



Hidden Cost of Active Management

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Investors are well aware of the incremental transaction costs managers incur as they seek to replace securities perceived to be overvalued with those perceived to be undervalued. Moreover, it is no secret that active funds charge significantly higher fees than passive funds designed to track market indexes. It is perhaps not as widely understood, however, that there is a hidden cost associated with most active funds. The typical active fund is more than 90% correlated with the market. Yet their relatively high active management fee is applied not just to the fund's active component but to its market component as well. Rather than pay active fees on total assets, including those that provide market exposure, an investor could achieve essentially the same result before fees by allocating most of the portfolio to an index fund with the residual allocated to a pure alpha fund that nets out market exposure.¹ The following example illustrates this hidden cost of active management.

Table 1 shows the monthly returns and values of a hypothetical actively managed fund and an index fund, assuming an initial investment of \$10 million. The index fund serves as the benchmark for the active fund.

¹ A fund manager could achieve a pure alpha exposure by purchasing securities that would otherwise be overweighted in a long only portfolio and selling short securities that would otherwise be underweighted in a long only portfolio. Alternatively, a fund manager could sell futures contracts to eliminate a fund's market exposure.



Month	Active Fund		Index Fund		Alpha
	Return	Value	Return	Value	
		10,000,000		10,000,000	
January	0.41%	10,041,000	-1.13%	9,887,000	1.53%
February	6.03%	10,646,472	5.87%	10,467,367	0.16%
March	-8.30%	9,762,815	-8.08%	9,621,604	-0.22%
April	6.09%	10,357,371	6.23%	10,221,030	-0.13%
May	6.08%	10,987,099	7.03%	10,939,568	-0.95%
June	-4.74%	10,466,310	-5.66%	10,320,388	0.92%
July	-0.95%	10,366,880	-1.85%	10,129,461	0.89%
August	-5.83%	9,762,491	-4.41%	9,682,752	-1.42%
September	1.72%	9,930,406	1.59%	9,836,708	0.13%
October	2.49%	10,177,673	3.45%	10,176,074	-0.96%
November	-1.84%	9,990,404	-3.10%	9,860,616	1.26%
December	10.11%	11,000,000	9.53%	10,800,000	0.57%
Cumulative Return	10.00%		8.00%		2.00%
Standard Deviation	19.29%		19.59%		3.23%

In this example, the active fund generates a 2.00% alpha with active risk equal to 3.23% for a respectable information ratio of 0.62. If this performance is consistent with past results, it would not be unreasonable for the fund to charge a fee of 100 basis points or more. The active fund used in this example is anonymous, but it ranked in the top 2nd percentile of US equity funds for the 10-year period ending in 2008.

We might be tempted to hire this talented manager, but let us first consider an alternative course of action. Suppose we instruct the manager to deliver a fund that comprises only the active bets of the portfolio. The manager would achieve this result by first putting the capital to work in a short-term investment fund. Let's suppose this fund earns 4.00% annually. The manager then sells short the index fund and uses the proceeds of these short sales to purchase the stocks that are expected to outperform, and levers these exposures 12 to 1. By employing this approach, the manager delivers a pure alpha stream rather than the composite of market returns and alpha that make up the active fund. Table 2 shows the returns and values of this pure alpha fund, assuming an initial investment of \$10 million.



Table 2: Pure Alpha Fund Returns and Values

Month	STIF		Active Fund		Index Fund		Pure Alpha Fund	
	Return	Value	Return	Value	Return	Value	Return	Value
		10,000,000		120,000,000		-120,000,000		10,000,000
January	0.33%	10,032,737	0.41%	120,492,000	-1.13%	-118,644,000	18.73%	11,873,000
February	0.33%	10,065,582	6.03%	127,757,668	5.87%	-125,608,403	2.80%	12,205,444
March	0.33%	10,098,534	-8.30%	117,153,781	-8.08%	-115,459,244	-3.41%	11,789,238
April	0.33%	10,131,594	6.09%	124,288,446	6.23%	-122,652,355	-0.15%	11,771,555
May	0.33%	10,164,762	6.08%	131,845,184	7.03%	-131,274,815	-8.73%	10,743,898
June	0.33%	10,198,039	-4.74%	125,595,722	-5.66%	-123,844,661	11.32%	11,960,107
July	0.33%	10,231,425	-0.95%	124,402,563	-1.85%	-121,553,535	9.38%	13,081,965
August	0.33%	10,264,920	-5.83%	117,149,894	-4.41%	-116,193,024	-14.17%	11,228,251
September	0.33%	10,298,524	1.72%	119,164,872	1.59%	-118,040,493	1.80%	11,430,359
October	0.33%	10,332,239	2.49%	122,132,077	3.45%	-122,112,890	-9.36%	10,360,478
November	0.33%	10,366,065	-1.84%	119,884,847	-3.10%	-118,327,390	15.20%	11,935,270
December	0.33%	10,400,000	10.11%	132,000,000	9.53%	-129,000,000	7.24%	12,800,000
Cumulative Return	4.00%		10.00%		8.00%		28.00%	
Standard Deviation	0.00%		19.29%		19.59%		35.56%	

The \$10 million investment in the short-term investment fund compounds at 0.33% per month for a cumulative annual return of 4.00%. The initial exposure to the active fund equals \$120 million (12:1 leverage), while the initial exposure to the index fund equals negative \$120 million (again 12:1 leverage). The value of the pure alpha fund each period, therefore, equals the sum of the short-term investment fund position and the active fund and index fund positions.

The pure alpha fund produces an annual return of 28.00%, which equals 12 times the active fund's 2.00% alpha plus 4.00% from the funds invested in the short-term investment fund. The annualized standard deviation of the pure alpha fund is slightly less than 12 times the active fund's active risk, because it is exposed to the short-term investment fund. Thus, the pure alpha fund produces an information ratio of 0.79 compared to an information ratio 0.62 for the active fund.

Now let's consider combining a low cost investment in an index fund with investment in the pure alpha fund, instead of investing in the active fund. Table 3 shows the returns and values of a 90/10 mix of the index fund and the pure alpha fund.



Month	Index Fund		Pure Alpha Fund		90/10 Mix	
	Return	Value	Return	Value	Return	Value
		9,000,000		1,000,000		10,000,000
January	-1.13%	8,898,300	18.73%	1,187,300	0.86%	10,086,000
February	5.87%	9,420,630	2.80%	1,220,544	5.51%	10,641,739
March	-8.08%	8,659,443	-3.41%	1,178,924	-7.55%	9,838,287
April	6.23%	9,198,927	-0.15%	1,177,155	5.46%	10,375,458
May	7.03%	9,845,611	-8.73%	1,074,390	5.24%	10,919,132
June	-5.66%	9,288,350	11.32%	1,196,011	-3.99%	10,483,458
July	-1.85%	9,116,515	9.38%	1,308,197	-0.57%	10,423,703
August	-4.41%	8,714,477	-14.17%	1,122,825	-5.64%	9,835,806
September	1.59%	8,853,037	1.80%	1,143,036	1.62%	9,995,146
October	3.45%	9,158,467	-9.36%	1,036,048	1.99%	10,194,049
November	-3.10%	8,874,554	15.20%	1,193,527	-1.24%	10,067,643
December	9.53%	9,720,000	7.24%	1,280,000	9.26%	11,000,000
Cumulative Return	8.00%		28.00%		10.00%	
Standard Deviation	19.59%		35.56%		17.39%	

This particular mix of a \$9,000,000 initial investment in the index fund, together with an initial investment of \$1,000,000 in the pure alpha fund, produces precisely the same return, 10.00%, as the active fund, and it achieves this result at slightly less risk – 17.39% versus 19.29% for the active fund. Moreover, the returns of this strategy are 99.85% correlated with the active fund returns. It is almost a perfect substitute for the active fund. Now let's compare the costs of these two strategies.

As stated earlier, the active fund charges 100 basis points, which is applied to the average of the beginning and ending values. Therefore the cost of the active fund is \$105,000, as shown:

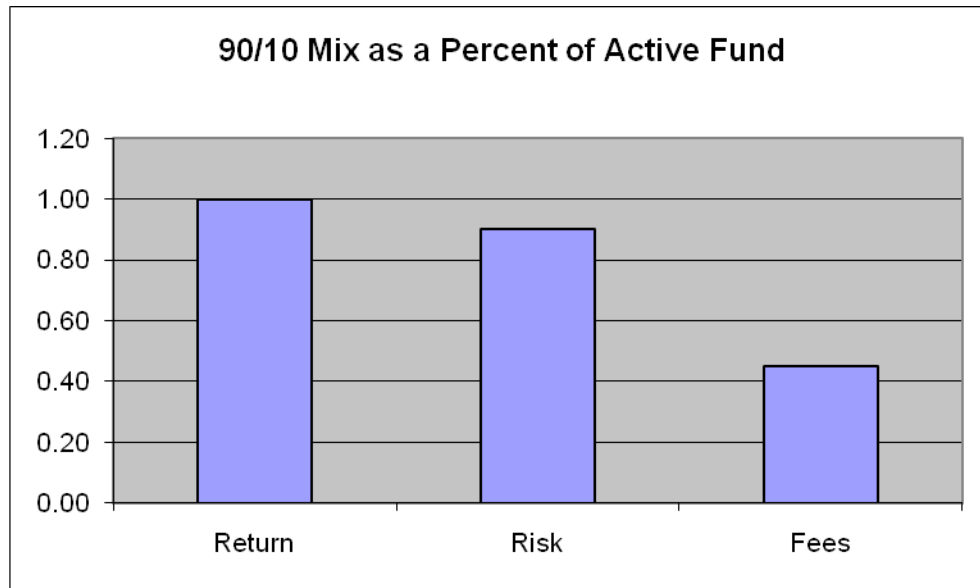
$$[(10,000,000 + 11,000,000) \div 2] \times .01 = 105,000$$

Let's suppose the index fund charges 20 basis points and the pure alpha fund charges 250 basis points. The premium relative to the active fund compensates for the slight increase in complexity associated with netting out the market exposure to isolate the active bets. With these assumptions, the fee of this combined strategy is substantially lower, only \$47,220, as shown:

$$[(9,000,000 + 9,720,000) \div 2] \times .0020 + [(1,000,000 + 1,280,000) \div 2] \times .025 = 47,220$$



The chart below summarizes the benefits of combining an index fund with a pure alpha fund. This blended approach delivers 100% of the active fund's return, incurs only 90% of its risk, and is only 45% as expensive.²



Perhaps there is a free lunch after all, or at least a less expensive one!

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² There are several simplifying assumptions that underlie this analysis. We assume, for example, that the income from selling securities short exactly offsets the cost of purchasing securities on margin. In practice, there may be net costs associated with the long/short strategy described in our example. Our example also depends on specific assumptions about return, volatility, interest rates, and fee schedules, which all conspire to produce the specific result you see. Nonetheless, variations in these assumptions will not alter the essence of our argument, which is that it is simple to mimic a typical active fund at a much lower cost by combining an index fund with a pure alpha fund.