



Investment

Management

Reflections

**LOSS HARVESTING:
WHAT'S IT WORTH TO THE
TAXABLE INVESTOR?**

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Loss Harvesting: What's It Worth To The Taxable Investor?

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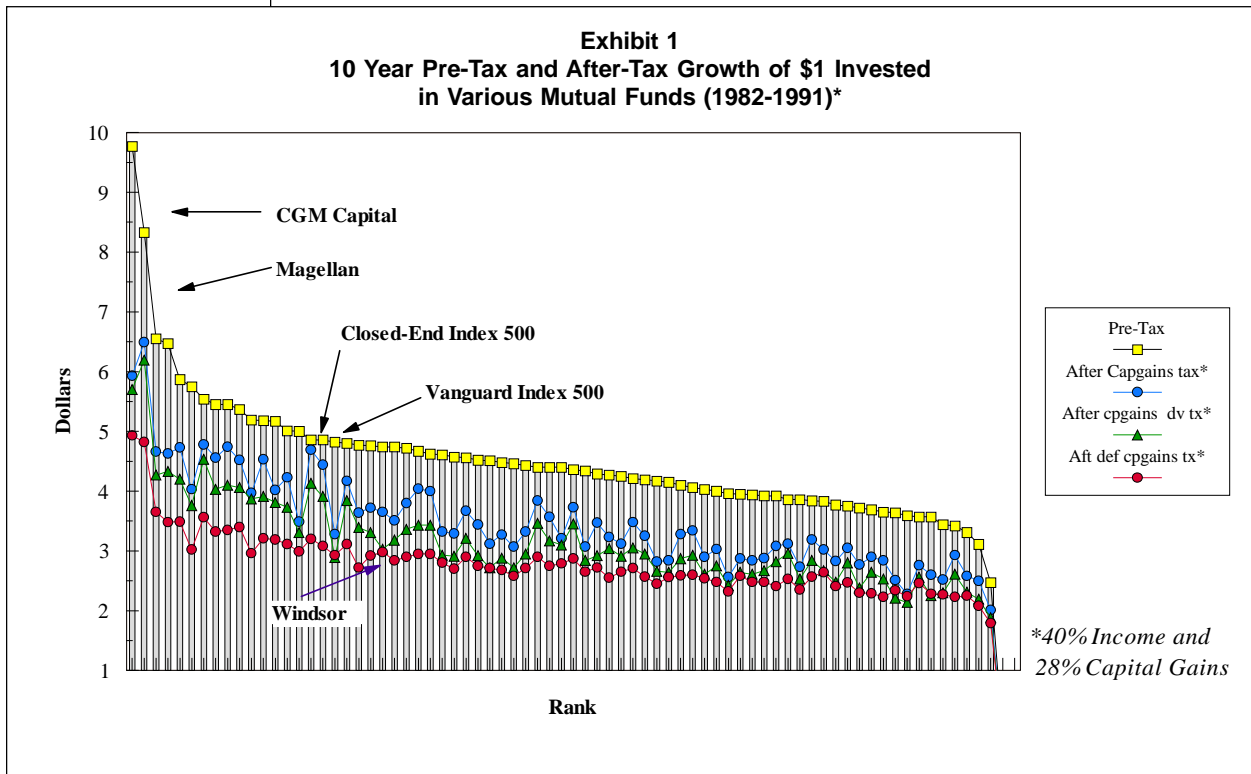
Abstract

Loss harvesting has become a well-known tool for the management of taxable portfolios. By “harvesting” losses, we realize capital losses which, for tax purposes, can be offset against any gains an investor may have. Often, this can bring the capital gains taxes down to zero or even create loss carryforwards for future tax years. How much is it worth to the taxable investor? Specifically, if we assume no stock selection skill whatsoever, how much can we increase the after-tax returns on a portfolio by combining loss harvesting with otherwise passive portfolio management? The answer is that loss harvesting adds a great deal of value, far more than most active strategies can hope to achieve, net of trading costs and capital gains taxes. We find that loss harvesting is remarkably robust, adding substantial value over time, whether markets are volatile or quiet, strong or soft.

Loss Harvesting: What’s It Worth To The Taxable Investor?

Adding value in actively managed portfolios is a difficult challenge: the investment ideas must have value which is greater than the round-trip trading costs, and there must be a willing counter-party on the other side of the trade, who will necessarily lose that same relative return and pay their own trading costs in the process. Finding alpha for taxable investors through tax avoidance and tax deferral, on the other hand, is remarkably easy. Yet, assured alpha through tax savings is too often tossed aside in the quest for uncertain alpha in active management.

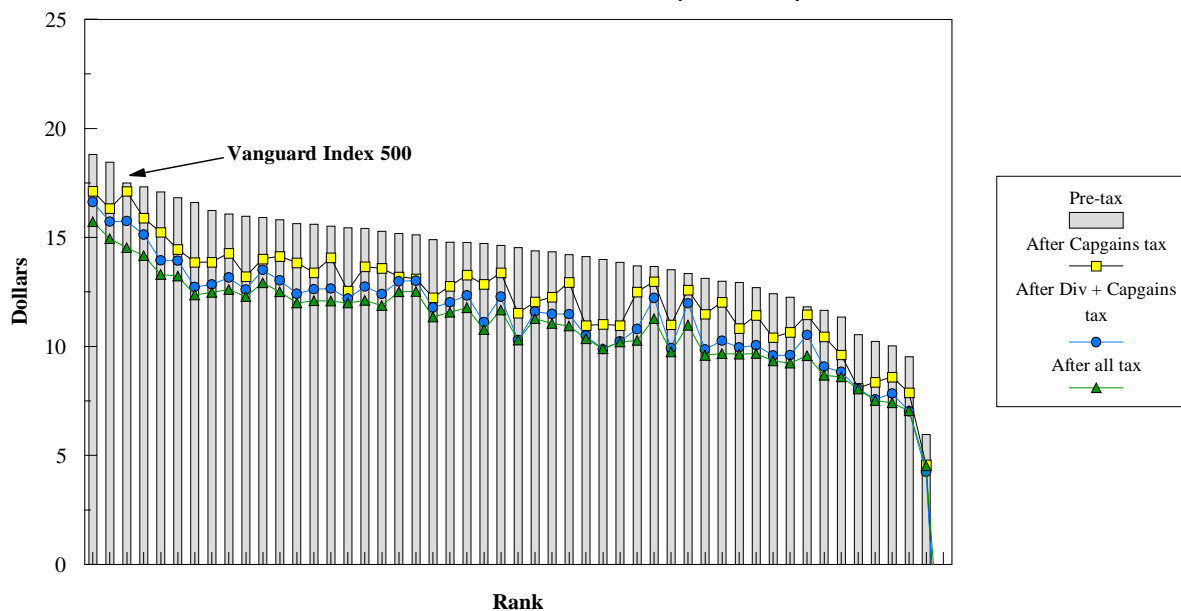
Numerous studies have shown that it takes 2%-3% of pretax alpha for a conventional actively managed portfolio to match the after-tax returns of “plain-vanilla” indexing. Put another way, the first 2%-3% of alpha goes straight to the government (and far



more than that during a bull market!). Few managers can add that much value reliably over the very long run. Less well-known is the fact that tax-advantaged investing can consistently add roughly another 60 basis points of after-tax alpha per annum, over and above index fund results, without any stock selection skill whatsoever!

We've seen tangible evidence of this in the mutual fund arena. Jeffrey and Arnott wrote an article in the *Journal of Portfolio Management* in 1992, in which the graph in Exhibit 1 appeared. It shows the ten-year pre-tax and after-tax growth of one dollar invested in various mutual funds. You can see the Vanguard Index fund beats about three-fourths of all mutual funds, but what's interesting is that the after-tax return beats better than 90% of the 71 mutual funds in the study. Worse, only two funds beat the index funds by any meaningful margin during this decade. Identifying just two out of 71 funds in advance would be a neat trick. The average margin of gain for the six winners is a slender 90 basis points. The 65 that lost value relative to the index, underperformed by a lofty 310 basis points per annum, for a decade. Results for longer spans are even more compelling, as we can see in Exhibit 2 (drawn from Arnott, Berkin and Ye, *Journal of Portfolio Management*, 2000).

Exhibit 2
15 Year Pre-Tax and After-Tax Growth of \$1 Invested
in Various Mutual Funds (1984-1998)*



*Note: 204 funds of over \$100M included. Only every fourth fund is plotted here.

Basically, to succeed in taxable investing, an investor must avoid taxes that can be avoided, defer taxes that can be deferred, add value in areas where they have skill, avoid trading in areas where they lack skill, and avoid errors in each of these decisions. Surely, this is a daunting challenge, no? Actually, it is not as difficult as it sounds.

To succeed in taxable investing, the central paradigm of active management needs to be reversed. Instead of incurring quantifiable and significant tax costs in the quest for uncertain gains (which all-too-often turn out to be losses), the successful tax-advantaged strategy places taxes first (see Stein and Narasimhan, 1999; Arnott,

Berkin and Ye, *Journal of Investing*, 2000). Losses are harvested, triggering reductions in the customer's tax bill, hence delivering a reliable and measurable "tax alpha" for the client's after-tax returns. The quest for pretax alpha, through effective stock selection, is, for the most part, limited to the reinvestment of proceeds from the harvesting of losses. The tax savings are actually tax deferrals: the taxes must eventually be paid. But, if we are, in effect, owing future moneys to the government, at least we are not incurring interest charges for the continued use of this money. For this reason, tax deferral strategies are sometimes characterized as an "interest-free loan from the government."

The only "hook" on this "free loan" from the government is that it must remain invested in the same asset in which the gain accumulated. Suppose a stock has doubled in price. 50% of the asset is now an accumulated capital gain. In a 40% bracket, this means that 20% of the total value of the asset is "on loan" at zero interest from the government. If the long-term return for retaining that asset is at least 80% of the market return available on reinvestment, the taxable investor is ahead of the game by retaining that stock. Of course, while individual assets may perform better or worse than the market, it would be difficult to make the case that a portfolio of the "kept winners" would perform so drastically worse than the reinvestment alternatives as to justify trading them. The obvious exception would be if individual stocks become such a large part of the portfolio as to disrupt the diversification.

The relationship between turnover and holding period is an inverse relationship. When you have 50% turnover, your average holding period is two years. At 50% turnover, the first year's gain is still in your portfolio, tax-deferred, for one additional year. If you have gained 10%, and therefore owe 4% in tax, you have been "loaned" 4% by the government for one additional year, interest-free; this is a benefit worth whatever the investor can earn on that 4% in the second year, presumably a few tens of basis points. Nice, but not worth deferring the sale of an overpriced stock. At 33% turnover, the average stock is now held for two additional years. Taxes on that first year's gain of 10% are deferred for an additional year, plus taxes on the second year's return also are deferred, both earning another year's return. When you get to 10% turnover, your average holding period is ten years. At 5% turnover, you have a 20 years average holding period, and so forth. Stated in this fashion, it's quite obvious that the average holding period and the benefit of tax-deferred gains does not increase materially until you get to very low levels of turnover. A ten- or twenty-year interest-free loan is obviously very interesting, and should cause pause in selling any but the most vulnerable issues that are held at a profit.

Good Turnover and Bad Turnover

The issue of efficient taxable management is not as simple as turnover and holding periods, however. In effect, there is both "good turnover" and "bad turnover." Good turnover, from a taxable investor's perspective, is turnover which reduces the year-end tax burden by realizing a capital loss. Most typically, the best is a transaction that realizes a short-term capital loss, although long-term capital losses are also helpful. This is because a realized loss triggers a tax savings, which delivers a near-term reduction in taxes. If that reduction in taxes is viewed as an indirect form of "alpha," it means that it is remarkably easy to deliver a "tax alpha" to the portfolio. These tax savings can indeed be reinvested into the portfolio, further expanding the taxable investor's portfolio wealth. Turnover which generates tax savings is generally referred to as "loss harvesting."

“Bad turnover” is trading which realizes a capital gain, especially a short-term capital gain, thereby triggering an increased year-end tax bill. Unless the relative success of the subsequent investment of sales proceeds is more successful than the liquidated asset, by a margin which more than covers the tax bill, that turnover has damaged investor after-tax wealth. Because the taxes on a realized gain can often be quite large, it would require an excessive degree of stock selection skill to overcome this tax drain on after-tax returns.

The Nature of the Simulation

We wanted to gauge how much benefit one could derive from simple loss realization, and to measure how the rewards of loss harvesting might depend on the characteristics of market returns in the years ahead. The easiest way to do this is with a stochastic “Monte Carlo” simulation. Since the tax impact of trading is really the only aspect of active management that we can measure with any precision, the simulation focuses on a zero-skill investor, with no ability to discern which stocks were likely to perform well or badly. However, this zero-skill investor has a great deal of skill in loss harvesting.

Since the tax impact of trading can be measured with precision and can be managed, we can use it to deliver a reliable “tax alpha”. The way we can do this is by harvesting the losses, reducing the investor’s taxes, and reinvesting these tax savings into the portfolio. This is not a far-fetched assumption. Tax savings are a near-immediate cash flow benefit. Whether we are dealing with corporate quarterly tax estimates or an individual investor’s quarterly tax estimates, one can garner the benefit of tax savings from loss harvesting almost immediately.

We simulate the returns for 500 assets (in effect, a simulated S&P 500), generating a random 25-year life history for each asset. For each month, we assume 0.12% average dividend yield plus 0.54% average market gain, plus or minus a randomized normal 4.3% volatility for the market. Effectively, this gives us an annual yield of 1.44%, roughly matching current levels, plus a 6.48% annual price return, for a 7.92% total return, plus or minus a normal 15% average annual market volatility. For each individual stock, we assumed that the return for each month is the market return, plus or minus a random-normal 9% stock-specific volatility, equivalent to about 31% annualized stock-specific risk, which again is fairly typical. We repeat this exercise for 500 simulations of 300 months on 500 assets. Furthermore, with reinvestment of dividends and loss-harvesting, this quickly involves as many as hundreds of individual tax lots for each of the 500 assets in each of the simulations. In short, the simulation involves approximately ten billion simulated returns on individual tax lot holdings for each simulation run¹.

It is also important to note that the composition of any index will change over time. This can often occur as a consequence of corporate actions. Companies go bankrupt, are taken over, or merge. It may also be a consequence of decisions made by the managers of the index itself. Standard & Poor’s will sometimes make conscious decisions to delete smaller or less important companies in order to make room for new large-capitalization and bellwether companies. The same happens on an even larger scale in the Russell indexes, where the composition changes annually as a consequence of market capitalization. This means that dozens and even hundreds of companies may be added to or deleted from one of the Russell indexes every single

¹ Ten years ago, this simulation would have required a supercomputer. Today, it requires an ordinary Sun workstation and about one weekend per simulation.

year, solely because of the price movement and capitalization level changes relative to one another. In our simulation, we examine the impact of corporate actions. We make the base case assumption that one company disappears from the index every month, corresponding to an average of 2.4% annualized turnover in index composition.

Lastly, we assume the 35% tax rate as our base case. Some investors (most of the readers of this journal, for instance) pay as much as 50% marginal tax in combined federal, state and local taxes.² Other taxable investors (qualified Nuclear Decommissioning Trust portfolios and some classes of insurers) pay as little as 20%. The 35% assumption is “not too far wrong” for both extremes. Suffice it to say that the 50% taxpayer should care more about taxes than we suggest, and the 20% taxpayer should care somewhat less, as we verify later.

In each simulation, we have two portfolios: one is simple buy-and-hold and the other is tax-advantaged. In the tax-advantaged portfolio, we sweep through the portfolio each month, find all assets that have losses, sell those, and then buy them back immediately. For simplicity we ignore the “wash rule”; we have done simulations that include the wash rule as well, but differences are marginal. Once every quarter, we take any tax obligations from taxable gains out of the portfolio and reinvest any tax savings from loss harvesting back into the portfolio. Because the tax savings are a “cash flow event,” money must be paid out for tax obligations and money is available from tax savings.

By carrying out 300 Monte Carlo simulations, we cover scenarios ranging from the Great Depression years (and far worse!) to the spectacular 50-fold cumulative total returns from stocks over the last 25 years (and far better!). In other words, the entire spectrum of likely market outcomes is covered in these simulations. Exhibit 3 illustrates just one simulation drawn from the hundreds that went into this study. What we can see is the performance of a passive index fund in a randomly selected simulation, and the performance of the same assets under the loss harvesting rules detailed above. The loss harvesting portfolio, by reinvesting the associated tax savings, shows steady growth relative to the passive indexed portfolio.

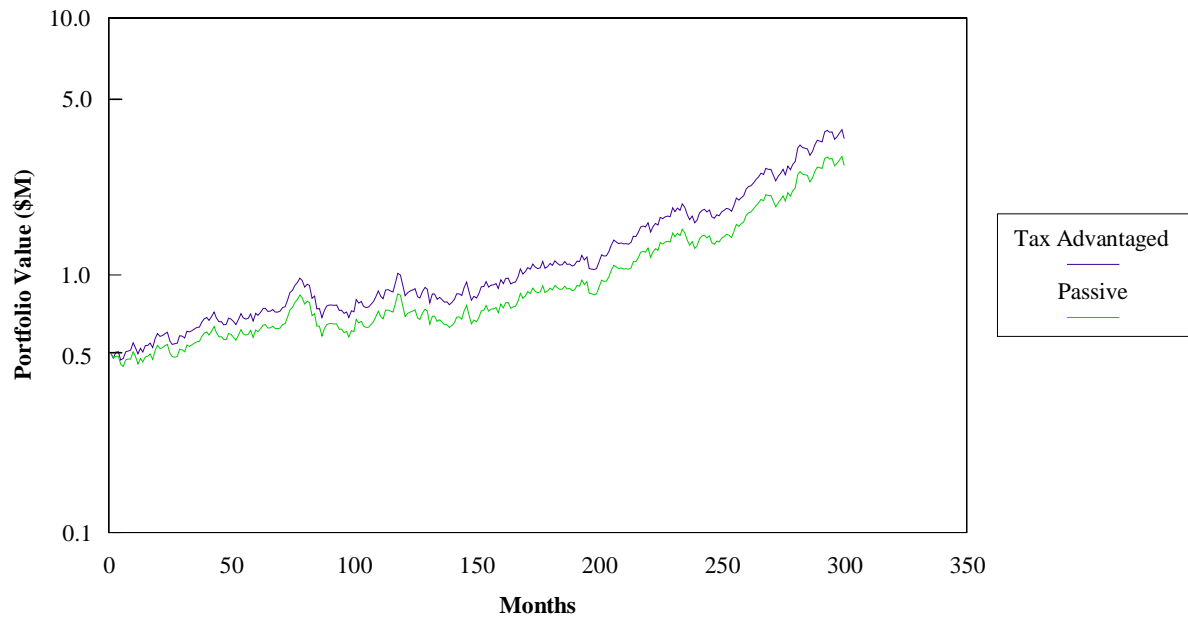
“Tax Alpha” in Loss Harvesting Strategy

Exhibit 4 shows the cumulative value-added for our base case set of assumptions. For each simulation, in each month, we compute the ratio of portfolio value for the loss harvesting portfolio, relative to the buy-and-hold portfolio. For each month, we find the median ratio, the 25th percentile and the 75th percentile, out of the 300 simulations. So, this exhibit shows how much value is added from a simple loss harvesting program, due to reinvestment of tax savings.

A great deal of loss harvesting is possible in the first few years, and the earnings on the associated tax savings leads to an immediate and dramatic increase in relative portfolio value. After the first five years or so the pace of gain added begins to diminish rather sharply. Yet, even after 25 years, the “tax alpha” is still adding about 0.5% per annum to portfolio wealth, an alpha that most active managers can’t add reliably pretax, let alone after-tax. After 25 years, the cumulative gain from loss harvesting is roughly 27%. This graph also shows the 25th percentile outcome and the 75th percentile outcome, which basically represents the range of tax savings in different market conditions.

2 In fact, the top U.S. tax bracket is north of 50%, a fact which is not widely recognized. The top tax bracket of 39.6% does not include Medicare tax, which is uncapped at 2.9% (1.45% for employee and for employer). State taxes in most states are 7%-10%; even after considering the deductibility against federal taxes, the effective incremental tax from states is 4%-6%. While it does not affect the most highly compensated individuals, Social Security tax and employer matching adds an effective 14.2% (7.65% is paid by you and another 7.65% of your income is never seen by you, but is paid directly to the government: 15.3% tax over 107.65% “true” income equals 14.2%). Then, deductions are phased out in federal taxes and most state tax plans as an additional “hidden” tax. For the federal taxes, the loss of deductions at a rate of \$3 for every \$100 of reported income translates into an additional 1.2% tax. The same arithmetic on state phase-outs in most states adds about another 0.4%. All of this pushes the top marginal tax bracket to approximately 50%-54%, depending on the state of residence.

**Exhibit 3
Sample Simulation**



**Exhibit 4
Portfolio Value Ratios
Base Case: Median, 25th and 75th Percentiles**

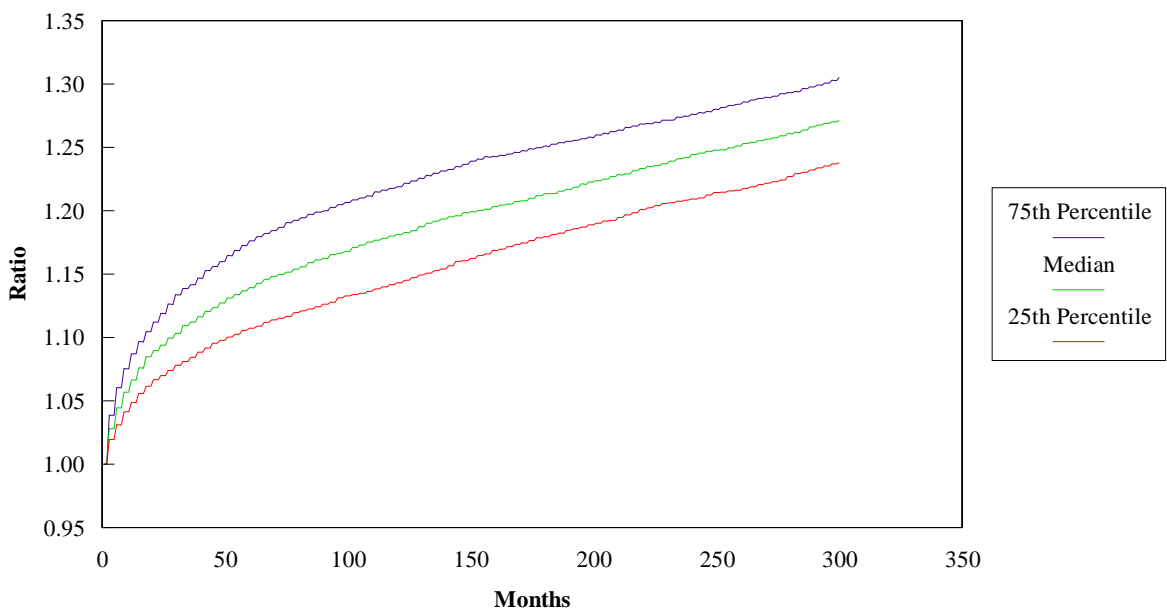
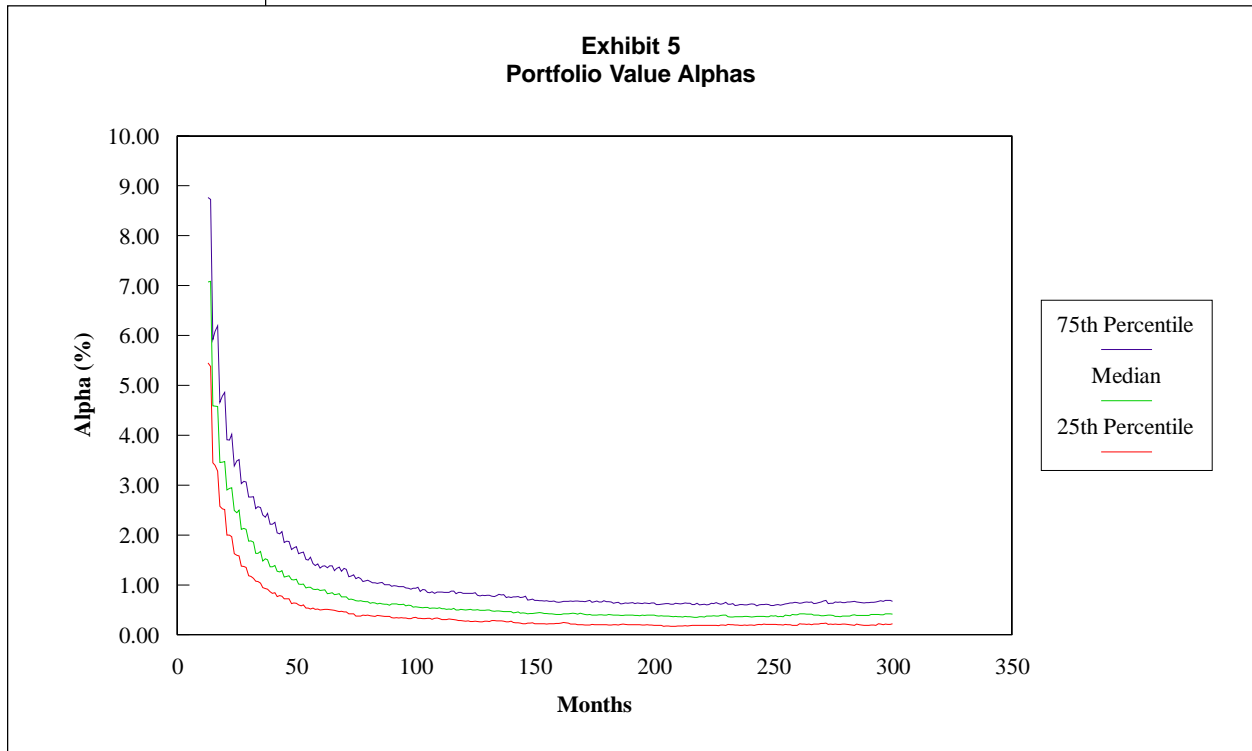


Exhibit 5 shows the month by month annualized “alpha” associated with a loss harvesting strategy. This graph tells a similar story to what we saw in Exhibit 4. The typical alpha in the first year of a loss harvesting program can be as large as 7%, for a portfolio that is funded initially with cash. However, it quickly falls off, falling below 2% per annum before three years is finished and below 1% per annum before five years is finished. Even so, the early alpha sets the stage for a long-term accumulation of value-added from tax-loss harvesting.



What About Those Deferred Taxes?

There's a problem, however. If we harvest losses, we are cutting the cost basis of the holdings in the portfolio every opportunity we have, while the market typically is growing. What about the deferred tax obligation? Isn't it much higher in the tax-advantaged program than in the benchmark? Absolutely. This should not be overlooked, because the deferred tax eventually needs to be paid unless one takes advantage of the step-up in cost basis on death. Accordingly, Exhibit 6 shows precisely the same numbers as Exhibit 4, but subtracts the deferred tax obligation for each month in the simulation, showing the relative after-tax liquidation value of the portfolios.

For each month we ask the question, “What is the relative value of the loss harvesting strategy, net of any deferred tax obligation, relative to the buy-and-hold strategy, net of its deferred tax obligation, if both portfolios were liquidated today?” Here, we find a much more moderate early benefit from tax loss harvesting, but it quickly compounds and builds over time. Why is this? Because an interest-free loan for 20 years is worth far more than an interest-free loan for five years, which is worth more than an interest-free loan for a single year. If we view each loss harvesting opportunity as an opportunity to take out an interest-free loan, most of these loans are taken out in the early years (Years 1-5), thereby accumulating more benefit after 20 years than after just five.

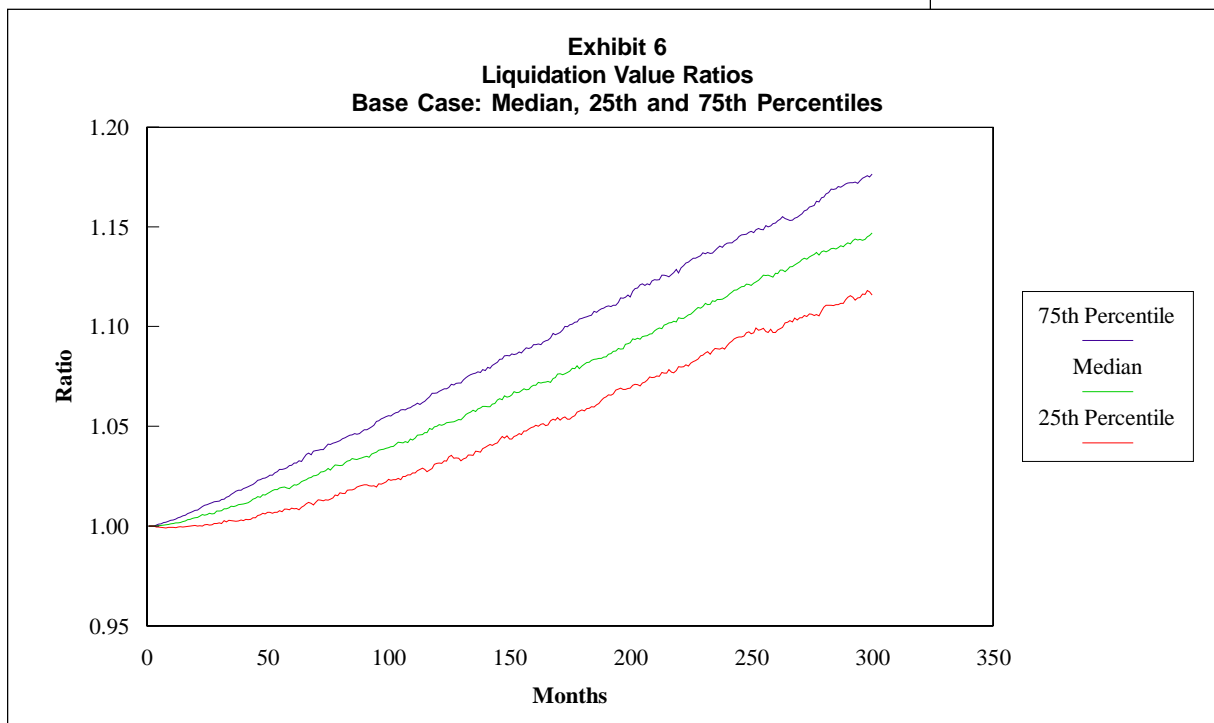
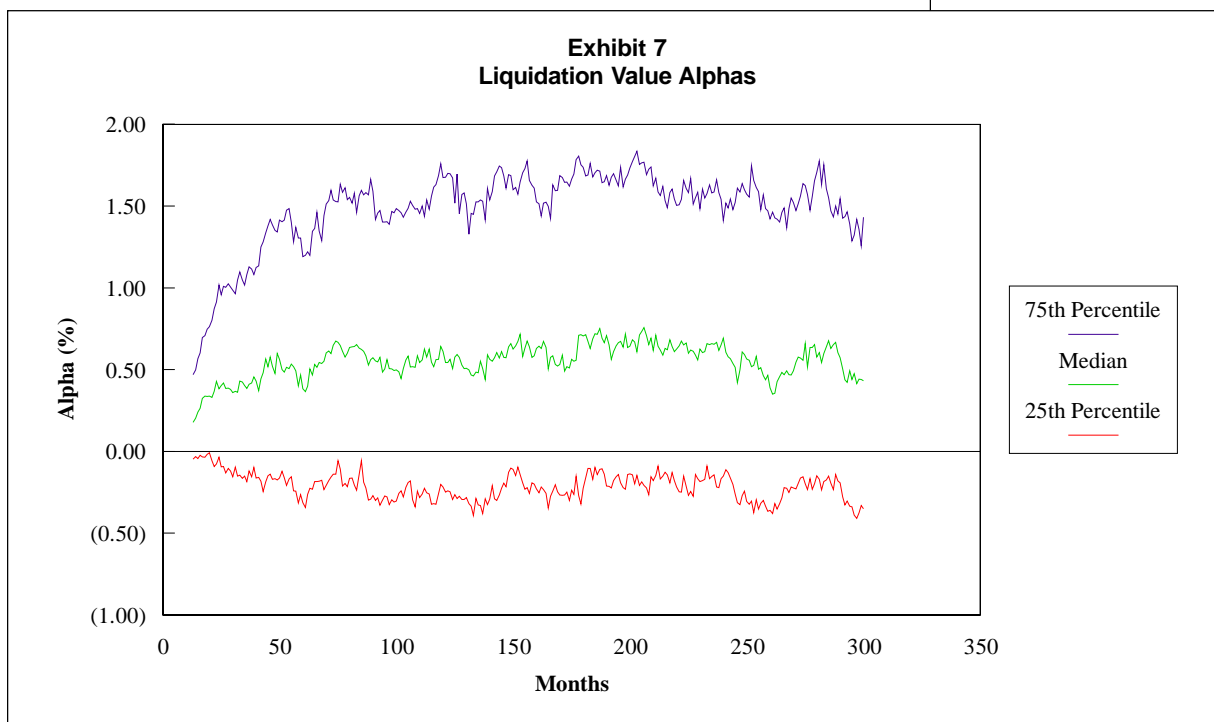


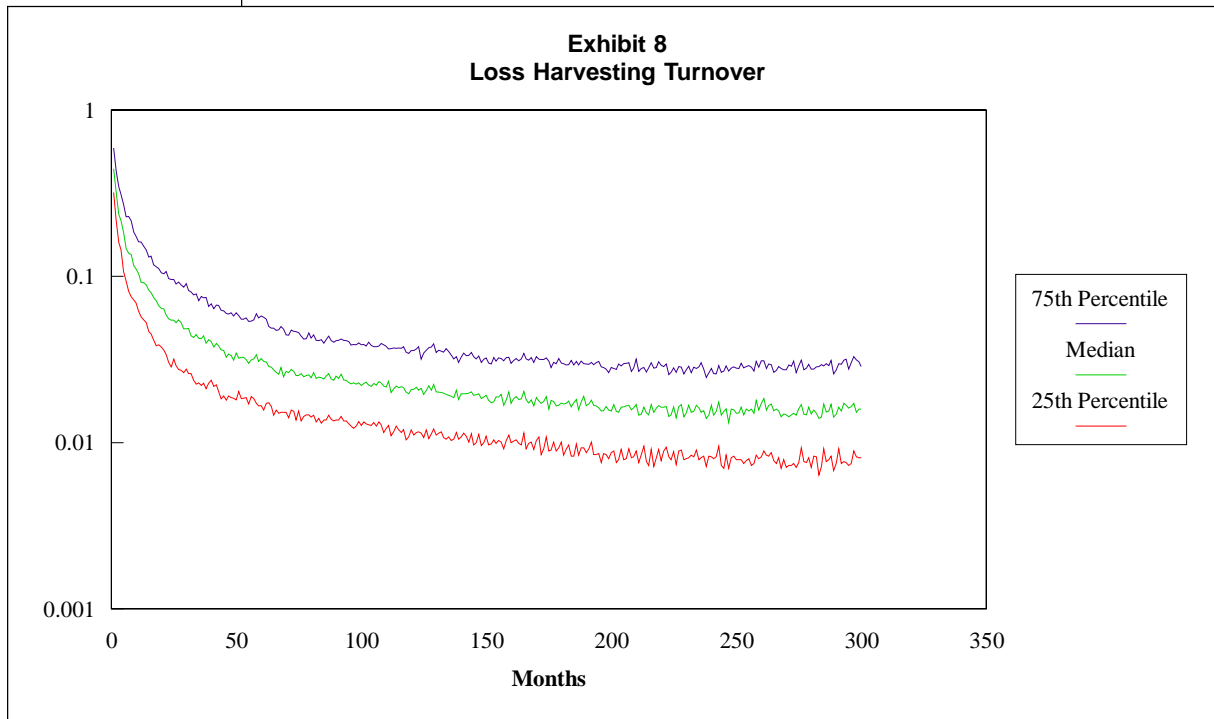
Exhibit 7 shows the annualized alphas net of all liquidation taxes, based on the ratio of the liquidation value of the tax-advantaged portfolio, as compared with the liquidation value for the buy-and-hold benchmark. Because the 25th percentile line is mostly negative, we can see that there will actually be a slight negative liquidation value alpha in just over 25% of the portfolio in any given month. This short-term drop occurs when the market falls, since the money saved by loss harvesting is invested back in the market. That said, since the market tends to go up in the long run, we note that over the full 25-year period even the 25th percentile outcome is well ahead of the benchmark, as seen in Exhibit 6.



The median first-year alpha in Exhibit 7 is slight. Why is this? This is because with loss harvesting, we realize the loss; lowering the immediate tax obligation of the investor, but also lowering our cost basis by a near-identical amount. So, the benefit of a lower immediate tax bill is almost exactly offset by a higher tax bill owed upon liquidation. If we then subtract the liquidation tax to calculate the alpha, net of liquidation taxes, of course the alpha net of liquidation taxes is near-zero. However, the accumulation of returns earned on those immediate tax savings accumulates powerfully over time, still adding over 50 basis points per annum even after 25 years.

Loss Harvesting Turnover

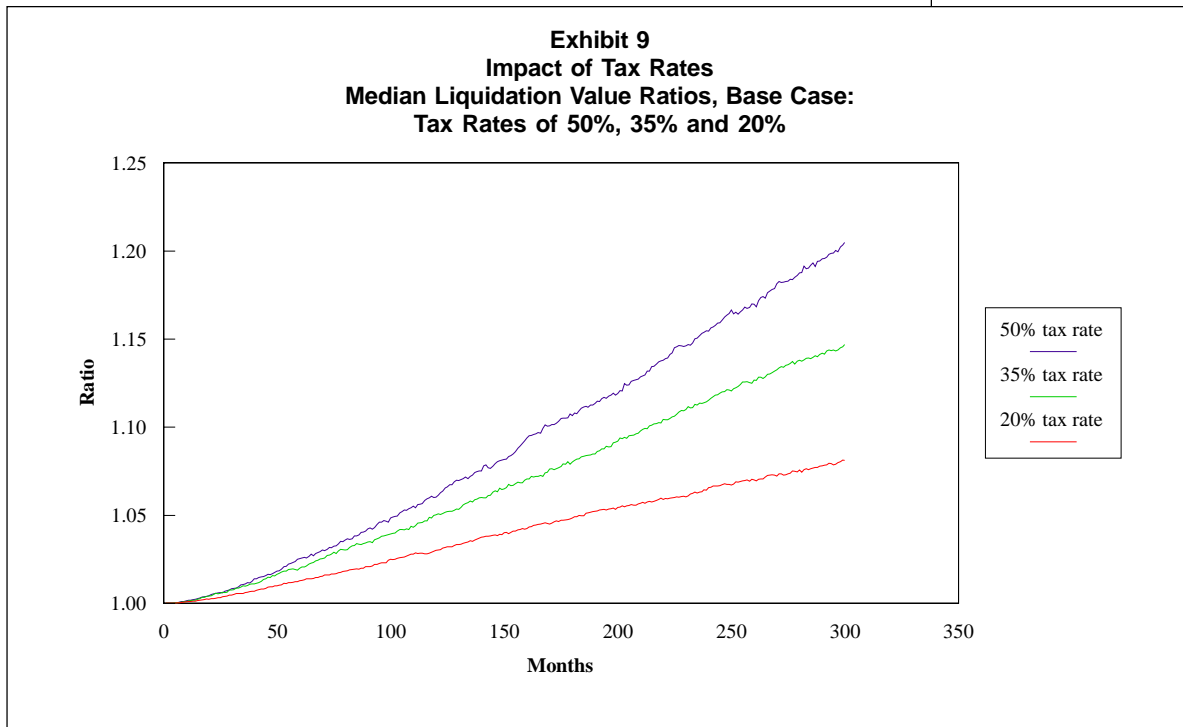
What about turnover? Turnover in a loss harvesting strategy is high at first, averaging 50%, since we find that almost half the stocks in the starting portfolio fall. As those assets fall and the loss is harvested, the proceeds are reinvested in new assets, almost half of which fall, and so forth. There are two implications to this pattern. The first is that an assiduous effort to harvest losses is highly rewarding. The so-called tax-sensitive investment manager, who only engages in loss harvesting once a year at the end of a fiscal year, has probably seen numerous loss harvesting opportunities appear and disappear during the course of a year. The second implication is a “virtuous cycle” in any sort of assiduous effort to harvest losses whenever they occur and whenever the tax alpha is large enough to justify the round-trip trading costs for the



investor. The more careful we are about pouncing on any meaningful loss harvesting opportunity, the longer the loss harvesting opportunities linger into the future, due to the new loss harvesting opportunities created from the reinvestment of loss harvesting proceeds. This shows up in Exhibit 8 which shows substantial annualized turnover for the first year of a loss harvesting program, diminishing sharply over the next five years, and then, remarkably, stabilizing over the next 20 years at a level which is higher than the level explained by corporate actions.

Tax Rates

Finally, we test the impact of marginal tax rates in Exhibit 9. It is not surprising that the tax advantages associated with loss harvesting are roughly linearly related to tax rates. The 25-year benefit of simple loss harvesting yields 14% more wealth for an investor in a 35% tax bracket than simple passive investing, an impressive gain. For the investor in a 50% marginal tax bracket (see our earlier footnote for a demonstration that 50% tax brackets in the US are routine for those in the top



income brackets), this marginal improvement in wealth leaps to 20% in 25 years. Keep in mind that this translates into an 80 basis point annualized benefit. But, to achieve that 80 basis point benefit with conventional active investing one would have to earn a 160 basis point alpha, with no capital gains taxes on those trades, which most observers of active investing would consider nearly impossible. Even for the investor in a modest 20% tax bracket (some categories of insurers and Nuclear Decommissioning Trusts), the marginal benefit of loss harvesting is still a lofty 800 basis points in just 25 years. Keep in mind that this is relative to a plain-vanilla passive portfolio, which in turn sharply exceeds the after-tax returns of the vast majority of active managers.

Conclusion

We have simulated returns for 500 assets over 25 years to examine the benefits of loss harvesting for taxable portfolios, and found a huge advantage over the passive case. By rigorously realizing losses, the median portfolio would add about 27% compared to a pure buy and hold strategy in typical market conditions. Even after liquidation, net of all deferred taxes, this advantage is still an impressive 14%. We have also stress tested these results under a variety of assumptions about the market, and while the final numbers change, the general conclusion is robust. In every case, loss harvesting adds significant value.

There is nothing “magical” about this value added; we are not attempting to exploit any market inefficiencies. We are merely taking advantage of the U.S. tax code, by realizing losses when available which can then be offset against gains from both inside and outside the portfolio. In this sense, loss harvesting acts as an interest free loan from the government, and when compounded over 25 years, that is a powerful advantage.

In conclusion, how do we cut portfolio taxes? First, a roster of don'ts:

- Don't sell any existing portfolio just to buy an index fund. Sometimes people will ask, “Should we just liquidate what we have and turn it over to a tax-advantaged manager?” The answer is, “Absolutely not.” It triggers the very taxes you want to avoid.
- Don't handle manager transitions in a conventional fashion. Transitions, when you fire Manager A and hire Manager B, should be handled in as tax-sensitive a fashion as portfolio management itself.
- Don't allow equity sales at a profit unless (1) there is an offsetting loss that can save you from being hit with a large tax bill, or (2) the valuation basis for trade is exceptionally strong.
- Don't engage in active management without regard to tax consequences. This is an easy way to achieve a modest alpha which may or may not be positive, less a massive tax haircut on your long-term accumulation of wealth.

There's also a list of do's:

- Do harvest losses. What Exhibits #4 and #6 show is just the “tax alpha” from harvesting of losses. That tax alpha from harvesting of losses is material. Over a 25-year span, assuming modest 8% returns on stocks, we earn an average of almost 1400 basis points of cumulative alpha just from harvesting the losses. And that's net of all of the taxes that you would face at the end of the period for liquidating the portfolio. It's a very important source of after-tax alpha, and it's a reliable, predictable source of after-tax alpha.

- Encourage managers to realize losses, even to the point of taking losing assets away from managers who don't harvest their losses! Suppose you have a \$500 million portfolio, with such large gains from a roaring bull market that you only have \$5 million of unrealized losses embedded in the portfolio. Our reaction is that you're missing an opportunity to save \$2 million in taxes. Harvest those losses, even if they're small.
- Do feel free to engage in active management, if you believe you have skill in identifying stocks which are likely to outperform. However, do so only at the margin, on the reinvestment of the proceeds from stocks that are being liquidated for loss harvesting purposes.
- Do consider placing loss harvesting "on hold" if the portfolio cannot enjoy the benefits of a realized loss for several years. In other words, if the investor has no gains that can be offset against the losses in a loss harvesting program, and already has a large accumulated bank of losses to carry forward over the next several years, further loss harvesting will not necessarily help the investor and will incur some modest trading costs. This is not a relevant concern for most of today's investors, but could be relevant in the wake of a significant or sustained bear market.
- Do apply a yield tilt. Whether to favor low-yield or high-yield depends upon the relative tax treatment of dividends and capital gains in your portfolio. Similarly, Brunel (1997) recommends taking a positive volatility tilt, which all other things being equal will increase loss harvesting opportunities.
- Do reduce fees by moving towards less active, hence typically less costly strategies, and perhaps consolidating with fewer managers. Do fund a separately-managed tax-advantaged strategy, even if only with incremental cash flows, into the portfolio. Why do you want to do that if you've already got a portfolio established with a commingled indexation strategy? Because when you do want to handle liquidations, the earliest liquidations can then come from the separate account first, on a tax-optimized basis. And that will save you millions.

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