

# What Differentiates Index Funds - Tax Management

## Skill \*

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### ABSTRACT

While the buying and selling of securities in an active manager's portfolio will surely affect taxes paid on short/long term capital gains (and affect long-term performance), does the same relationship also hold with index funds? Ranking the top 25 most popular S&P 500 index funds by their post-tax performance over time, highlights that the costs of poor tax management practices detract from a fund's long-run returns far more than the stated expense ratio. This result demonstrates that tax management is just as crucial a component to returns for index funds as it is for actively managed funds.

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# I Introduction

Investors who believe strongly in market efficiency tend to repeat the mantra that one should minimize fees and tracking error when picking an index fund. Yet, is this really the main factor that differentiates long run returns between index funds? Looking at the top 25 most popular S&P 500 index funds by AUM, it appears that the tax management practices of the fund are equally important, if not more important, as the fees charged by the fund to the long run performance of the fund.

Often it is assumed that because index funds are meant to be passive, that things like portfolio turnover and other tax management issues shouldn't really come into play when deciding which index fund to go with. While the buying and selling of securities in an active manager's portfolio will surely affect taxes paid on short/long term capital gains (and affect long-term performance), for a manager who is just tasked with following an index how could tax issues be of any concerning?

When ranking the top 25 most popular S&P 500 index funds by their pre-tax performance over time, and then looking at the difference between the fund at the 75th percentile of performance and the fund at the 25th percentile of performance, the difference in their per-annum returns is 0.115 percentage points over a 10-year horizon. This spread in returns directly corresponds to the spread in operating expenses between these funds (0.16% v. 0.06% – a 0.10 percentage point spread in fees). In other words, for pre-tax returns, all that appears to matter when deciding which index fund to go with is the fees that you will be paying the fund manager.

Using the same ranking procedure, but this time for post-tax returns, I find a much wider gap in the performance difference over a ten-year horizon between the fund at the 75th percentile in terms of post-tax returns and the fund at the 25th percentile. Once adjusting for the management fees paid at each fund, the spread in the post-tax returns is 0.26 percentage points. This spread

in post-tax returns purely isolates the performance differences due to tax management practices (since operating expenses and other fees have been negated in this calculation).

And, importantly these differences in post-tax performance metrics for varying S&P 500 index funds appear to be persistent over time. A fund that performed in the top half of the group during the first 5 years of the sample period had a 72% chance of repeating and being in the top half of the group in the latter 5 years of the sample period. It seems that some mutual fund families are just better at managing tax issues than others.

To make this point clearer - Consider two funds among the cheapest S&P 500 index funds out there - the Schwab S&P 500 Index Fund (SWPPX) and the Vanguard 500 Index fund (VFINX). Schwab's fund has averaged an expense ratio of 0.09% over the past 10 years while Vanguard's fund has averaged 0.16% over the same period. Due to this slightly lower fee, Schwab's S&P 500 Index fund has outperformed Vanguard's fund with an average annual pre-tax return of 9.45% v. 9.37% over the past 10 years, a 0.08 percentage point out-performance. Yet, on a post-tax basis Vanguard's fund delivered a per annum return of 7.62% v. an average post-tax return of 7.47% for Schwab's fund.

This complete reversal in performance is not only a 0.15 percentage point underperformance by Schwab on an annual post-tax basis, but also implies a greater 0.23 percentage point underperformance in terms of tax management on Schwab's part. By choosing based on the lower-fee option, an index investor could be sacrificing nearly a quarter of a percent in returns per annum due to poor tax management practices of an index fund.

What drives after-tax differences in returns between different S&P 500 index funds? Well, the biggest driver of the return spreads may be partially outside the control of the mutual fund manager - inflows and outflows from the index mutual fund itself. The greater the volatility in inflows/outflows, the more the fund manager has to rebalance by buying or selling securities, which leads to a greater tax bill. And since the greatest outflows occur during times of market panics, the after-tax returns to an index fund can be drastically different than the pre-tax returns

when considering downturns like the 2008 crisis.

Other things that may drive differences in post-tax returns are how a manager handles rebalancing the portfolio around corporate events like firm mergers/acquisitions, and S&P 500 index reconstitution events. In addition, a manager that is attune to tax considerations of the portfolio, can harvest losses along the way (while still minimizing tracking error) and carry these forward to reduce the future tax bill.

This paper proceeds as follows. Section II highlights the data construction and empirical analysis. Section III concludes the paper.

## **II Data Construction and Empirical Analysis**

In this section, I first detail the construction of the dataset used in this investigation and provide summary statistics. Following this, I summarize the empirical methodology and results.

### **A Construction of the Data**

The dataset used in the proceeding analysis was produced via the Morningstar Direct database. From the Morningstar platform, information on all equity focused mutual funds trading in the U.S. (U.S. dollar based mutual funds) was pulled. This initial list of mutual funds included all open-end funds (currently active or defunct) with assets under management listed as non-zero at anytime from 2000 and forward.

From Morningstar information on each the top 25 S&P 500 index funds in the US (by AUM as of first quarter, 2018) is extracted. This information is the fund's stated return, its after tax return and its expense ratio.

## B Empirical Analysis

Next, with this information from Morningstar, I rank all the top 25 index funds by their stated return and their after tax return. Forming rankings according to the 25th and 75th percentiles yields the following charts:

	Total Return (3 yr)	Total Return (5 yr)	Total Return (10 yr)
25th Percentile	10.42208	12.7965475	8.87623
75th Percentile	10.53371	12.9179875	8.99134
	Post Tax Return (3 yr)	Post Tax Return (5 yr)	Post Tax Return (10 yr)
25th Percentile	7.70444	9.810155	6.7595825
75th Percentile	7.929955	10.00521	7.134835

**Figure 1:** Ranking of index funds according to pre-tax and post-tax returns

Next I calculate the implied costs (taking the difference in returns of the fund at the 75th and 25th percentiles) of expense ratios and the implied costs of tax management skill:

	Costs of Fees/Tracking Error (%)	Costs of Poor Tax Management (%)
3 yr Horizon	0.11163	0.113885
5 yr Horizon	0.12144	0.073615
10 yr Horizon	0.11511	0.2601425

**Figure 2:** Implied costs according to expense ratios and tax management

## III Conclusion

Ranking the top 25 most popular S&P 500 index funds by their pre-tax performance over time, highlights that the costs of poor tax management detract from a fund's long-run returns far more than the stated expense ratio. This result demonstrates that tax management is just as crucial a component to returns for index funds as it is for actively managed funds.

When ranking the top 25 most popular S&P 500 index funds by their pre-tax performance over time, and then looking at the difference between the fund at the 75th percentile of performance and the fund at the 25th percentile of performance, the difference in their per-annum returns is 0.115 percentage points over a 10-year horizon. This spread in returns directly corresponds to the spread in operating expenses between these funds (0.16% v. 0.06% – a 0.10 percentage point spread in fees). In other words, for pre-tax returns, all that appears to matter when deciding which index fund to go with is the fees that you will be paying the fund manager.

Using the same ranking procedure, but this time for post-tax returns, I find a much wider gap in the performance difference over a ten-year horizon between the fund at the 75th percentile in terms of post-tax returns and the fund at the 25th percentile. Once adjusting for the management fees paid at each fund, the spread in the post-tax returns is 0.26 percentage points. This spread in post-tax returns purely isolates the performance differences due to tax management practices (since operating expenses and other fees have been negated in this calculation).

And, importantly these differences in post-tax performance metrics for varying S&P 500 index funds appear to be persistent over time. A fund that performed in the top half of the group during the first 5 years of the sample period had a 72% chance of repeating and being in the top half of the group in the latter 5 years of the sample period. It seems that some mutual fund families are just better at managing tax issues than others.

## References

- [1] Fama, E. F., K. R. French (1992). The Cross-Section of Expected Stock Returns. *The Journal of Finance* 2 (46), 427-465.
- [2] Fama, E. F., K. R. French (1993). Common Risk Factors in the Returns on Stocks and Bonds. *Journal of Financial Economics* (33), 3-56.
- [3] Fama, E. F., K. R. French (1997). Industry Costs of Equity. *Journal of Financial Economics* (43) 153-193.
- [4] Fama, E. F. (1998). Market Efficiency, Long-term Returns, and Behavioral Finance. *Journal of Financial Economics* 49, 283-306.
- [5] White, H. (1980). A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica* (48), 817-838.