

# **Do Enhanced Index Funds Outperform Pure Index Funds?**

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## **Introduction**

Over the past 25 years, index funds have gained tremendous popularity among equity investors. Recently, a special group of quasi-index funds, including enhanced, leveraged, and inverse index funds (Ferri, 2002, pp. 149-150), have evolved as a synthesis between pure index funds and actively managed funds. Enhanced index funds are funds that make adjustments to indexed portfolios in an effort to increase returns relative to the benchmark market index. According to Morningstar, "Like index funds, this group includes funds that attempt to match an index's performance. Unlike an index fund, however, enhanced index funds attempt to better the index by either adding value or reducing volatility through selective stock-picking."

In this paper, we first distinguish enhanced indexing from pure indexing, then review the literature on performance studies of enhanced index funds, and examine the characteristics and performance of pure index funds and enhanced index funds.

## **Enhanced Indexing vs. Pure Indexing**

Where does enhanced indexing belong? Active portfolio managers seek to outperform the market as defined in the prospectus. Managers of an index fund attempt to match a specified index. If enhanced indexing is to outperform the market, the approach must involve active management techniques. If enhanced indexing is to closely track the targeted index, it must share with indexing certain techniques designed to control risk. "Risk-controlled active management" may be a more appropriate phrase, but enhanced indexing may better reflect marketing imperatives more than any desire for linguistic precision. If enhanced indexing delivers consistent excess returns with close tracking and few disappointments, investors may prefer it to traditional forms of indexing or active management.

Two factors distinguish enhanced indexing from pure indexing. The first factor consists of the degree of active management and portfolio turnover. Pure index funds are passively-managed portfolios, in which trades are made only when necessary to rebalance the portfolio and to realign the portfolio's risk and return characteristics with those of the index. Enhanced index funds are actively-managed portfolios in which trades are intended to rebalance the portfolio and to capture any available investment opportunities. Therefore, enhanced index funds typically have higher turnover rates than pure index funds. The second factor consists of the direction and magnitude of realized tracking error. Pure index funds are managed with the objective of minimizing realized tracking error, while enhanced index funds are managed with the objective of maximizing positive realized tracking error.

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How enhanced indexing accomplishes its objective varies across a spectrum of techniques. Loftus (2000), McKee (1998), Schoenfeld and Yang (2004), as well as Steinberg and Madigan (1999) discuss the major methods of enhanced equity indexing. With security-based methods, fund managers may underweight or eliminate stocks they think are overvalued and increase the weight of stocks they think are undervalued. Other security-based methods focus on equally-weighted portfolios. Using this approach, portfolio managers place the same amount of money in each stock in the fund rather than allocating funds by its value in the index. With synthetic methods, funds create an index fund using derivatives such as futures, options, and equity swaps in an attempt to capture small anomalies in stock or bond market pricing and in an attempt to beat the market by a small margin.

### **Review of Previous Studies**

Are enhanced index funds worthy of investors' money? That depends on whom we ask. Mutual fund firms who manufacture and sell the funds claim they are index funds that can be used to enhance returns (e.g., Neal, 1999). DiBartolomeo (2000) argues that investing in enhanced index funds is a better alternative to investing in a combination of index and actively managed funds. In his view, compared with combination strategies, enhanced index funds reduce transaction costs and avoid capitalization biases, while better utilizing manager forecasting skills.

Many other observers, including index purists and academics (e.g., Gutner, 1999; Haslem, 2003; McDowell, 1999; Polyak, 2000; Scott and Stumpp, 2003; and Swedroe, 2004), would say that these funds are actively managed funds and do not belong in any index fund portfolio. These safe-sounding funds attempt to provide returns higher than a specified index, but not without assuming more risk. Zweig (1999) discusses three types of enhanced index funds, but concludes that they provide "a jumble of erratic performance, higher risks, higher taxes and higher expenses." Riepe and Werner (1998) study eight large-blend funds, but only two provide enhanced returns while exhibiting characteristics reasonably consistent with the S&P 500 index. Barbee (1998) examines enhanced index funds and concludes that they are "hardly a no-lose proposition." Jorion (2003) warns that enhanced index funds may result in seriously inefficient portfolios since funds managers pay no attention to total portfolio risk. Ahmed and Nanda (2005) find that enhanced index funds do not outperform their benchmarks.

In this paper, we examine the characteristics and performance of pure index funds and enhanced index funds. Characteristics include expense ratios and annual turnover. Performance measures include Morningstar's category-based risk and return ratings, and analysis of three-year average returns, risk (measured by standard deviation and beta) and risk-adjusted returns (measured by the Sharpe ratio and Alpha).

## **Data**

All pure index funds and enhanced index funds in the U.S., with data available on September 30, 2005, were collected from Morningstar and Yahoo! Finance. As shown in Table I, of 11,018 stock and bond mutual funds in 21 categories by Morningstar, 443 pure index funds and 216 enhanced index funds were found to have expense ratio and annual turnover data. In order to make meaningful comparisons, we then chose only categories that have three-year risk and performance measures data for both pure index funds and enhanced index funds. As a result, we found 372 pure index funds and 176 enhanced index funds in 16 categories that were directly comparable. Large blend is the most popular category with both types of index funds, followed by small blend, mid-blend, foreign large blend, large growth, and intermediate-term bond categories.

## **Results**

Expense ratios and annual turnover rates are shown in Table II. Pure index funds have much lower expense ratios (0.64%) and turnover (110.05%) than both enhanced index funds (1.73%, 500.85%) and the average of all mutual funds (1.52%, 119.56%) across all categories. Enhanced index funds have higher expense ratios and much higher turnover than the category average. Lower turnover will lead to better tax efficiency for capital-gains considerations.

Morningstar return, risk and “star” (or risk-adjusted return) ratings are shown in Table III. Morningstar rates mutual funds from 1 to 5 stars based on how well they have performed (after adjusting for risk and accounting for sales charges) in comparison to similar funds. Within each Morningstar category, the top 10% of funds receive 5 stars and the bottom 10% receive 1 star (the next 22.5% receive 2 and 4 stars, the middle 35% receive 3 stars). Funds are rated for up to three time periods (three-, five-, and 10-years) and these ratings are combined to produce an overall rating. Return and risk are assessed in a similar manner. This study finds that, over the past 10 years, pure index funds exhibit higher returns (3.29 vs. 2.80), lower risk (2.92 vs. 3.67), and higher risk-adjusted return (3.35 vs. 2.48) ratings than enhanced index funds. The only exceptions are found in the categories of taxable-bond funds, where pure index funds exhibit higher risk (3.74 vs. 2.48) than enhanced index funds.

Annualized NAV returns over the past three-year period ended September 30, 2005 are shown in Table IV. Morningstar calculates NAV total return by taking the change in a fund’s NAV (assuming the reinvestment of all income and capital gains distributions on the actual reinvestment date used by the fund during the period), and then dividing by the initial NAV. This study finds pure index funds, compared to enhanced index funds, exhibit higher NAV returns in the categories of all international-stock funds and half of taxable-bond funds, but mostly (8 of 11) lower NAV returns in the categories of domestic-stock funds. Overall, pure index funds and enhanced index funds exhibit higher NAV returns than the average of all categories of stock mutual funds, but they don’t perform as well in taxable-bond funds.

Table IV also shows results of standard deviations (risk) and Sharpe ratios (risk-adjusted return) over the same three-year period. Standard deviation is a statistical measure of the dispersion of a fund's performance. When a fund has a high standard deviation, the predicted range of performance is wide, implying greater volatility. At Morningstar, the standard deviation is computed using the trailing monthly total returns for the appropriate time period. All monthly standard deviations are then annualized. The Sharpe ratio is calculated for the past 36-month period by dividing a fund's annualized excess returns over the risk-free rate by its annualized standard deviation. The Sharpe ratio is then recalculated on a monthly basis and the higher the ratio, the better the fund's historical risk-adjusted performance. Pure index funds exhibit lower standard deviations (12.13%) than the average of all mutual funds (12.61%) and enhanced index funds (17.24%) across all categories, with the exception of taxable-bond funds where pure index funds exhibit the highest standard deviations. Pure index funds exhibit higher Sharpe ratios than enhanced index funds (1.30% vs. 1.03%).

Additional three-year results of market risk, measured by beta coefficients, and risk-adjusted returns, measured by Alphas, are shown in Table V. Beta is a measure of a fund's sensitivity to market movements. Alpha measures the difference between a fund's actual returns and its expected performance, given its risk level as measured by beta. A positive alpha indicates the fund has performed better than its beta would predict. Pure index funds exhibit lower beta coefficients (0.94 vs. 1.37 against standard index; 0.94 vs. 1.23 against best fit index) and higher Alphas (3.00% vs. -0.33% against standard index; -0.54% vs. -5.05% against best fit index) when compared with enhanced index funds.

## Conclusion

Enhanced index funds are a hybrid between actively managed funds and passive index funds. They set an explicit objective to outperform a benchmark. Ordinary investors would expect enhanced index funds to live up to their names--enhance their performance. Our results, based on data from Morningstar and Yahoo! Finance, however, suggest that enhanced index funds have mostly lower returns, much higher risk, and end up with lower risk-adjusted returns. Enhanced index funds behaved more like actively-managed funds, with higher expense ratios and very high turnover. Investors beware!

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Table I

The Number\* of Available and Comparable Pure Index Funds and Enhanced Index Funds

Morningstar Category	Total Number of Funds	Available**		Comparable***	
		Pure Index Funds	Enhanced Index Funds	Pure Index Funds	Enhanced Index Funds
<b>Domestic-Stock Funds</b>					
Large Blend	1,581	211	80	187	67
Large Growth	1,397	32	22	25	20
Large Value	1,119	9	6	5	5
Mid-Cap Blend	397	37	12	32	12
Mid-Cap Growth	791	4	7	2	6
Mid-Cap Value	289	2	1		
Small Blend	480	41	17	36	17
Small Growth	703	6	5	4	4
Small Value	286	6	1		
Specialty-Financial	116	1	8		
Specialty-Health	179	1	10		
Specialty-Natural Resources	118	1	2		
Specialty-Real Estate	236	6	2	5	2
Specialty-Technology	274	6	6	4	6
Specialty-Utilities	94	2	2	1	2
Moderate Allocation	1,027	3	7	3	7
<b>International-Stock Funds</b>					
Europe Stock	93	5	2	5	2
Foreign Large Blend	524	40	3	34	3
Japan Stock	41	3	4	3	4
<b>Taxable-Bond Funds</b>					
Intermediate-Term Bond	920	24	14	23	14
Short-Term Bond	353	3	5	3	5
<b>Total Number of Funds</b>	<b>11,018</b>	<b>443</b>	<b>216</b>	<b>372</b>	<b>176</b>

\* As of September 30, 2005 at Morningstar and Yahoo! Finance.

\*\* Available for at least expense ratio and annual turnover rate.

\*\*\* Comparable for all three-year measures.

Table II  
Expense Ratio and Annual Turnover

Morningstar Category	Expense Ratio (%)			Annual Turnover (%)		
	AMFs	PIFs	EIFs	AMFs	PIFs	EIFs
<b>Domestic-Stock Funds</b>						
Large Blend	1.21	0.66	1.31	73.95	22.56	257.33
Large Growth	1.50	0.89	1.83	101.45	167.59	535.82
Large Value	1.39	0.86	1.83	62.16	180.22	673.50
Mid-Cap Blend	1.45	0.78	1.58	95.34	69.76	217.08
Mid-Cap Growth	1.59	1.27	1.55	130.11	662.50	309.57
Mid-Cap Value	1.46	0.26	1.46	72.20	23.00	731.00
Small Blend	1.50	0.79	1.33	79.91	40.83	126.65
Small Growth	1.71	0.84	1.74	124.62	313.33	267.00
Small Value	1.54	0.79	1.47	67.62	199.00	744.00
Specialty-Financial	1.74	0.28	2.17	178.87	9.00	448.25
Specialty-Health	1.83	0.28	2.21	148.86	8.00	484.60
Specialty-Natural Resources	1.57	0.28	2.14	159.31	8.00	634.00
Specialty-Real Estate	1.60	0.83	2.05	108.84	19.50	1,303.00
Specialty-Technology	1.92	1.14	2.21	205.35	10.50	608.33
Specialty-Utilities	1.53	0.57	2.39	133.72	20.50	1,001.00
Moderate Allocation	1.23	0.13	1.63	77.97	26.00	637.86
<b>International-Stock Funds</b>						
Europe Stock	1.78	0.93	1.99	114.19	299.80	350.00
Foreign Large Blend	1.62	0.90	1.35	81.41	17.79	58.33
Japan Stock	1.65	0.25	2.07	160.88	3.00	738.00
<b>Taxable-Bond Funds</b>						
Intermediate-Term Bond	1.06	0.37	1.19	202.43	110.75	289.57
Short-Term Bond	1.00	0.27	0.89	131.47	99.33	103.00
<b>Averages</b>						
Domestic-Stock Funds	1.55	0.67	1.81	113.77	111.27	561.19
International-Stock Funds	1.68	0.69	1.80	118.83	106.86	382.11
Taxable-Bond Funds	1.03	0.32	1.04	166.95	105.04	196.29
Above Three Categories	1.52	0.64	1.73	119.56	110.05	500.85

AMFs: Average of All Mutual Funds

PIFs: Pure Index Funds

EIFs: Enhanced Index Funds

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Table III  
Morningstar Return, Risk and Star Ratings

Morningstar Category	Return Rating		Risk Rating		Star Rating	
	PIFs	EIFs	PIFs	EIFs	PIFs	EIFs
<b>Domestic-Stock Funds</b>						
Large Blend	2.95	3.06	3.11	3.13	2.87	3.03
Large Growth	3.48	2.85	3.72	4.20	3.38	2.75
Large Value	3.22	4.20	3.78	4.60	3.33	2.40
Mid-Cap Blend	3.09	3.25	3.21	3.33	3.09	3.42
Mid-Cap Growth	3.00	2.67	2.00	2.33	3.00	3.00
Small Blend	2.61	3.35	3.71	3.29	2.58	3.29
Small Growth	3.50	2.50	2.67	3.00	3.50	2.50
Specialty-Real Estate	2.40	4.00	3.40	5.00	2.40	1.50
Specialty-Technology	3.75	2.33	1.50	5.00	4.50	2.00
Specialty-Utilities	4.00	2.50	3.00	5.00	4.00	2.00
Moderate Allocation	3.00	1.29	2.00	4.00	3.33	1.29
<b>International-Stock Funds</b>						
Europe Stock	2.60	2.50	3.00	4.00	2.60	2.50
Foreign Large Blend	3.44	3.67	2.75	2.33	3.47	3.67
Japan Stock	4.00	2.00	1.33	4.50	4.00	1.50
<b>Taxable-Bond Funds</b>						
Intermediate-Term Bond	3.57	2.64	3.48	2.36	3.57	2.79
Short-Term Bond	4.00	2.00	4.00	2.60	4.00	2.00
<b>Averages</b>						
Domestic-Stock Funds	3.18	2.91	2.92	3.90	3.27	2.47
International-Stock Funds	3.35	2.72	2.36	3.61	3.36	2.56
Taxable-Bond Funds	3.79	2.32	3.74	2.48	3.79	2.40
Above Three Categories	3.29	2.80	2.92	3.67	3.35	2.48

PIFs: Pure Index Funds

EIFs: Enhanced Index Funds

Table IV  
Three-Year Average Annual Return, Standard Deviation and Sharpe Ratio

Morningstar Category	Annual Return (%)			Standard Deviation (%)			Sharpe Ratio (%)	
	AMFs	PIFs	EIFs	AMFs	PIFs	EIFs	PIFs	EIFs
<b>Domestic-Stock Funds</b>								
Large Blend	15.72	16.12	16.89	11.03	11.09	11.76	1.25	1.25
Large Growth	14.62	20.05	20.29	12.72	16.85	21.37	1.08	0.86
Large Value	17.75	20.10	20.98	11.15	11.94	22.22	1.46	1.05
Mid-Cap Blend	21.57	22.04	24.62	13.00	12.36	14.63	1.54	1.51
Mid-Cap Growth	19.58	15.21	13.94	14.27	11.54	13.87	1.15	0.98
Small Blend	23.25	23.48	25.98	14.61	15.38	17.52	1.35	1.36
Small Growth	21.17	22.05	14.63	16.71	14.45	17.21	1.34	0.78
Specialty-Real Estate	25.93	24.05	30.21	15.00	15.63	23.85	1.36	1.17
Specialty-Technology	24.67	26.17	40.53	25.08	21.42	46.77	1.13	0.91
Specialty-Utilities	25.76	24.49	31.78	10.08	10.20	16.46	2.05	1.68
Moderate Allocation	12.40	12.49	7.23	7.32	6.55	8.37	1.57	0.71
<b>International-Stock Funds</b>								
Europe Stock	26.94	25.30	25.16	14.18	13.83	17.90	1.59	1.26
Foreign Large Blend	22.03	23.86	23.71	11.91	11.72	11.07	1.75	1.84
Japan Stock	18.04	22.18	18.83	18.62	14.17	27.25	1.37	0.71
<b>Taxable-Bond Funds</b>								
Intermediate-Term Bond	4.01	3.77	3.95	4.13	4.45	3.95	0.47	0.57
Short-Term Bond	2.13	2.47	1.40	1.99	2.47	1.64	0.31	-0.18
<b>Averages</b>								
Domestic-Stock Funds	20.22	20.57	22.46	13.72	13.40	19.46	1.39	1.11
International-Stock Funds	22.34	23.78	22.57	14.90	13.24	18.74	1.57	1.27
Taxable-Bond Funds	3.07	3.12	2.68	3.06	3.46	2.80	0.39	0.20
Above Three Categories	18.47	18.99	20.01	12.61	12.13	17.24	1.30	1.03

AMFs: Average of All Mutual Funds

PIFs: Pure Index Funds

EIFs: Enhanced Index Funds

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Table V  
Beta Coefficients and Alphas

Morningstar Category	Against Standard Index						Against Best Fit Index			
	Beta			Alpha (%)			Beta		Alpha (%)	
	AMFs	PIFs	EIFs	AMFs	PIFs	EIFs	PIFs	EIFs	PIFs	EIFs
<b>Domestic-Stock Funds</b>										
Large Blend	0.95	1.00	1.04	-0.18	-0.49	-0.38	1.00	1.04	-0.68	-1.08
Large Growth	1.03	1.39	1.70	-2.12	-1.94	-5.48	0.99	1.19	-2.25	-7.50
Large Value	0.94	1.05	1.72	1.81	2.36	-4.82	1.09	1.80	-1.80	-8.78
Mid-Cap Blend	0.98	0.97	2.08	4.56	5.12	-4.88	1.00	1.36	-0.52	-7.39
Mid-Cap Growth	1.06	0.88	1.50	2.03	0.51	-7.21	0.94	1.41	-4.71	-11.23
Small Blend	1.04	1.15	1.26	5.39	4.18	4.95	0.98	1.15	-0.39	-1.65
Small Growth	1.19	1.04	1.18	1.80	4.47	-3.63	0.88	0.88	0.59	-4.84
Specialty-Real Estate	0.38	0.38	0.65	17.15	15.73	18.50	0.97	1.48	-1.38	-6.50
Specialty-Technology	1.90	1.73	3.44	-3.86	-1.04	-7.14	1.05	2.16	-3.01	-12.62
Specialty-Utilities	0.54	0.43	0.42	14.06	14.66	21.46	0.64	1.17	3.85	-3.70
Moderate Allocation	0.58	0.57	2.27	1.94	2.14	-5.54	0.58	1.11	1.55	-5.33
<b>International-Stock Funds</b>										
Europe Stock	1.04	1.07	1.39	1.11	-0.69	-6.96	1.00	1.24	0.62	-5.46
Foreign Large Blend	0.97	0.99	0.92	-1.58	-0.33	0.81	0.99	0.93	-0.57	0.51
Japan Stock	0.72	0.72	1.10	1.32	4.14	-3.98	1.00	1.40	0.47	-4.33
<b>Taxable-Bond Funds</b>										
Intermediate-Term Bond	0.95	1.05	0.93	0.15	-0.29	0.15	1.01	0.83	-0.33	-0.17
Short-Term Bond	0.43	0.57	0.36	-0.56	-0.51	-1.12	0.99	0.62	-0.02	-0.80
<b>Averages</b>										
Domestic-Stock Funds	0.96	0.96	1.57	3.87	4.15	0.53	0.92	1.34	-0.80	-6.42
International-Stock Funds	0.91	0.93	1.14	0.28	1.04	-3.38	1.00	1.19	0.17	-3.09
Taxable-Bond Funds	0.69	0.81	0.65	-0.21	-0.40	-0.49	1.00	0.73	-0.18	-0.49
Above Three Categories	0.92	0.94	1.37	2.69	3.00	-0.33	0.94	1.23	-0.54	-5.05

AMFs: Average of All Mutual Funds

PIFs: Pure Index Funds

EIFs: Enhanced Index Funds