Asset Location for Taxable Investors

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Executive summary. It has long been understood that asset allocation, based on an investor's goals, risk tolerance, and investment horizon, is one of the most important determinants of long-term portfolio performance. Proper diversification, low relative costs, and rebalancing are also critical to realizing the benefits of the selected asset allocation. Perhaps less understood is the impact of *asset location*. Asset location refers to where or in which type of account (taxable or tax-deferred) an investor should purchase stocks and bonds. After determining the appropriate asset allocation, the investor should decide whether the primary goal is to maximize after-tax return by forgoing tax-inefficient investments or strategies (for example, active equity mandates, real estate investment trusts [REITS], commodities, or other alternative investments) or to include these tax-inefficient assets or strategies in the hope of adding performance or reducing the portfolio's risk.

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Introduction

If an investor's primary goal is to maximize after-tax return, then there is a strong preference, from an asset location perspective, to hold broad-market index equity funds/exchange-traded funds (ETFs) or tax-managed equity funds in taxable accounts and to hold taxable bond funds in tax-deferred accounts (Dammon, Spatt, and Zhang, 2004).[1] (Note that in this paper, unless stated otherwise, when referring to index funds we are assuming broad-market index funds/ETFs.)

Purchasing broad-market index equity funds/ETFs or tax-managed equity funds in taxable accounts has several advantages. First, it maximizes annual after-tax returns (historically, the active-equity tax cost has been approximately 200 basis points [bps], versus a tax cost of approximately 100 bps for index equity funds).[2] Second, it allows for the "shelf space" in tax-deferred accounts to be filled with taxable bond funds, which typically have higher yields than municipal bonds (historically, 155 bps; currently, as of June 30, 2007, 138 bps);[3] this provides a higher and more certain return premium. Finally, upon the death of the owner, the taxable assets that remain receive a step-up in cost basis. Therefore, because equity investments usually provide more deferred capital appreciation over time than fixed income investments, it is more advantageous to purchase these assets in taxable accounts, as the tax forgiveness can be substantial (Daryanani and Cordaro, 2005).

Tax-inefficient investments or strategies (for example, active equity mandates, REITS, commodities, or other alternative investments) should only be added to the portfolio if the value resulting from their inclusion increases returns or reduces volatility more than the cost of implementing these strategies (costs include taxes as well as management and frictional costs). The potential net benefit should also be considered relative to the taxable–municipal spread.

This paper examines several scenarios that illustrate these concepts. Note that the scenarios assume an even split between the investor's taxable and tax-deferred investment buckets (see **Table 1**). If the majority of an investor's assets are held in either taxable or tax-deferred registrations, the benefits of asset location will be reduced. In addition, although this analysis focuses primarily on stock and bond mutual funds, it can be extended to include REITS, commodities, or other alternative investments such as hedge funds, by modifying the applicable hurdle rates.

Table 1. Assumptions for Scenarios 1, 2, and 3

Taxable assets	$500,000	**Broad-market index equity fund/ETF or tax-managed equity fund return**	
Tax-deferred assets	$500,000		
Marginal tax bracket	35.0%	Dividends	2.0%
Capital gains tax rate	15.0%	Long-term capital gains	0.5%
Taxable bond fund return	5.0%	Short-term capital gains	0.0%
Municipal bond fund return	4.0%	Unrealized gain	7.5%
		Total equity return	10.0%

Note: The scenarios in this paper are hypothetical and do not reflect returns on any particular investments.

Scenario 1—Index equity (or tax-managed) funds in taxable accounts and taxable bond funds in tax-deferred accounts

As Scenario 1 (**Table 2**, on page 3) demonstrates, by placing taxable bond funds in the tax-deferred account, the investor earns the entire 5% return (see assumptions in Table 1), with no taxes due until withdrawal. In the taxable account, the dividends of $10,000 are taxed at the qualifying dividend tax rate

1 Dammon et al. (2004) examined the joint determination of the asset allocation decisions for both taxable and tax-deferred investment accounts in the presence of taxes.

2 Sources: Morningstar, Inc., and Vanguard (2007), for the 15-year period ended March 31, 2007.

3 Sources: Lehman Brothers Municipal Bond Index versus Lehman U.S. Aggregate Bond Index; historical figure covers January 1, 1980, through June 30, 2007.

Table 2. Scenario 1—Index equity or tax-managed funds in taxable accounts and taxable bond funds in tax-deferred accounts

Taxable		Tax-deferred	
Index equity funds	$500,000	Taxable bond funds	$500,000
Dividends	$10,000	Dividends	$25,000
Long-term capital gains	$2,500		
Short-term capital gains	$0		
Unrealized gain	$37,500		
Balance before taxes	**$550,000**		
Less taxes on:			
Dividends	$1,500		
Long-term capital gains	$375		
Ending balance	**$548,125**	**Ending balance**	**$525,000**
Total asset balance (preliquidation):			**$1,073,125**
Less taxes on liquidation	$5,625	Less taxes on liquidation	$183,750
Total asset balance (postliquidation in 1 year):			**$883,750**
Total asset balance (postliquidation in 10 years):			**$1,694,671**

Note: The ten-year postliquidation balance assumes the investor has sufficient cash flow to maintain the portfolio's asset allocation targets and registration percentages.

These hypothetical data do not reflect returns on any particular investments.

Table 3. Scenario 2—Taxable bond funds in taxable accounts and index equity funds in tax-deferred accounts

Taxable		Tax-deferred	
Taxable bond funds	$500,000	Index equity funds	$500,000
Dividends	$25,000	Dividends	$50,000
Balance before taxes	**$525,000**		
Less taxes on: Dividends	$8,750		
Ending balance	**$516,250**	**Ending balance**	**$550,000**
Total asset balance (preliquidation):			**$1,066,250**
Less taxes on liquidation	$0	Less taxes on liquidation	$192,500
Total asset balance (postliquidation in 1 year):			**$873,750**
Total asset balance (postliquidation in 10 years):			**$1,531,413**

These hypothetical data do not reflect returns on any particular investments.

of 15%, which is the same tax rate that is applied to the long-term capital gains. This strategy is preferred, since broad-market index equity funds/ETFs or tax-managed equity funds provide minimal long-term capital gain distributions and little (or no) short-term capital gains. As a result, this scenario minimizes the impact of taxes on the portfolio and provides the opportunity to earn the taxable–municipal spread.

Scenario 2—Taxable bond funds in taxable accounts and index equity funds in tax-deferred accounts

In Scenario 2 (**Table 3**), index equities are placed in the tax-deferred account and the investor earns the entire 10% return (see assumptions in Table 1), with no taxes due until withdrawal. In the taxable account, the taxable bond funds earn $25,000 in dividends, which are taxed at the investor's assumed ordinary income tax rate of 35%. The primary difference in the ending asset balances between Scenarios 1 and 2 is the amount paid in taxes—$1,875 in Scenario 1 and $8,750 in Scenario 2. This difference ($6,875), over time, can significantly reduce an investor's chances of meeting his or her financial goals; the difference in portfolio balances after just ten years is more than $160,000.

Table 4. Scenario 3—Municipal bond funds in taxable accounts and index equity funds in tax-deferred accounts

Taxable		Tax-deferred	
Municipal bond funds	$500,000	Index equity funds	$500,000
Dividends	$20,000	Dividends	$50,000
Balance before taxes	**$520,000**		
Less taxes on: Earnings	$0		
Ending balance	**$520,000**	**Ending balance**	**$550,000**
Total asset balance (preliquidation):			**$1,070,000**
Less taxes on liquidation	$0	Less taxes on liquidation	$192,500
Total asset balance (postliquidation in 1 year):			**$877,500**
Total asset balance (postliquidation in 10 years):			**$1,583,088**

These hypothetical data do not reflect returns on any particular investments.

Scenario 3—Municipal bond funds in taxable accounts and index equity funds in tax-deferred accounts

In Scenario 3 (**Table 4**), as in Scenario 2, equities are placed in the tax-deferred account and the investor earns the entire 10% return, with no taxes due until withdrawal. The taxable account, however, holds municipal bond funds that earn $20,000 in dividends —100 bps less than that of taxable bond funds— that are free from federal taxation. In Scenario 3, the investor forgoes the 100-bp return differential between taxable and municipal bond funds (which equates to $5,000) and in return reduces the tax liability to $0 (from $8,750, assuming a 35% marginal tax bracket). The higher total assets in this scenario, compared with Scenario 2, show that it is more advantageous for investors in high marginal tax brackets to invest in municipal bond funds in taxable accounts (rather than taxable bond funds), because the tax savings exceed the return that is forgone.

Note that for investors in marginal tax brackets lower than 25%, it is usually more advantageous to purchase taxable bond funds in taxable accounts and to pay taxes on the income, rather than purchasing municipal bond funds.

The preceding scenarios assume that the investor is willing to forgo including actively managed equity funds in his or her portfolio. An investor who wants to include active equity funds should purchase them in tax-deferred accounts before purchasing taxable bond funds, because the tax implications of active equity would most likely be greater than those for bond funds in taxable accounts. **Table 5** outlines assumptions for Scenario 4.

Table 5. Assumptions for Scenario 4

Taxable assets	$500,000	**Active equity fund return**	
Tax-deferred assets	$500,000	Dividends	2.0%
Marginal tax bracket	35.0%	Long-term capital gains	5.0%
Capital gains tax rate	15.0%	Short-term capital gains	2.0%
Taxable bond fund return	5.0%	Unrealized gain	1.0%
Municipal bond fund return	4.0%	Total equity return	10.0%

Note: The scenarios in this paper are hypothetical and do not reflect returns on any particular investments.

Table 6. Scenario 4—Active equity funds in taxable accounts and taxable bond funds in tax-deferred accounts

Taxable		Tax-deferred	
Equity funds	$500,000	Taxable bond funds	$500,000
Dividends	$10,000	Dividends	$25,000
Long-term capital gains	$25,000		
Short-term capital gains	$10,000		
Unrealized gain	$5,000		
Balance before taxes	**$550,000**		
Less taxes on:			
Dividends	$1,500		
Long-term capital gains	$3,750		
Short-term capital gains	$3,500		
Ending balance	**$541,250**	**Ending balance**	**$525,000**
Total asset balance (preliquidation):			$1,066,250
Less taxes on liquidation	$750	Less taxes on liquidation	$183,750
Total asset balance (postliquidation in 1 year):			$881,750
Total asset balance (postliquidation in 10 years):			$1,623,108

These hypothetical data do not reflect returns on any particular investments.

If purchased in a taxable account:

Once an investor has decided to purchase active equity, the next decision is whether to place it in a taxable or a tax-deferred account. In a taxable account, an active equity fund's tax cost is about 200 bps, versus an index fund's tax cost of about 100 bps (average for all U.S. index equity funds). If active management fees and frictional costs are estimated in as well, it is reasonable to assume that all-in costs for an active fund in a taxable account can be 200 bps higher than the all-in costs of a broad-market index fund. To beat an index fund, an investor's expectation should be that the active equity fund can provide more than about 200 bps in excess return.

Scenario 4—Active equity funds in taxable accounts and taxable bond funds in tax-deferred accounts

Scenario 4 (**Table 6**) shows that, from a tax perspective, placing active equity funds in taxable accounts results in a lower after-tax return for an investor than the portfolio discussed in Scenario 1 ($1,694,671 in assets for Scenario 1 versus $1,623,108 for Scenario 4 after ten years).[4] As a result, an investor should feel confident about several factors before deciding to use valuable space in tax-deferred accounts to invest in active equity funds. The paragraphs following outline factors to consider with active equity for both taxable and tax-deferred accounts.

Historically, index funds as a whole have minimized annual tax costs relative to the actively managed universe. In addition to tax-efficiency, index funds can also produce superior pre-tax returns. Numerous studies have indicated that indexing has provided performance superior to that of the average actively managed fund on a pre-tax basis over longer periods of time (e.g., Sharpe, 1991; Malkiel, 1995; Ennis and Sebastian, 2002; Waring and Siegel, 2005). **Table 7**, on page 6, shows that the Vanguard® index and tax-managed funds cited performed in the top 35% of their peer groups on a pre-tax basis over ten years. Then, when measured on an after-tax basis, these funds outperformed an even greater percentage of their peers. An important source of this pre- and post-tax advantage relative to peer-group averages is the funds' relative low cost (Donaldson and Kinniry, 2007). Research has repeatedly shown a powerful relationship between low costs and relatively higher returns (Gruber, 1996; Carhart, 1997).

4 This assumes that active equity funds and index equity funds have equal pre-tax returns.

Table 7. Pre-tax and after-tax percentile ranking of selected Vanguard funds within Morningstar category

As of September 30, 2007	Morningstar category	Morningstar category percentile ranking by total returns					
		One-year		Five-year		Ten-year	
		Pre-tax	After-tax	Pre-tax	After-tax	Pre-tax	After-tax
Vanguard® Total Stock Market Index Fund	Large blend	38 (805/2089)	25 (507/2089)	20 (248/1284)	15 (195/1284)	28 (163/566)	21 (118/566)
Vanguard 500 Index Fund	Large blend	46 (961/2089)	29 (593/2089)	35 (443/1284)	29 (366/1284)	35 (200/566)	25 (141/566)
Vanguard Total International Stock Index Fund	Foreign large blend	18 (130/715)	11 (80/715)	9 (40/454)	9 (39/454)	20 (43/218)	16 (34/218)
Vanguard Tax-Managed Growth and Income Fund	Large blend	45 (942/2089)	44 (918/2089)	33 (418/1284)	27 (348/1284)	33 (188/566)	23 (130/566)
Vanguard Tax-Managed Capital Appreciation Fund	Large blend	34 (722/2089)	31 (640/2089)	15 (196/1284)	12 (146/1284)	27 (157/566)	18 (100/566)

The performance data shown represent past performance, which is not a guarantee of future results. For fund performance data current to the most recent month-end, visit our website at www.vanguard.com/performance.

Notes: All fund returns are for Investor Shares. Table includes only Vanguard broad stock index funds, and a Vanguard tax-managed fund, with ten-year returns. Numbers in parentheses are: fund ranking/total number of funds in Morningstar category.

Source: Morningstar, Inc.

Tax cost is a very high hurdle, in addition to management expenses, for active managers to overcome. Historically, the probability of active managers overcoming the tax hurdle has been limited. For instance, for the ten years ended December 31, 2006, when incorporating only management expenses, 48% of actively managed equity funds outperformed the U.S. stock market. When adjusting for a tax hurdle of 100 bps, that figure fell to 36%. Over the 20 years ended December 31, 2006, the percentage of outperformers fell from 33% to 17% (see also Philips and Ambrosio, 2007).

Or, if purchased in a tax-deferred account: The active equity fund must, in addition to overcoming a high expense differential, produce an estimated alpha (excess return) greater than the taxable–municipal spread (historically, more than 100 bps); otherwise, the active equity is taking up valuable space in the tax-deferred account that could be used for taxable bond funds.

Table 8 compares the postliquidation portfolio values for this paper's four scenarios after one year and ten years. As shown, over long time periods, asset location can have a big impact on a portfolio's value.

Table 8. Summary of scenario results

	Postliquidation values after:		Difference from optimal Scenario 1	
	1 year	10 years	1 year	10 years
Scenario 1	$883,750	$1,694,671	n.a.	n.a.
Scenario 2	873,750	1,531,413	($10,000)	($163,258)
Scenario 3	877,500	1,583,088	(6,250)	(111,583)
Scenario 4	881,750	1,623,108	(2,000)	(71,563)

The optimal strategy as described in this paper (outlined in Scenario 1) is based on historical and anticipated market relationships, along with current, historical, and predicted future tax laws. Naturally, any financial plan should be reviewed on a regular basis and adjusted to reflect changes in market conditions and tax laws.

Conclusion

If an investor's primary goal is to maximize after-tax return, then, in general, an optimal portfolio, from an asset location perspective, would hold broad-market index equity funds/ETFs or tax-managed equity funds in taxable accounts and taxable bond funds in tax-deferred accounts. This assumes the investor is willing to forgo owning active equity funds (or other tax-inefficient investments), unless space in his or her tax-deferred registrations allows for it. Investors who decide to purchase tax-inefficient investments in tax-deferred accounts before fulfilling their strategic allocation to taxable bonds should believe the investments will provide excess return greater than the taxable–municipal spread (historically, more than 100 bps) plus the associated implementation costs. Or the investors should expect to derive sufficient utility from including less-tax-efficient strategies in hopes of reducing their portfolios' overall risk.

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ICRAL 112007