Optimizing Asset Location: Is It Worth the Effort?

By Joe Tomlinson
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Asset location – the choice of whether to hold stocks and bonds in taxable or sheltered accounts – is receiving increased attention as advisors seek more ways to add value. New research has challenged long-held beliefs. I'll examine that research and answer a question that should concern every advisor and client: Does the value provided by asset-location advice justify the fees for the work involved?

A popular view has been that stocks, with their low tax rates on dividends and capital gains, should be concentrated in taxable accounts, while taxable bonds are better candidates for tax-deferred or tax-free accounts. But that view has been challenged recently. Michael Kitces, a prominent voice in financial planning research, argued in this 2012 blog post that, with low interest rates, "most bonds should NOT go into tax-deferred accounts."

Baylor University Professor William Reichenstein, who has been publishing research on asset location since 2001, still advocates stocks in taxable accounts and bonds in tax-favored accounts. He made his case most recently in The Asset Location Decision Revisited, co-authored with William Meyer in the November 2013 *Journal of Financial Planning*.

Let's look at what each side has to say in the debate.

Measuring the effect

This debate hinges on how one measures the financial impact of asset location. The most straightforward approach involves projecting financial outcomes under a hypothetical asset-location arrangement, and then swapping assets between taxable and tax-favored accounts and re-running the numbers to determine which arrangement produces the best results.

Here's an example based on the following assumptions:

- Income tax rate: 28.75% (25% federal, 5% state deductible from federal)
- Capital gains and dividend taxation: 18.75% (15% federal, 5% state deductible from federal income tax)
- Bond return: 2.6%, based on late-November 2013 10-year Treasury rate
- Stock return: 7.4%, assuming a 4.8% premium over the bond return
- Stock turnover: Just barely more than yearly, so that stocks are taxed annually at the capital gains rate
- Investments: $500,000 in taxable, $500,000 in tax-deferred accumulating for 20 years

Arrangement 1: Stocks in taxable, bonds in tax deferred

Stock accumulation: $500,000 * (1 + .074 * (1 - .1875)) ^ 20 = $1,607,354
Bond accumulation: 500,000 * (1.026) ^ 20 * (1 - .2875) = $595,254
Total = $2,202,608

Under this arrangement, the 7.4% annual stock returns are subject to annual "tax drag" at the capital gains tax rate. The bonds accumulate free of the tax drag but are taxed at the ordinary income rate at the end of 20 years.

Arrangement 2: Stocks in tax deferred, bonds in taxable

Stock accumulation: $500,000 * (1.074) ^ 20 * (1 - .2875) = $1,485,390
Bond accumulation: $500,000 * (1 + .026 * (1 - .2875)) ^ 20 = $721,778
Total = $2,207,168

These numbers support Kitces' argument, although the margin is small and depends on the tax bracket. Higher tax brackets would flip the results and favor holding stocks in taxable accounts and bonds in tax-deferred accounts. (For 2014, the 25% federal bracket used in the example will apply to couples with incomes between $73,800 and $148,850.) Kitces noted in his blog post that his specific view on bonds is supported by a more general asset-location strategy developed by Gobind Daryanani and Chris Cordaro. They proposed (in this 2005 *Journal of Financial Planning* paper, which can be accessed by Financial Planning Association members) that location should be based on the combination of return and tax efficiency for each asset class. Those asset classes with the highest returns and lowest tax efficiency (e.g., high-yield bonds) would be prime candidates for tax-favored accounts. Good candidates for taxable accounts would be stocks with low dividends held for long-term appreciation. But this approach focuses on particular asset characteristics and these examples might not apply in all situations.

Reichenstein and Meyer took issue with Kitces and Daryanani/Cordaro and argued that focusing only on financial outcomes ignores differing risk levels. The best financial outcome might entail more investment risk. They argue that, when risk is properly taken into account, the "optimal asset location decision is to locate bonds in retirement accounts and stocks in taxable accounts to the extent possible." It's worth studying the Reichenstein/Meyer analysis in some detail, because it offers an inventive approach to adjust for risk and provides a unique conceptual view of taxable and tax-favored accounts that advisors may find useful.

 The Reichenstein/Meyer approach

I'll discuss two key concepts before delving into methodology.

The first is that a tax-deferred account can be thought of as a partnership with the taxing authorities in which the government's share of the account value is the income tax rate times the account value, and investor owns the remaining (1 – t) portion. The investor effectively receives a tax-free return, but only on his or her share.

In the earlier example of stocks in a tax-deferred account, the equation can be arranged: $500,000 * (1 - .2875) = $356,250 as the investor's share, which grows tax-free at 7.4% for 20 years, producing the same $1,485,390.

The second concept is that stock and bond investments in taxable accounts have both their returns and volatility reduced by the applicable tax rate. In effect, returns and risk are shared with the taxing authorities. If we take the bond with a 2.6% return from the earlier example and assume a 5.7% standard deviation, that turns into an investor's share with a 1.85% return and a 4.06% standard deviation at an income tax rate of 28.75%.

This chart provides a summary for an investor with $1 million spread equally across account types and asset classes. It uses the assumptions from the previous example and assumes a standard deviation of 5.7% for bonds and 20.3% for stocks based on long-term historical numbers.

After-tax expected returns and volatility				
	Before-tax account values	After-tax account values	After-tax expected returns	After-tax standard deviation
Stocks in tax-deferred accounts	$250,000	$178,125	7.40%	20.30%
Bonds in tax-deferred accounts	$250,000	$178,125	2.60%	5.70%
Stocks in taxable accounts	$250,000	$250,000	6.01%	16.49%
Bonds in taxable accounts	$250,000	$250,000	1.85%	4.06%
Source: Author's calculations based on Reichenstein and Meyer methodology				

Although I'll limit my analysis to taxable versus tax-deferred accounts, these concepts could also be applied to tax-free accounts like Roth IRAs. They would appear in the above chart the same as tax-deferred, except there would be no deduction in after-tax account values.

The key point from Reichenstein and Meyer is that we are dealing with four separate asset classes with differing return and risk characteristics. The asset-location analysis transforms itself into an asset-allocation optimization, determining how best to allocate investments among the four asset classes.

Applying mean-variance optimization (MVO)

The investor's decision-making involves choosing how best to re-allocate the before-tax values in the above chart. There are constraints, in that tax-deferred and taxable account values must each total $500,000. The optimization involves the calculation of expected returns and variances (standard deviations squared) on a total-portfolio basis. The objective is to consider only the subset of allocations that maximize expected returns for any given portfolio variance, also known as the "efficient frontier." The choice of the optimal combination of expected return and variance along the efficient frontier depends on the investor's aversion to risk.

For any portfolio allocation being considered as input to the optimization, after-tax expected return is the weighted average of the after-tax expected returns with weights based on the after-tax account values. The portfolio variance is more complicated, involving after-tax weights, standard deviations and correlations among the four asset classes. The full formula can be found in the "Risk and Return" section of this [write-up](#).

The final MVO step involves calculating the risk-adjusted return for the portfolio, also referred to as "utility," which is the after-tax expected return minus a deduction for portfolio variance. The size of the deduction depends on the investor's assumed risk aversion. The formula is:

Portfolio Utility = After-tax expected return - 0.5 * Risk aversion coefficient * Portfolio variance

Economists commonly use risk-aversion coefficients ranging from one to 10. For the analysis that follows, I'll use values of 2, 4 and 8 to represent low, moderate and high risk aversion. The optimum portfolio is identified as the allocation that produces the highest utility value.

The following chart shows the optimum portfolios for the three levels of risk aversion.

Optimum allocations for different risk-aversion levels			
Risk Aversion (RA)	Low	Moderate	High
RA Coefficient	2	4	8
Stocks in tax-deferred accounts	$150,000	$0	$0
Bonds in tax-deferred accounts	$350,000	$500,000	$500,000
Stocks in taxable accounts	$500,000	$375,000	$225,000
Bonds in taxable accounts	$0	$125,000	$275,000
Total stock allocation	65.0%	37.5%	22.5%
Expected after-tax return	5.19%	3.99%	3.26%
Utility value	3.68%	2.77%	1.96%
Source: Author's calculations based on Reichenstein and Meyer methodology			

The utility values represent what economists refer to as "certainty equivalents." For the moderate risk aversion case, an investor would be indifferent between a portfolio with a 3.99% variable return versus a portfolio with a 2.77% certain return.

This chart confirms the key conclusion from Reichenstein and Meyer that "the optimal asset location decision is to locate stocks in taxable accounts to the extent possible." For the low-risk-aversion case, the taxable account is fully invested in stocks and a portion of the tax-deferred account is also invested in stocks. The low risk aversion permits a heavier stock allocation than can be achieved with only the taxable account. At the higher levels of risk aversion, only the taxable accounts hold stocks, because the target

allocations use less than the $500,000 taxable account capacity. It is never optimal to hold stock/bond mixes in both taxable and tax-deferred accounts.

Reichenstein and Meyer used a much higher bond return assumption (5%) than I use here (2.6%). They were focused on a comparison with Daryanani and Cordaro, whose 2005 paper was written when interest rates were higher. However, I reach the same conclusion as Reichenstein and Meyer.

I also tested the sensitivity of my findings to changes in assumptions affecting returns or tax efficiency. I ran one set of tests where I raised the pre-tax stock return to 8.83% to duplicate the long-term historical difference between stock returns and bond returns. This increase in returns was almost, but not quite, enough to make tax-deferred the preferred location for stocks. I also ran a test reducing the tax efficiency of stocks by artificially raising the capital gains and dividend tax rate to 23.75%. (This could represent a case when stock turnover is increased and a portion of gains is taxed as ordinary income.) Again, this change was not quite enough to flip the optimal allocations.

Reichenstein and Meyer found that their general conclusion that stocks should be placed in taxable accounts and bonds should be placed in tax-deferred accounts held over a wide range of return and tax-efficiency combinations, and my tests with updated investment assumptions produced similar results.

Is it worth the trouble?

My findings support Reichenstein and Meyers's conclusions, but there is still a question of the value to a client to optimize asset location. Moreover, does that value justify fees for the amount of work required of the advisor?

Of the various studies, Daryanani and Cordaro estimated an "average after-tax return benefit of 20 basis points per year over using identical allocations in multiple accounts with different characteristics." Reichenstein and Meyer found a return benefit of around 30 basis points using their MVO approach, but they compared optimal allocations to allocations that were flipped, with stocks concentrated in tax-deferred accounts. David Blanchett and Paul Kaplan produced a study on various sources of advisor value and developed an estimate of 23 basis points, but that included both asset location and withdrawal sequencing (taking withdrawals first from taxable accounts), and they did not separately estimate the asset-location impact. With a $1 million portfolio, 20 points would be worth $2,000 annually.

An issue with these studies is that they are all based on interest rates reflective of long-term historical averages, which are significantly higher than current rates. So I ran tests to investigate the effect of today's rates. I tested holding the overall asset allocations constant at the optimum levels from the previous chart, but varying the asset locations. In the first test I reversed the locations (e.g., if the optimum level of stocks in taxable accounts was $500,000, I ran the test with stocks in tax-deferred as $500,000). In the second test, I applied the optimum overall stock allocation to both taxable and tax-deferred accounts. The chart below shows the results:

Utility value comparison for various asset location strategies			
Risk Aversion (RA)	Low	Moderate	High
RA Coefficient	2	4	8
Total stock allocation	65.0%	37.5%	22.5%
Utility value with optimum asset location	3.68%	2.77%	1.96%
Utility value with reversed asset location	3.58%	2.68%	1.94%
Difference versus optimum	0.10%	0.09%	0.02%
Utility value with even asset location	3.63%	2.73%	1.96%
Difference versus optimum	0.05%	0.04%	0.00%
Source: Author's calculations based on Reichenstein and Meyer methodology			

The current interest-rate environment dramatically reduces the value added from optimizing asset location, particularly at higher risk-aversion levels where the overall asset allocations are tilted heavily toward bonds.

It's questionable whether it's worth paying a lot of attention to (and paying fees for) asset location, although particular client characteristics, such as tax bracket, might affect that assessment. One particular consideration is that, for clients with 401(k)s invested in target-date funds with mixes of stocks and bonds, it may not be worthwhile switching to more customized location strategies.

Conclusion

Although I have produced evidence supporting the Reichenstein and Meyer asset-location strategy, I have also shown that in the current interest-rate environment, adopting the strategy may not be worth very much. Paying attention to asset location may become more important when interest rates return to historically normal levels.

But if we are indeed in the "new normal" of slow growth, low inflation and depressed interest rates, it may take awhile.

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