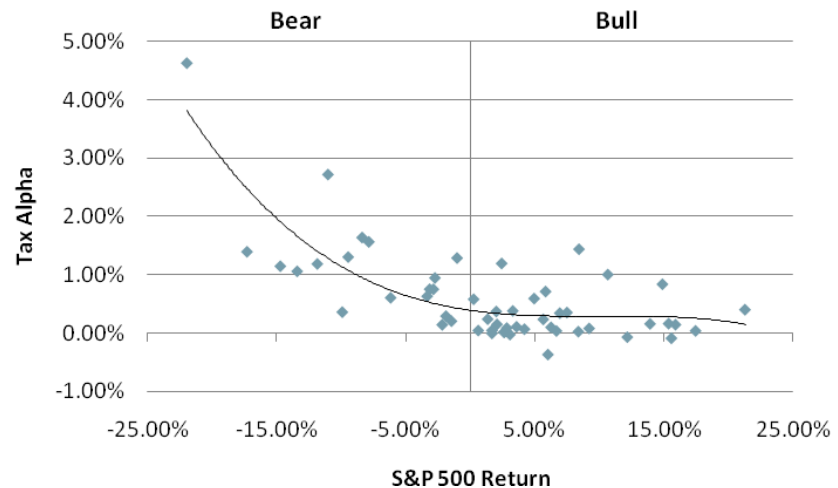
Figure 9: Cross-sectional volatility is a key factor for explaining tax alpha.



SOURCE: Parametric, and Standard and Poors.

In Figure 10, we look at quarterly tax alpha versus market returns and see that while tax alpha may be captured in all market environments, it is higher in bear markets. Looking at the trend line implied by this scatter plot, you can see an option-like pay off. In bear markets and in volatile markets, the tax code gives investors an option to create a tax benefit. In bull markets the value of this option is clearly less.

Figure 10: Tax Alpha in Bull and Bear Markets



SOURCE: Parametric, and Standard and Poors.

In the final analysis, the whole process is quite straightforward, transparent, and repeatable. There are no fascinating stock stories, no leverage, and no high-frequency trading. For the core of a long-term investor's portfolio, dull is good. There are some extensions and special cases that make things more interesting. These are covered in the next section.

SPECIAL CASES

Transition Management

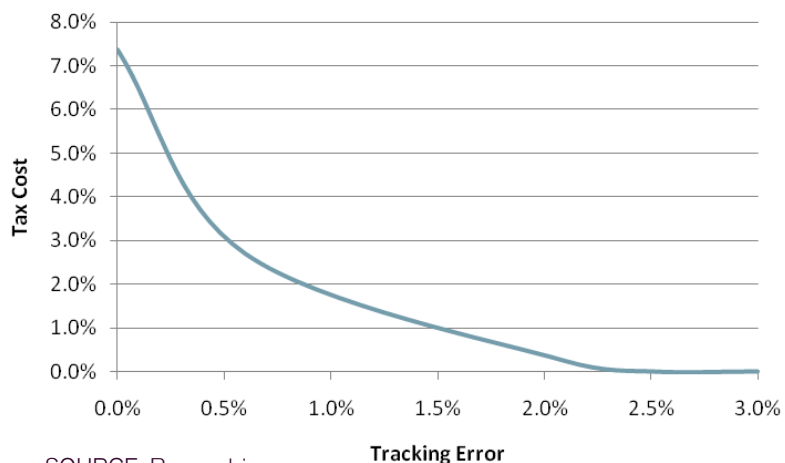
Any time assets are moved between asset classes or managers or accounts there is the potential for the realization of gains. Typically switching between investment strategies involves liquidating the old strategy and sending cash to the new manager. In the case of a tax-managed core, the following procedure is generally used:

- (1) Report tax lots of the current holdings to the new core manager
- (2) Core manager analyzes which securities should be sold and which should be retained
- (3) The advisor and client choose a level of tax cost and benchmark-relative risk that is appropriate to their situation
- (4) The securities are transferred in kind to the new account
- (5) The core manager optimizes the portfolio to minimize tax cost and tracking error

For example, a recent account was funded with a portfolio of 58 stocks that transferred into the account in kind. This portfolio had an estimated tracking error of 3 percent versus the S&P 500. Liquidating the portfolio completely would result in realized gains equal to about a third of the portfolio and a tax liability equal to 7.4 percent of the portfolio. However, careful transitioning to a portfolio with close tracking (0.5 percent) to the index would incur a tax liability of only about 3 percent of the portfolio.

If the client is willing to accept a higher 2 percent tracking error, then tax cost would be only 0.3 percent of the portfolio. In this case we would manage the portfolio with the objective of matching gains and losses until the benchmark relative risk was reduced to 1 percent tracking error. Once the portfolio reached this level of risk we would switch the objective to generate the maximum net losses.

Figure 11: Tax versus Risk Frontier



SOURCE: Parametric

Gift of Low-Basis Positions to Charity

If all goes well, an equity portfolio will appreciate significantly over time. At some point the investor will sell the shares and ultimately realize the capital gain, gift the shares to charity, or face a step up in cost basis at the time of death. Often in the course of managing a tax-efficient core portfolio we are asked to identify tax lots for the client in order to satisfy a charitable donation. Transitioning the shares directly to the charity and allowing them to sell the position avoids the realization of capital gains tax. As with loss harvesting, it is important to ensure that the benchmark-relative risk of the portfolio does not become too high and a balance between risk and tax management is maintained. There are numerous other estate planning structures and techniques that can be used in combination with a core portfolio.

Concentrated Low-Basis Positions

Another special case in portfolio construction is when an investor has a significant portion of their portfolio concentrated in a single security, often at a very low cost basis. If significant wealth has been created by a concentrated position; the stock price has likely appreciated exponentially. How long can the trend continue and how much downside risk is embedded in the current price? The case of Cisco is shown in Figure 12.

The simplest approach to dealing with concentration risk is to sell the stock, pay the taxes, and invest in a broadly diversified portfolio of stocks, bonds, and other assets. A more nuanced approach is to stage the diversification over several tax years, add the proceeds to a tax-efficient core to help realize losses, and thus mitigate some of the tax pain of the transition. Covered call writing and other strategies can also be employed to manage a concentrated position.

Figure 12: Where are you on this chart?



SOURCE: Bloomberg

CONCLUSION

The benefits of core and satellite investing are well known and have been adopted by the majority of individual and institutional investors. There is a compelling case to be made for holding part of your portfolio in a passive instrument that is more tax efficient, lower risk, and lower cost.

A lesser known fact is that implementing the core portfolio in a separate account and/or employing an overlay manager for the satellites can vastly improve the investor's tax experience. It also creates a higher level of flexibility for customizing the portfolio and is a powerful tool for achieving true integrated wealth management. These types of strategies are favored by advisors that favor indexing, realize that taxes are important, and have a consultative relationship with their clients.

Looking to the future, I see an increased interest in defining beta differently. Instead of choosing the S&P 500, investors are looking to get broader exposure via the Russell 3000 or even the MSCI World indexes. Many have looked to fundamental indexes that are not capitalization weighted, like the FTSE RAFI indexes, for their core exposure. Socially responsible investing has experienced a surge and new indexes are available, for example, the FTSE KLD Global Sustainability Index, the FTSE KLD Catholic Values Index, and the Dow Jones Islamic Market Index. With higher volatility in the markets some advisors are incorporating options into the core portfolio—both call writing and put buying—to create a lower volatility equity exposure. Regardless of how beta is defined, implementing the portfolio tax efficiently will be crucial.

In this paper, I have reviewed the benefits of tax-efficient management techniques and related them to practical solutions for advisors and their clients. A typical active management strategy loses 1 to 2 percent return per year to taxes. Our research shows that most or all of this tax impact can be mitigated by allocating 60 to 80 percent of the portfolio to a passive core separate account. When tax rates go up in 2011, investors will turn to their advisors to provide them with investment solutions that are more tax-efficient.

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