

A Proposal for Tax-Efficient Active Equity Investing

Active Long Portfolio = Index Portfolio + Market Neutral Portfolio

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The typical active equity investor hopes to garner return from two sources: *market exposure* and *manager alpha*. In a traditional long-only portfolio, the two are inextricably tied together. Capturing alpha usually involves turnover, sometimes a lot of turnover, depending upon the strategy. For a taxable investor, incurring turnover means paying taxes. Capturing the market risk premium, on the other hand, requires almost no turnover. Consequently, *separating these two sources of return* would maximize tax efficiency while retaining the potential to generate a return through active management, as suggested by Brunel [2001] and Stein [2001], who both recommend a structure comprised of a tax-efficient “core” (indexed or nearly indexed to the broad market) and tax-inefficient (highly active, high value-added) “satellite” strategies.

The structure that I propose here is a specific variation on that theme, one that can be applied to an overall portfolio, or to any allocation to a specific asset class. Any actively managed long-only portfolio can be thought of as a combination of an *index* portfolio and a *market neutral* long-short portfolio. Splitting a long-only portfolio into these two components can dramatically increase tax efficiency (by leaving the index portfolio completely undisturbed) and also maintain a high level of portfolio management flexibility (by avoiding much of the “lockup” problem). The market neutral strategy can provide both alpha capture *and* tax efficiency, if implemented with

an eye toward harvesting capital losses to offset realized capital gains.

In this article, I will consider and discuss the following:

1. Attempting to satisfy the objectives of market exposure, tax efficiency, and alpha capture in the same portfolio with a low-turnover long-only active strategy is vastly inferior to the two-portfolio structure proposed here.
2. The lockup problem looms large, especially when the tax cost of a trade, which is known with certainty, is compared to the prospective alpha pickup adjusted for a reasonable level of uncertainty (which I call the “confidence-adjusted alpha”).
3. Using a market neutral long-short portfolio to capture alpha offers the potential to solve the lockup problem, even over the very long term, because of the inherently balanced nature of the portfolio, which always has an equal amount in long and short positions, so that no matter whether the market rises or falls, there are usually ample opportunities to offset gains with losses, providing maximum flexibility as well as tax efficiency.

THE ELUSIVE SEARCH FOR ALPHA

Others, including Jeffrey and Arnott [1993], have demonstrated that consciously applying tax-smart investment principles will

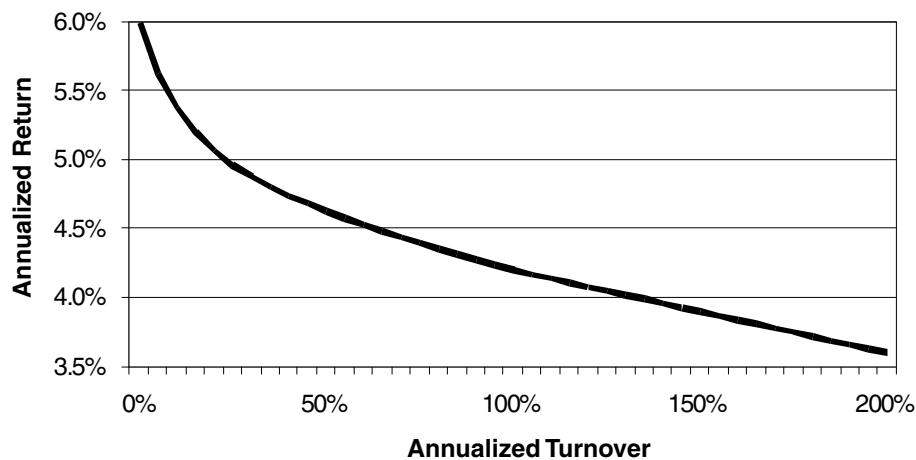
EXHIBIT 1

Effect of Turnover on 20 Year After-Tax Return

Assumptions								
6%	Annual principal growth rate							
40%	Short-term tax rate							
20%	Long-term tax rate							
Total Turnover:	0.0%	5.0%	10.0%	25.0%	50.0%	100.0%	200.0%	
Short-Term Turnover:	0.0%	0.1%	0.5%	3.1%	12.5%	50.0%	200.0%	
Long-Term Turnover:	0.0%	4.9%	9.5%	21.9%	37.5%	50.0%	0.0%	
Beg. of Year Value	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	2	106.00	105.94	105.87	105.66	105.25	104.20	103.60
	3	112.36	112.17	111.98	111.39	110.40	108.58	107.33
	10	168.95	165.58	162.79	156.90	151.32	144.81	137.48
	20	302.56	283.52	271.09	251.45	236.41	218.52	195.81
Year-End Value Before Taxes	1	106.00	106.00	106.00	106.00	106.00	106.00	106.00
	2	112.36	112.29	112.23	112.00	111.57	110.45	109.82
	3	119.10	118.90	118.70	118.08	117.02	115.09	113.77
	10	179.08	175.51	172.56	166.32	160.40	153.50	145.73
	20	320.71	300.53	287.36	266.53	250.59	231.63	207.56
Beg. Cost Basis	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	2	100.00	100.24	100.47	101.16	102.25	104.20	103.60
	3	100.00	100.72	101.40	103.26	105.74	108.58	107.33
	10	100.00	111.13	119.57	134.47	143.01	144.81	137.48
	20	100.00	150.96	179.95	213.57	223.41	218.52	195.81
Realized Short-Term Gain	1	0.00	0.01	0.03	0.19	0.75	3.00	6.00
	2	0.00	0.02	0.06	0.34	1.16	3.13	6.22
	3	0.00	0.02	0.09	0.46	1.41	3.26	6.44
	10	0.00	0.08	0.26	1.00	2.17	4.34	8.25
	20	0.00	0.19	0.54	1.66	3.40	6.56	11.75
Realized Long-Term Gain	1	0.00	0.29	0.57	1.31	2.25	3.00	0.00
	2	0.00	0.59	1.12	2.37	3.49	3.13	0.00
	3	0.00	0.89	1.64	3.24	4.23	3.26	0.00
	10	0.00	3.14	5.03	6.97	6.52	4.34	0.00
	20	0.00	7.29	10.20	11.59	10.19	6.56	0.00
Short-Term Capital Gains Tax	1	0.00	0.00	0.01	0.08	0.30	1.20	2.40
	2	0.00	0.01	0.02	0.14	0.47	1.25	2.49
	3	0.00	0.01	0.03	0.19	0.56	1.30	2.58
	10	0.00	0.03	0.11	0.40	0.87	1.74	3.30
	20	0.00	0.07	0.21	0.66	1.36	2.62	4.70
Long-Term Capital Gains Tax	1	0.00	0.06	0.11	0.26	0.45	0.60	0.00
	2	0.00	0.12	0.22	0.47	0.70	0.63	0.00
	3	0.00	0.18	0.33	0.65	0.85	0.65	0.00
	10	0.00	0.63	1.01	1.39	1.30	0.87	0.00
	20	0.00	1.46	2.04	2.32	2.04	1.31	0.00
After-Tax Proceeds Reinvested	1	0.00	0.24	0.47	1.16	2.25	4.20	3.60
	2	0.00	0.48	0.93	2.10	3.49	4.38	3.73
	3	0.00	0.72	1.37	2.87	4.23	4.56	3.86
	10	0.00	2.56	4.19	6.17	6.52	6.08	4.95
	20	0.00	5.95	8.49	10.26	10.19	9.18	7.05
Ending Cost Basis	1	100.00	100.24	100.47	101.16	102.25	104.20	103.60
	2	100.00	100.72	101.40	103.26	105.74	108.58	107.33
	3	100.00	101.44	102.77	106.13	109.97	113.14	111.19
	10	100.00	113.69	123.76	140.64	149.53	150.90	142.43
	20	100.00	156.90	188.43	223.83	233.61	227.70	202.86
Ending Market Value	1	106.00	105.94	105.87	105.66	105.25	104.20	103.60
	2	112.36	112.17	111.98	111.39	110.40	108.58	107.33
	3	119.10	118.72	118.34	117.24	115.61	113.14	111.19
	10	179.08	174.85	171.45	164.52	158.22	150.90	142.43
	20	320.71	299.00	285.10	263.55	247.20	227.70	202.86
Annualized Return:	6.00%	5.63%	5.38%	4.96%	4.63%	4.20%	3.60%	

EXHIBIT 2

Effect of Turnover on 20 Year After-Tax Return



usually offer a greater, and certainly a more predictable, return for taxable investors than attempting to identify portfolio managers with enough alpha to overcome the tax costs of their active management.

Given the fact that the average active manager fails to deliver *any* alpha over an appropriate index benchmark after fees and expenses, the case for indexation is strong even for tax-exempt investors. For tax-paying investors, it is *compelling*. For example, a superior manager may be able to achieve an alpha of, say, 1% over the benchmark on average over a long time period, a feat that would put such a manager comfortably in the upper quartile within most manager universes. However, even that superior manager will likely fall behind an index fund on an after-tax basis, even at a fairly low level of turnover.

Despite the long odds against success, the hope of achieving above-benchmark return lures a majority of taxable investors into pursuing active strategies. Let's face it, indexation is not much fun. Nor is it very lucrative for the sellers of investment services. Like dieting and exercising, it may be the right thing to do, but that does not mean that everyone does it.

Many taxable investors believe that if they can find a manager with fairly low turnover, they may be able to satisfy both the desire for tax efficiency and the desire for some amount of risk-adjusted excess return (or "alpha") from active management. They are mistaken.

LOW TURNOVER IS NOT THE ANSWER

Most people are surprised to learn that simply striving for a low level of annual turnover will not have

a dramatic impact on tax costs.¹ Even at a turnover rate as low as 25% (a rarity among actively managed portfolios), *over half* of the loss to capital gains taxes remains compared to the more typical turnover rate of 100% (Jeffrey and Arnott [1993]).

Note that our focus is taxes on *capital gains*, not taxes on *dividends*. Dividend income is unfortunately taxed at the high rates assigned to ordinary income. Historically, minimizing dividend income has noticeably reduced the tax burden for savvy investors (Chincarini and Kim [2001]), but with the current dividend yield on the S&P 500 around 1.5%, ignoring the effect of taxes on dividends makes the analysis simpler without having a major effect on the conclusions applicable to today's investors.

Exhibit 2, which builds upon the work of Jeffrey and Arnott [1993] but incorporates two capital gain tax rates (40% short-term and 20% long-term) instead of their simplifying assumption of one rate, illustrates the effects of turnover on capital gains taxes and after-tax returns under the following assumptions:

- Annual capital appreciation of 6% (the same rate used by Jeffrey and Arnott [1993])
- 20% long-term capital gain tax rate
- 40% short-term capital gain tax rate
- Turnover occurs at a constant rate so that half takes place before the end of the average holding period, and half takes place after

Note from Exhibit 2 (which is based on the numerical data shown in Exhibit 1) how the return-diminishing effects of turnover on after-tax return are most pronounced

at the far left side. To quote Jeffrey and Arnott, “What is counter-intuitive—but *very* important—about the pattern . . . is that the marginal impact of taxes is the most severe at the outset (i.e., as turnover commences). Even the slightest turnover can sharply affect returns” (Jeffrey and Arnott [1993, p. 17]).

Compared to the no-turnover return of 6.0%, an active strategy requiring only 25% annual turnover would still need to add over 1.0% in value, net of all fees and expenses, *just to break even*. A more typical turnover of 100% would require 1.8% in net value-added to get back to square one.

These facts make a *very* low (near zero) turnover strategy extremely attractive for taxable investors. S&P 500 Index funds, for example, only experience turnover in order to track changes made to the index (or to fund redemptions), and historically their turnover rate has been around 5%.

THE “LOCKUP” PROBLEM

Actively managed portfolios can make use of one tax management tool that index funds cannot: consciously “harvesting” stocks with capital losses in order to offset profits realized from selling other positions at a gain. The main problem with this technique when implemented in a traditional long-only equity portfolio is that over time stock prices tend to rise, offering fewer and fewer opportunities to harvest losses.² Over a surprisingly short period of time, more and more holdings will be “locked up” because the tax cost of selling them will more than outweigh any probable alpha capture benefit.

Using the same 20% long-term capital gains tax rate as above, Exhibit 4 (based on data shown in Exhibit 3) illustrates the rising potential tax cost of selling a position as it appreciates steadily at three different assumed rates of capital gain: 3%, 6%, and 12%. Ultimately, as a higher percentage of the current market value is unrealized capital gain, the tax cost will approach 20%. Of course, this graph merely illustrates the *average* stock at the assumed capital appreciation rates. The experience of individual stocks will, of course, vary considerably, even if the assumed appreciation rate holds on average for all stocks.

At the 6% rate (compounded), the average stock will have increased in price by 33.8% over a five-year holding period, and the 20% capital gains tax would equal 5.1% of the current market value of the position (33.8% × 20%/133.8%). Under what conditions would it make sense to sell the stock, despite the 5.1% capital gains tax cost? Assuming that any stock that is sold would be replaced by another stock, presumably one with better return prospects,

the trade would have been profitable in hindsight if the stock that was sold underperformed the stock that was bought by at least 5.1% over the expected holding period.

Of course, taxes will be owed within roughly a year of the realization of the capital gain, so to the extent that the excess return of the newly purchased stock occurs further out into the future, the return benefit would have to be discounted appropriately. The expected holding period of stocks in the portfolio may be quite long, particularly if the investor understands the tax benefits of keeping turnover as close to zero as possible. On the other hand, the forecasting period for most stock analysts and most alpha models is usually about a year, so it may be more realistic to require that the return pickup occur within that time frame.

It is also important to note that the 5.1% tax cost of selling is *certain*. The return enhancement hoped for behind a trade cannot be known with certainty. How can I compare an outcome that is certain (the tax cost of selling) with one that is uncertain (the possible pick up in return)?

Grinold [1994] has suggested breaking an alpha forecast down into three component parts, according to the following formula:

$$\text{Alpha} = \text{Volatility} \times \text{IC} \times \text{Score}$$

in which

Alpha = expected residual return

Volatility = residual volatility from a risk model (Grinold used the BARRA model)

IC = information coefficient, or the correlation between forecasted residual return and realized residual return

Score = a standardized measure of stock preference (mean = 0, standard deviation = 1)

Let’s say that I have a negative opinion on the stock in question that has appreciated 33.8% over the past five years, but I do not have a specific return forecast. I think that it will fall behind the market by a considerable margin over the coming year, but nothing more specific than that. What would be a reasonable return forecast?

Let’s start with the *volatility* component, using the formula above. If you do not have a risk model handy to provide an estimate of the residual volatility for the stock in question, a *very rough generalization* would be to assume that all stocks have the same residual volatility. (Forgive me, Mr. Grinold!) Residual volatility is that portion of a stock’s volatility that is not explained by the risk model.

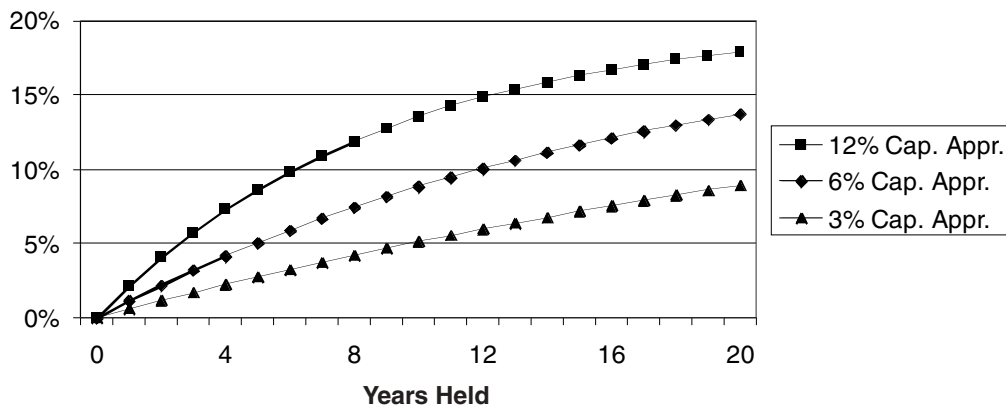
EXHIBIT 3

Potential Capital Gains Tax as a % of Value

End of Year	-----12% Growth-----				-----6% Growth-----				-----3% Growth-----			
	Value	\$ Capital Gain	% of Value In Capital Gain Taxes	% of Value In Capital Gain Taxes	Value	\$ Capital Gain	% of Value In Capital Gain Taxes	% of Value In Capital Gain Taxes	Value	\$ Capital Gain	% of Value In Capital Gain Taxes	% of Value In Capital Gain Taxes
0	100.00	0.00	0.00	0.0%	100.00	0.00	0.00	0.0%	100.00	0.00	0.00	0.0%
1	112.00	12.00	2.40	2.1%	106.00	6.00	1.20	1.1%	103.00	3.00	0.60	0.6%
2	125.44	25.44	5.09	4.1%	112.36	12.36	2.47	2.2%	106.09	6.09	1.22	1.1%
3	140.49	40.49	8.10	5.8%	119.10	19.10	3.82	3.2%	109.27	9.27	1.85	1.7%
4	157.35	57.35	11.47	7.3%	126.25	26.25	5.25	4.2%	112.55	12.55	2.51	2.2%
5	176.23	76.23	15.25	8.7%	133.82	33.82	6.76	5.1%	115.93	15.93	3.19	2.7%
6	197.38	97.38	19.48	9.9%	141.85	41.85	8.37	5.9%	119.41	19.41	3.88	3.3%
7	221.07	121.07	24.21	11.0%	150.36	50.36	10.07	6.7%	122.99	22.99	4.60	3.7%
8	247.60	147.60	29.52	11.9%	159.38	59.38	11.88	7.5%	126.68	26.68	5.34	4.2%
9	277.31	177.31	35.46	12.8%	168.95	68.95	13.79	8.2%	130.48	30.48	6.10	4.7%
10	310.58	210.58	42.12	13.6%	179.08	79.08	15.82	8.8%	134.39	34.39	6.88	5.1%
11	347.85	247.85	49.57	14.3%	189.83	89.83	17.97	9.5%	138.42	38.42	7.68	5.6%
12	389.60	289.60	57.92	14.9%	201.22	101.22	20.24	10.1%	142.58	42.58	8.52	6.0%
13	436.35	336.35	67.27	15.4%	213.29	113.29	22.66	10.6%	146.85	46.85	9.37	6.4%
14	488.71	388.71	77.74	15.9%	226.09	126.09	25.22	11.2%	151.26	51.26	10.25	6.8%
15	547.36	447.36	89.47	16.3%	239.66	139.66	27.93	11.7%	155.80	55.80	11.16	7.2%
16	613.04	513.04	102.61	16.7%	254.04	154.04	30.81	12.1%	160.47	60.47	12.09	7.5%
17	686.60	586.60	117.32	17.1%	269.28	169.28	33.86	12.6%	165.28	65.28	13.06	7.9%
18	769.00	669.00	133.80	17.4%	285.43	185.43	37.09	13.0%	170.24	70.24	14.05	8.3%
19	861.28	761.28	152.26	17.7%	302.56	202.56	40.51	13.4%	175.35	75.35	15.07	8.6%
20	964.63	864.63	172.93	17.9%	320.71	220.71	44.14	13.8%	180.61	80.61	16.12	8.9%

EXHIBIT 4

Potential Capital Gains Tax as a % of Value



Most risk models include both “common factors” such as beta, size, and book/price, as well as industry factors. Even for very large cap stocks, the residual volatility is about 70% of total volatility, on average (Grinold [1994, p. 10]). For smaller cap stocks, it would be an even greater percentage. If your stock selection process includes some degree of implicit industry selection as well as individual stock selection, you may want to exclude industry effects from your estimate of residual volatility, making residual volatility an even higher percentage of total volatility. In any event, ex ante forecasts of residual volatility are themselves fraught with uncertainty. To keep the analysis simple, for our purposes we will assume that total volatility roughly approximates residual volatility.

Return means and variances are generally measured using a one-year time horizon. We will assume that a reasonable distribution of returns over a one-year time period for the typical S&P 500 stock, based upon past behavior and current conditions, would be a lognormal distribution with a mean expected return of 7.5% (6% capital appreciation and 1.5% dividend yield) and a cross-sectional standard deviation around that mean of about 20%, as illustrated in Exhibit 6. Bear in mind that the mean really doesn’t affect the alpha (excess return), which depends upon the standard deviation, not the mean. I select 7.5% only to have a concrete example. The distribution of stock returns around the mean is lognormal because although raw one-year stock returns are not normally distributed,

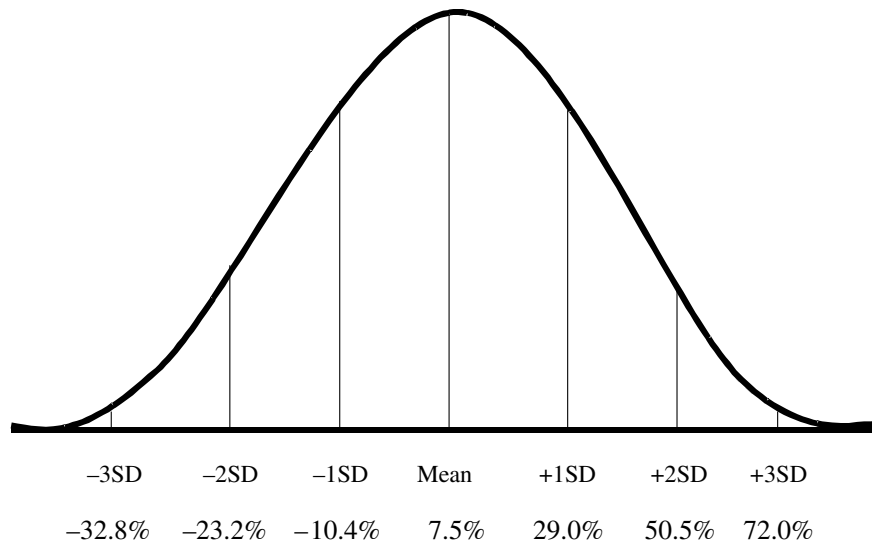
EXHIBIT 5

Lognormal Return Distribution with Mean = 7.5% and Standard Deviation = 20%

Stdzd Distance	Compounding Factor	Wealth Relative	Return	Log of WR
+3	1.600	1.720	72.0%	0.542
+2	1.400	1.505	50.5%	0.409
+1	1.200	1.290	29.0%	0.255
mean	1.000	1.075	7.5%	0.072
-1	1.200	0.896	-10.4%	-0.110
-2	1.400	0.768	-23.2%	-0.264
-3	1.600	0.672	-32.8%	-0.398

EXHIBIT 6

Lognormal Return Distribution with Mean = 7.5% and Standard Deviation = 20%



the log of one-year raw returns is generally close to normal. Remember, stocks can't go down more than 100%, but they can go up more than 100%.

Let's say that I believe the stock in question will return one standard deviation below the mean over the next year (I give it a "Score" of -1), which translates into a "raw" forecasted return of -10.4% (see Exhibit 6). However, -10.4% is a forecast with a lot of uncertainty. I know that selling the stock will cost me 5.1% for sure. How can I translate my -10.4% raw forecast into a *confidence-adjusted* forecast? As you might guess, it has to do with how good my forecasting ability is, as measured by the correlation of my past forecasts with actual outcomes ("IC" or "information coefficient"). Correlations can be as high as +1.00 (perfect foresight in getting both direction and magnitude exactly right) and as low as -1.00 (getting magni-

tude exactly right but with the wrong sign). One way to estimate what my IC will be on this forecast is to average what my IC has been in the past. However, let's assume that I haven't measured my past ICs, but I believe that I am "very good" at forecasting. What is a reasonable IC for a "very good" stock picker?

According to Grinold [1989, p. 10-11], "a reasonable IC for an outstanding (top 5%) manager forecasting the returns on 500 stocks is about 0.06. If the manager is good (top quartile), 0.04 is a reasonable number." So let's say that I think I am in the top 5% group, with an IC of 0.06. To translate my raw forecast into a confidence-adjusted forecast, I multiply it by my assumed IC: $-10.4\% \times 0.06 = -0.62\%$.

Let's assume that I have a stock I'd like to buy that I am forecasting will return *three* standard deviations above

average, or 72.0%. (After all, I can buy the highest alpha stock in my universe, if I don't already own it.) My raw return forecast of 72.0% translates into a confidence-adjusted forecast of 4.32% ($72.0\% \times 0.06 = 4.32\%$). So my *confidence-adjusted return pickup* from the transaction would be 4.94% ($0.62\% + 4.32\% = 4.94\%$). Even with these extremely aggressive assumptions, it does not make sense to make the trade, since it will cost 5.1% in capital gains taxes. *The position is "locked up."*

The only way to make the trade attractive would be to 1) lower the tax implications by realizing offsetting capital losses, 2) raise my assumed forecasting ability (IC), and/or 3) extend my assumed holding period beyond one year and assume that my alpha forecast will continue to garner excess return beyond the first year. Of course, option #1 should be pursued aggressively to the extent that the transaction costs of eliminating positions with unfavorable alpha forecasts are of reasonable magnitude relative to the magnitude of the poor alphas and the losses that can be harvested. On the other hand, the human psychological tendencies toward impatience, overconfidence, and rationalization being what they are, options #2 and #3 should be approached with a healthy dose of skepticism.

The lockup problem is even more acute for short-term gains, which we assume are taxed at a 40% rate. If we conclude that most stocks held more than one year that have appreciated more than about 30% probably should be thought of as locked up for a taxable investor because of the low probability that any hoped-for pickup in return will be high enough to cover the tax consequences of making the trade, the threshold for lockup applicable to stocks that have been held for less than one year would be only 15%.

For long-only portfolios, the lockup problem tends to build up over time. Because stocks tend to appreciate in the long run, eventually most stocks in a long-only portfolio will become locked up, severely limiting portfolio management flexibility.

THE MARKET NEUTRAL SOLUTION

Because market neutral portfolios have an equal amount invested in long and short positions, regardless of whether the market is up, down, or flat, typically there will be unrealized losses available to offset unrealized gains. This condition will hold even over the very long term.

The annual alphas that most market neutral strategies are able to achieve are modest (say 5%-15%) compared

to the magnitude of the cross-sectional distribution of individual stock returns (see Exhibit 6—based on Exhibit 5). A well-diversified market neutral portfolio is likely to offer ample opportunity to offset most, if not all, of any realized gains with realized losses within a calendar year, if the portfolio manager consciously seeks such opportunities throughout the year. However, to the extent that the level of alpha increases relative to the magnitude of the standard deviation of individual stock returns within a calendar year, it may become more difficult to find losses to offset gains. At the extreme, a market neutral manager in the "unhappy" position of having gains in all positions, long and short, obviously would not be able to harvest any losses. However, in this rare circumstance, clients are likely to be quite happy to pay their taxes!

It is important to note that a portfolio manager must *consciously* harvest unrealized capital losses in order for the potential benefit of the market neutral structure to be fully utilized. Very few market neutral funds take full advantage of their inherent tax efficiency at present. Perhaps as more taxable investors include tax efficiency as an important selection criterion, more funds will make it a priority.

ACTIVE LONG PORTFOLIO = INDEX PORTFOLIO + MARKET NEUTRAL PORTFOLIO

Putting all of the pieces together, how much would my proposed structure of an index portfolio plus a market neutral portfolio save in capital gains taxes compared to an active long portfolio? We will use the same assumptions as above:

- Annual capital appreciation of 6%
- 20% long-term capital gain tax rate
- 40% short-term capital gain tax rate
- Turnover occurs at a constant rate so that half takes place before the end of the average holding period, and half takes place after

And add three more assumptions:

- 5% average annual turnover rate for the index
- Realized gains in the market neutral fund are fully offset with realized losses
- Alpha of 1% for both the active long strategy and the market neutral strategy

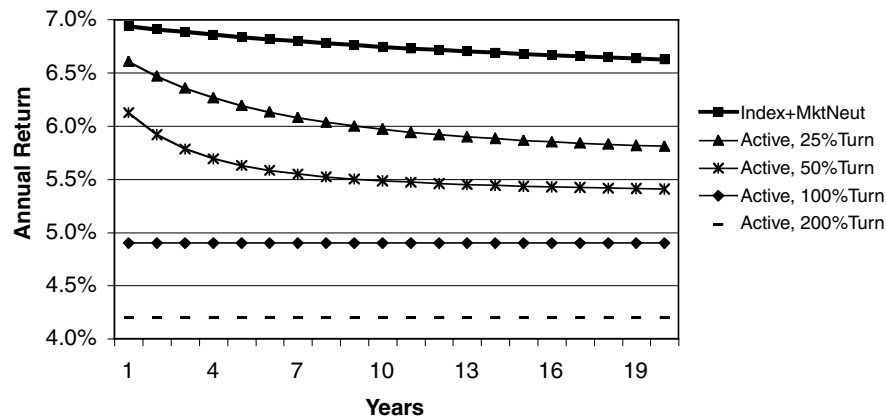
EXHIBIT 7

Active versus Index + Market Neutral

Short-term tax rate		40%						
Long-term tax rate		20%						
Type of Portfolio:		Active	Active	Active	Active	Index	Mkt. Neut.	Mkt. Neut.
Annual principal growth rate		7%	7%	7%	7%	6%	1%	1%
Total Turnover:		25.0%	50.0%	100.0%	200.0%	5.0%	0.0%	200.0%
Short-Term Turnover:		3.1%	12.5%	50.0%	200.0%	0.1%	0.0%	200.0%
Long-Term Turnover:		21.9%	37.5%	50.0%	0.0%	4.9%	0.0%	0.0%
Beg. of Year Value	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	2	106.61	106.13	104.90	104.20	105.94	101.00	100.60
	3	113.35	112.19	110.04	108.58	112.17	102.01	101.20
	10	168.94	161.95	153.81	144.81	165.58	109.37	105.53
	20	292.95	272.32	248.16	218.52	283.52	120.81	112.04
Year-End Value Before Taxes	1	107.00	107.00	107.00	107.00	106.00	101.00	101.00
	2	114.07	113.55	112.24	111.49	112.29	102.01	101.61
	3	121.29	120.04	117.74	116.18	118.90	103.03	102.22
	10	180.76	173.28	164.57	154.95	175.51	110.46	106.59
	20	313.45	291.38	265.53	233.81	300.53	122.02	113.16
Beg. Cost Basis	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	2	101.36	102.63	104.90	104.20	100.24	100.00	100.60
	3	103.82	106.72	110.04	108.58	100.72	100.00	101.20
	10	141.44	151.72	153.81	144.81	111.13	100.00	105.53
	20	242.85	255.10	248.16	218.52	150.96	100.00	112.04
Realized Short-Term Gain	1	0.22	0.88	3.50	7.00	0.01	0.00	1.00
	2	0.40	1.37	3.67	7.29	0.02	0.00	1.01
	3	0.55	1.66	3.85	7.60	0.02	0.00	1.01
	10	1.23	2.70	5.38	10.14	0.08	0.00	1.06
	20	2.21	4.54	8.69	15.30	0.19	0.00	1.12
Realized Long-Term Gain	1	1.53	2.63	3.50	0.00	0.29	0.00	0.00
	2	2.78	4.10	3.67	0.00	0.59	0.00	0.00
	3	3.82	4.99	3.85	0.00	0.89	0.00	0.00
	10	8.60	8.09	5.38	0.00	3.14	0.00	0.00
	20	15.44	13.61	8.69	0.00	7.29	0.00	0.00
Short-Term Capital Gains Tax	1	0.09	0.35	1.40	2.80	0.00	0.00	0.40
	2	0.16	0.55	1.47	2.92	0.01	0.00	0.40
	3	0.22	0.67	1.54	3.04	0.01	0.00	0.40
	10	0.49	1.08	2.15	4.05	0.03	0.00	0.42
	20	0.88	1.81	3.47	6.12	0.07	0.00	0.45
Long-Term Capital Gains Tax	1	0.31	0.53	0.70	0.00	0.06	0.00	0.00
	2	0.56	0.82	0.73	0.00	0.12	0.00	0.00
	3	0.76	1.00	0.77	0.00	0.18	0.00	0.00
	10	1.72	1.62	1.08	0.00	0.63	0.00	0.00
	20	3.09	2.72	1.74	0.00	1.46	0.00	0.00
After-Tax Proceeds Reinvested	1	1.36	2.63	4.90	4.20	0.24	0.00	0.60
	2	2.46	4.10	5.14	4.38	0.48	0.00	0.60
	3	3.38	4.99	5.39	4.56	0.72	0.00	0.61
	10	7.62	8.09	7.54	6.08	2.56	0.00	0.63
	20	13.68	13.61	12.16	9.18	5.95	0.00	0.67
Ending Cost Basis	1	101.36	102.63	104.90	104.20	100.24	100.00	100.60
	2	103.82	106.72	110.04	108.58	100.72	100.00	101.20
	3	107.20	111.72	115.43	113.14	101.44	100.00	101.81
	10	149.06	159.80	161.34	150.90	113.69	100.00	106.16
	20	256.53	268.70	260.32	227.70	156.90	100.00	112.71
Ending Market Value	1	106.61	106.13	104.90	104.20	105.94	101.00	100.60
	2	113.35	112.19	110.04	108.58	112.17	102.01	101.20
	3	120.31	118.38	115.43	113.14	118.72	103.03	101.81
	10	178.55	170.59	161.34	150.90	174.85	110.46	106.16
	20	309.48	286.85	260.32	227.70	299.00	122.02	112.71
Annualized Return:		5.81%	5.41%	4.90%	4.20%	5.63%	1.00%	0.60%

EXHIBIT 8

Active versus Index + Market Neutral



The results are illustrated in Exhibit 8 (with the data points shown in Exhibit 7). All of the strategies return 7% before taxes (ignoring any return from dividend income). Note that the after-tax returns for the long-only active strategies with 100% and 200% turnover are flat, but the returns for the index + market neutral strategy (5% turnover) and the long-only active strategies with 25% and 50% turnover slope downward in the early years and then flatten out. The higher turnover strategies never allow a large unrealized gain to build up. The lower turnover strategies build up unrealized gain over time, so as these low-basis positions are sold the tax bite increases.

For example, at 100% turnover, the average holding period is one year. Therefore, half of the stocks sold are assumed to have been held less than a year and half are assumed to have been held for between one and two years. Because turnover is assumed to take place at a constant rate, the maximum holding period is twice the average holding period, so the longest-held stock is two years old.

In contrast, at 5% turnover, the index fund return takes considerably longer to flatten out. The average holding period is 20 years, so it takes 40 years to completely turn the portfolio over.

Because the market neutral strategy is assumed to return 1% (on top of the 6% return from the index fund) with no taxes, the slight return decline over time in the index + market neutral strategy return is strictly a result of the 5% turnover assumption for the index. If all of the 1% market neutral return were from short-term gain, taxed at 40%, the “index + market neutral” return line would be only 0.4% lower. The fact that the difference between the most tax-efficient and the least tax-efficient

market neutral strategies is only 0.4% highlights the attraction of separating market return from manager alpha. With all of the capital exposed to the vagaries of long-only active management, the spread between the most tax-efficient implementation (0% turnover, 7% after-tax return) and the least tax-efficient implementation (200% turnover, 4.2% after-tax return) is a whopping 3.8%.

After 20 years, the proposed index + market neutral strategy has achieved an after-tax return of 6.63%. Even when implemented with the least tax-efficient market neutral strategy (200% turnover, all of it taxed at 40%), the index + market neutral strategy would return 6.23% after taxes over 20 years, comfortably ahead of the 5.81% return of the 25% turnover long-only strategy, and well ahead of the 4.90% return from the more typical 100% turnover active strategy.

Of course, any investor can put together their own index + market neutral portfolio as a substitute for an active long-only portfolio. However, when put together inside of a commingled vehicle that allows in-kind distributions, such as a hedge fund limited partnership, the index + market neutral structure has an additional attraction. The tax ramifications of individual investors leaving the commingled vehicle can be more or less isolated to those investors, leaving the remaining investors insulated from any adverse tax consequences. Departing investors can receive the majority of their redemption in the actual index shares that were purchased when they entered the commingled vehicle. This is particularly easy if some sort of exchange-traded index fund is used, such as S&P 500 Depository Receipts (SPDRs).

CONCLUSION

In this article, I discussed a tax-efficient structure for active management in place of the traditional long-only active portfolio that consists of an index fund plus a market neutral fund. This structure has several important advantages:

- Return from market exposure is obtained in a tax-efficient manner
- Return from active management is retained
- The balanced long-short nature of the market neutral strategy facilitates realizing losses to offset realized gains, dramatically reducing capital gains taxes
- The “lockup” problem is minimized, retaining portfolio management flexibility
- In a commingled vehicle, redemptions can be paid out in-kind in index fund shares, insulating the remaining investors from adverse tax consequences

The capital gains tax bite from active trading is indeed onerous. In fact, with a realistic set of assumptions regarding an investor’s ability to forecast alpha, most stocks that have appreciated more than 30% should probably be considered locked up for an upper bracket taxable investor in the sense that any “confidence-adjusted” pickup in expected return is unlikely to exceed the tax costs incurred, unless offsetting losses can be realized. For stocks held less than one year, the lockup breakpoint is more like 15%.

The key to understanding how quickly stocks can become locked up is recognizing that while capital gains taxes are known with certainty, the hoped-for pickup in return can only be forecasted with a great deal of uncertainty. I suggest the use of a “confidence-adjusted” alpha forecast, which I define as the raw alpha forecast multiplied by the expected information coefficient (IC) of the forecast, as a method of comparing the known cost of a trade with its unknown but hoped-for benefits.

ENDNOTES

¹For a discussion of that topic, see Brunel [1997].

²For a discussion of that topic, see Apelfeld, Fowler, and Gordon [1996], Stein and Narasimhan [1999], or Arnott, Berkin, and Ye [2001].

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