

Improved Study Finds Index Management Usually Outperforms Active Management

by Millicent Holmes

Executive Summary

- This study seeks to improve in several ways upon previous studies examining the relative performance of index management versus active management. It concludes that index management outperforms active management in most asset classes.
- To make comparisons between index management and active management as accurate as possible, the study segregated funds by style and then compared funds of the same style. This "apples to apples" comparison is the most accurate methodology. Many other studies suffer from some level of benchmark mis-specification or "size bias," as they compare all actively managed funds, which include Large-, Mid-, Small-, and Micro-cap funds to a Large-Cap Blend index, the S&P 500.
- Many studies on indexing versus active management have used only gross returns, which tend to overstate active manager fund performance. By contrast, this study examines fund performance net of management fees, expenses, and the impact of taxes.
- Also, these studies typically have used commercial mutual fund databases as their investment universe. Unfortunately, all commercial databases suffer from survivor bias, overstating the returns for the universe of active managers that have survived to the present date. This study uses "survivor-biased minimized" data to help solve this difficulty.
- In general, index management outperformed active management in the Large-Cap Blend, Value, and Growth asset classes. The results in Mid-Cap were mixed, with active Mid-Cap Value outperforming index management for most periods. Active management also outperformed in active Small-Cap Blend and international Mid/Small-Cap Blend.
- Surprisingly, indexing outperformed active management in the active Small-Cap Value and Growth asset classes, precisely the asset classes in which one would expect active management to outperform index management.

Millicent Holmes is director of research at Brownson, Rehmus & Foxworth Inc., a firm in Chicago, Illinois, that offers comprehensive wealth management, including investment consulting and multi-family office services. Her past experience includes working with fund of hedge fund managers, developing alternative investment products for international institutional investors in the United States and abroad, and trading options from the floors of the Chicago Board of Trade and Chicago Mercantile Exchange.

The debate between active management and index management has raged for many years. While many studies have been conducted to solve the question of whether index management outperforms active management, we have found that several of these studies contain basic flaws. Chief among them is benchmark mis-specification, where these past studies did not make accurate asset class or style comparisons; rather, they tended to compare *all* actively managed funds—which include large-, mid-, small- and micro-cap funds—with one large-cap blend index, the S&P 500. Another flaw involved the comparison of actively managed funds with indices rather than with index funds. This is an important distinction, since many index funds have not successfully replicate their indices. An additional flaw involved the use of gross returns, which tended to overstate active manager fund performance. Finally, the most prevalent flaw has been survivor bias. Many studies on indexing versus active management used commercial mutual fund databases as their investment universe. Unfortunately, all commercial mutual fund databases suffer from survivor bias, meaning they exclude the track records of funds that have ceased doing business, overstating the returns of the universe of active managers that remain.

Our study attempts to rectify the flaws in previous studies by making accurate asset class and style comparisons, accounting for management fees, expenses, and taxes, as well as incorporating mutual fund data that minimizes survivor bias. Through examination of current and survivor-bias-minimized fund data as well as other academic studies on this issue, we found that index management outperformed active management in most asset classes. Our results confirm the findings in other previous studies in the Large-Cap Blend, Value, and Growth asset classes, where index management outperformed active management. But surprisingly, our results differ from other studies in the Small-Cap Growth, Small-Cap Value, and International Large-Cap Blend asset classes where index management outperformed active management.

Methodology

Most investors do not directly invest in indices, they invest in index funds. Therefore, we focused this study on the comparison between active fund management and index fund management. In so doing, we compared the performance of the universe of actively managed funds relative to their counterpart index funds in the ten years from 1995 to 2004, using the data and fund classifications of the Morningstar database. The Morningstar database, which includes over 23,000 funds, is the largest fund data set in the industry. In addition to Morningstar, we also used survivor-bias minimized data from the Lipper database.

To make the comparison as accurate as possible, funds were segregated by style and then comparisons were made between funds of the same style. For example, we compared Large-Cap Blend index funds with Large-Cap Blend actively managed funds. To further ensure a close comparison, the Morningstar fund category and equity style box must be in the same asset class for a fund to be included in the domestic Large-, Mid- or Small-Cap asset classes. For example, a fund whose Morningstar category was Small-Cap, but whose equity style box indicated that it had grown to Mid-Cap, would not be included in either the small- or mid-cap asset classes, but excluded from the study altogether. We segregated international funds using Morningstar's classification between International Large-Cap and International Mid/Small-Cap. For the International category, we excluded individual country, region, and sector funds. Each fund in the International category must have regional allocations that were between 20–80 percent Europe and 5–50 percent Japan. Tax-managed funds were included in the index fund universe, not the actively managed fund universe.

Net of Fees and Taxes

Many past studies on indexing versus active management have not included investment management fees or the impact of taxes. By contrast, this study examines fund performance net of management fees and expenses. Additionally, we use the most conservative method to measure the impact of taxes—return after-tax on distribution and sale—which reflects the effect of both taxable distributions by a fund to its shareholders and any taxable gain or loss realized by the shareholders upon the sale of fund shares.

Survivor Bias

As noted earlier, our comparison of active versus index funds in the U.S. Large-Cap, Mid-Cap, Small-Cap, International Large-Cap, and International Mid/Small-Cap asset classes were taken from the Morningstar Database. Unfortunately, all commercial mutual fund databases, including Morningstar, suffer from survivor bias, meaning they exclude the track records of funds that have ceased doing business. Many of these databases also accept return histories after the fact, known as back-filling or instant history bias.

Excluding the track records of funds that have ceased doing business tends to inflate the returns

of the universe of active managers that remain. Brown and Goetzmann (1995); Carhart (1997); and Carhart, Carpenter, Lynch, and Musto (2001) demonstrated that funds tended to disappear from mutual fund databases following sustained periods of poor performance. Thus, using data free of survivor bias lowers the returns of active manager universes to a level that more accurately reflects their true performance.

Several studies have provided estimates of survivor bias, including Grinblatt and Titman (1989); Malkiel (1994); Brown and Goetzmann (1995); Elton, Gruber, and Blake (1996); Swenson (2000); and Carhart, Carpenter, Lynch, and Musto (2001). Their estimates of survivor-bias range from .10 percent to as high as 2.2 percent a year. The academic studies on survivor bias serve to enhance the reasons for using data free of survivor bias. But it appears specious to use the bias estimates from these studies for comparisons that do not cover the same period or use the same methodology.

To directly examine survivor-bias-free data, we sought a database that was free from this bias and found that it had issues as well. The CRSP (Center for Research in Security Prices) Survivor-Bias Free U.S. Mutual Fund Database uses the method of segregating funds via prospectus objective: "Growth," "Growth and Income," "Aggressive Growth," and so forth. Unfortunately, these prospectus objectives are not specific enough to provide accurate comparisons, given that the "Growth" objective could include both Large-Cap and Mid-Cap funds. Additionally, Elton, Gruber, and Blake (2001) found that the CRSP database has an omission bias that has the same effect as survivor bias. Elton et al. found that "although all mutual funds are listed in CRSP, return data is missing for many and the characteristics of these funds differ from the populations."

To attempt to solve the survivor-bias issue, we used "survivor-bias minimized" data sets from the Lipper database. This data was compiled by segregating funds by asset class and investment style and then calculating equally weighted averages of these monthly fund returns. These average returns were linked geometrically. This Lipper data is net of fees. All funds that existed for the entire month were included in each monthly return, but any fund that closed or merged during that month would not be part of the performance calculation for that period. For example, the Small-Cap Blend return for January 2004 is the return for all Small-Cap Blend funds included in the Lipper category for that month.

Unfortunately, similar to the CRSP database, this "survivor-bias minimized" data do not separate index funds from actively managed funds. But the current breakdown within each category indicates that the average Small-Cap series has only 10 percent index or index-based funds, while the average International series has only 5 percent index or index-based funds. Thus, these "survivor-bias minimized" data series can be classified as largely active manager data sets.

We find that survivor bias is not an issue in performance comparisons between active and index management in the Large-Cap Blend, Value, or Growth asset classes. As indexing largely outperforms active management in these asset classes, using survivor-bias-minimized data would only serve to strengthen this conclusion. But we find that survivor-bias-minimized data has a particular impact on performance comparisons between active and index management in the Small-Cap and International asset classes.

Table 1: Summary of Index Management Versus Active Management	
Index Management Outperforms Active Management	Active Management Outperforms Index Management
U.S. Large-Cap Blend	U.S. Mid-Cap Value
U.S. Large-Cap Value	
U.S. Large-Cap Growth	U.S. Small-Cap Blend
U.S. Mid-Cap Blend	
U.S. Mid-Cap Growth	International Mid/Small-Cap Blend
U.S. Small-Cap Value	
U.S. Small-Cap Growth	
International Large-Cap Blend	

Study Findings

We find that index management outperforms active management in the Large-Cap Blend, Value, and Growth asset classes on a pre-tax and an after-tax basis (See Tables 2 and 3). For example, the pre-tax ten-year average for Large-Cap Blend Index was 11.6 percent, versus 10.4 percent for Large-Cap Blend Active. While the conclusion in the Large-Cap asset classes does not preclude the existence of successful Large-Cap active managers, these results provide guidance that this is a less productive area to search for active management.

Table 2: Results of Study on Index Management Versus Active Management
Pre-Tax Performance Comparison
As of December 2004
U.S. LARGE-CAP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	10 Year
Large-Cap Blend Index	36.7%	22.6%	32.7%	28.0%	20.3%	-9.1%	-12.1%	-22.2%	27.6%	10.2%	11.6%
Large-Cap Blend Active	32.3%	21.3%	27.6%	22.5%	21.4%	-4.8%	-12.6%	-22.6%	25.8%	9.5%	10.4%
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	10 Year
Large-Cap Value Index	37.0%	21.5%	30.9%	15.0%	18.2%	8.1%	-6.7%	-17.9%	28.4%	13.2%	13.5%
Large-Cap Value Active	33.2%	20.8%	28.1%	12.8%	4.9%	8.0%	-4.6%	-18.7%	27.7%	13.3%	11.5%
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	10 Year
Large-Cap Growth Index	38.1%	23.7%	28.1%	28.1%	28.0%	-22.7%	-21.4%	-28.7%	32.9%	6.3%	8.2%
Large-Cap Growth Active	32.6%	19.4%	27.6%	32.4%	35.8%	-28.2%	-23.9%	-27.8%	28.1%	6.6%	6.9%

U.S. MID-CAP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	10 Year
Mid-Cap Blend Index	30.0%	18.6%	31.5%	18.3%	17.4%	15.4%	-2.1%	-16.4%	38.7%	18.1%	15.9%
Mid-Cap Blend Active	32.0%	21.3%	27.8%	9.4%	23.1%	11.2%	0.3%	-16.6%	34.5%	16.0%	14.9%
Mid-Cap Blend Survivor Bias Minimized	29.2%	18.2%	22.0%	8.9%	38.7%	9.8%	-6.2%	-18.6%	36.6%	15.4%	13.9%
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	6 Year
Mid-Cap Value Index	--	--	--	--	5.2%	11.0%	3.5%	-18.6%	37.8%	20.8%	8.6%
Mid-Cap Value Active	--	--	--	--	6.5%	26.2%	5.4%	-12.2%	37.3%	19.1%	12.6%
Mid-Cap Value Survivor Bias Minimized	--	--	--	--	7.7%	14.3%	7.0%	-13.5%	38.5%	19.1%	11.1%
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	4 Year
Mid-Cap Growth Index	--	--	--	--	--	--	-8.2%	-23.0%	33.0%	13.9%	1.7%
Mid-Cap Growth Active	--	--	--	--	--	--	-20.1%	-28.4%	36.4%	12.8%	-3.1%
Mid-Cap Growth Survivor Bias Minimized	--	--	--	--	--	--	-21.7%	-28.6%	35.6%	12.3%	-3.9%

U.S. SMALL-CAP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	10 Year
Small-Cap Blend Index	29.2%	17.7%	23.4%	-3.3%	15.0%	5.7%	4.3%	-17.2%	43.2%	19.9%	12.6%
Small-Cap Blend Active	27.2%	21.7%	26.2%	-4.4%	15.9%	15.4%	11.7%	-15.8%	40.6%	18.6%	14.6%
Sm-Cap Blend Survivor Bias Minimized	31.2%	19.5%	26.9%	-1.4%	26.3%	6.0%	6.4%	-18.5%	44.1%	18.5%	14.5%
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	10 Year
Small-Cap Value Index	29.1%	22.2%	30.8%	-7.2%	9.1%	16.0%	16.3%	-13.0%	42.9%	21.8%	15.6%
Small-Cap Value Active	24.5%	22.0%	29.5%	-5.2%	6.3%	15.7%	14.6%	-9.5%	45.6%	20.0%	15.3%
Sm-Cap Value Survivor Bias Minimized	23.1%	22.5%	29.2%	-7.5%	5.4%	17.8%	16.2%	-11.4%	42.0%	21.0%	14.8%
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	6 Year
Small-Cap Growth Index	--	--	--	--	19.8%	1.6%	-3.2%	-19.4%	42.0%	17.6%	8.0%
Small-Cap Growth Active	--	--	--	--	69.4%	-6.5%	-10.8%	-30.5%	44.2%	10.2%	7.7%
Sm-Cap Growth Survivor Bias Minimized	--	--	--	--	57.7%	-7.8%	-11.5%	-29.6%	44.4%	10.7%	6.4%

INTERNATIONAL

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	10 Year
Intl Large-Cap Blend Index	10.5%	9.8%	6.2%	20.3%	27.1%	-14.7%	-21.5%	-17.2%	37.1%	19.2%	6.0%

Table 3: Results of Study on Index Management Versus Active Management

Performance Comparison—Return After Tax on Distribution and Sale

As of December 2004

U.S. LARGE-CAP

	1 Year	3 Years	5 Years	10 Years
Large-Cap Blend Index	6.06%	2.11%	-2.50%	9.79%
Large-Cap Blend Active	4.94%	1.33%	-2.15%	7.84%
	1 Year	3 Years	5 Years	10 Years
Large-Cap Value Index	8.25%	4.47%	1.24%	9.68%
Large-Cap Value Active	7.46%	4.03%	2.73%	8.54%
	1 Year	3 Years	5 Years	10 Years
Large-Cap Growth Index	3.42%	-0.08%	-6.95%	7.02%
Large-Cap Growth Active	3.01%	-1.10%	-6.94%	4.22%

U.S. MID-CAP

	1 Year	3 Years	5 Years	10 Years
Mid-Cap Blend Index	11.80%	9.21%	3.48%	11.12%
Mid-Cap Blend Active	9.69%	7.22%	4.55%	10.27%
	1 Year	3 Years	5 Years	10 Years
Mid-Cap Value Index	13.86%	8.50%	4.85%	--
Mid-Cap Value Active	11.85%	9.41%	10.37%	--
	1 Year	3 Years	5 Years	10 Years
Mid-Cap Growth Index	8.21%	4.38%	--	--
Mid-Cap Growth Active	7.04%	2.06%	--	--

U.S. SMALL-CAP

	1 Year	3 Years	5 Years	10 Years
Small-Cap Blend Index	12.88%	10.54%	7.12%	9.13%
Small-Cap Blend Active	12.08%	9.52%	7.97%	10.59%
	1 Year	3 Years	5 Years	10 Years
Small-Cap Value Index	14.18%	12.98%	13.79%	15.20%
Small-Cap Value Active	13.10%	12.82%	12.36%	10.72%
	1 Year	3 Years	5 Years	10 Years
Small-Cap Growth Index	11.88%	8.10%	5.99%	--
Small-Cap Growth Active	5.63%	2.07%	-2.62%	--



INTERNATIONAL

	1 Year	3 Years	5 Years	10 Years
Intl Large-Cap Blend Index	11.81%	8.41%	-2.40%	5.13%
Intl Large-Cap Blend Active	9.76%	7.10%	-3.22%	4.60%
	1 Year	3 Years	5 Years	10 Years
Intl Mid/Small-Cap Blend Index	20.56%	24.30%	10.20%	--
Intl Mid/Small-Cap Blend Active*	15.95%	17.38%	4.26%	--

*After-Tax returns in Intl Mid/Small-Cap Blend do not include 1999, which would have changed the results of this analysis.

Data Source: Morningstar

Sample Estimate Error with 95% Confidence in Appendix

 Index Mgmt outperforms Active Mgmt
 Active Mgmt outperforms Index Mgmt

The results in Mid-Cap were mixed. In the Mid-Cap Blend and Growth asset classes, index management outperformed active management on a pre-tax and after-tax basis. For example, the pre-tax ten-year average for Mid-Cap Blend index management was 15.9 percent, versus 14.9 percent for active management and 13.9 percent for the survivor-bias-minimized average of Mid-Cap Blend active management. On an after-tax basis, Mid-Cap Blend index management's performance was 11.12 percent over the ten-year period, versus 10.27 percent for Mid-Cap Blend active management. (After-tax survivor bias minimized data was not available.)

In Mid-Cap Value, active management outperformed index management over the last five years and three years but not over the last one-year period. It should be noted, however, that the Mid-Cap results could be affected by the small sample sizes in these asset classes.

In the Small-Cap Blend asset class, active management continued to outperform index management, even when using survivor-bias-minimized data. But as markets have become progressively more efficient, this outperformance trend may be nearing an end. For example, while Small-Cap Blend active management outperformed index management on an after-tax basis over the last five and ten years, it underperformed over the last one-year and three-year periods. Surprisingly, indexing outperformed active management in the Small-Cap Value and Growth asset classes, precisely the asset classes that one would expect active management to outperform index management.

We have observed an evolution in the relationship between indexing and active management in the International Large-Cap Asset class over the last four years. In 2002, we conducted an unpublished study on indexing versus active management that indicated that in the International Large-Cap Blend asset class, active management outperformed index management. But as with Mid-Cap Value and Small-Cap Blend, there were indications that this margin of outperformance was narrowing. Based on the findings of this more recent study, it would appear that indexing has taken a small lead over active management in the International Large-Cap Blend asset class.

The improvement of indexing relative to active management in the International Large-Cap asset class is likely due to the progression of information efficiencies on a global basis. Information efficiencies appear to affect Large-Cap International stocks the same way they affect Large-Cap U.S. stocks. (Just as there are hundreds of analysts that evaluate IBM or Microsoft, there are a similar number of analysts that evaluate British Petroleum or Sony.)

Active management has outperformed index management in the International Mid/Small-Cap Blend asset class. However, our data show signs that this trend may be nearing an end. In the International Mid/Small-Cap Blend asset class, active management has outperformed index management over the longer-term eight-year period, but during more recent periods, indexing has outperformed active management.

Generally, we observed that while taxes had a greater adverse impact on active management than index management, the use of after-tax returns did not change the conclusion in any asset class. For example, if index management outperformed active management on a pre-tax basis, it also outperformed on an after-tax basis.

Over the years, we have observed that financial markets have become progressively more efficient. This increased efficiency can potentially explain the above-noted pattern of improvement in the near term performance of index management relative to active management in the Mid-cap, Small-Cap, and International asset classes.

The sample sizes of several of these index universes were small. For example, the International Mid/Small-Cap Blend index universe consisted of only one fund. These small sample sizes can potentially affect the results of this analysis. While this situation would usually cause concern, these small index fund universes typically consist of Vanguard or DFA funds, which are known to

have successfully tracked their respective indices. (More detail on sample sizes and dispersion is included in the appendix.)

Style Box Comparison

As index funds can periodically be unsuccessful in replicating their respective indices, we also compared the active manager universe to the Standard & Poor's Blend and S&P/Barra Growth and Value indices. (As the Standard & Poor's indices require companies to have at least four quarters of profitability prior to inclusion, these indices appear to present an appropriate comparison against actively managed funds.) The conclusion: over the last ten years, the S&P indices outperformed the majority of actively managed funds in all U.S. asset classes. While this outcome is daunting, we observed somewhat better relative performance by active managers during the bear market from 2000 through 2002. For example, while the S&P Small Cap 600 Value Index outperformed 80 percent of the active small-cap value managers over the longer ten-year period, this index outperformed only 28 percent of the active managers during the bear market from 2000 to 2002. (See Tables 4 and 5.)

Table 4: Percentage of Funds Outperformed by the S&P Style Indexes			
10 Years Ended 12/31/2004			
	Value	Blend	Growth
Large	S&P 500/Barra Value Index	S&P 500 Index	S&P 500/Barra Growth Index
	12.24%	12.07%	11.44%
	66%	88%	92%
Mid	S&P MidCap 400/Barra Value Index	S&P MidCap 400 Index	S&P MidCap 400/Barra Growth Index
	16.80%	16.10%	15.24%
	86%	84%	98%
Small	S&P SmallCap 600/Barra Value Index	S&P SmallCap 600 Index	S&P SmallCap 600/Barra Growth Index
	16.06%	14.29%	11.56%
	80%	62%	69%

Sources: Lipper Inc., Standard & Poors, The Vanguard Group
Data are not adjusted for survivor bias

Table 5: Percentage of Funds Outperformed by the S&P Style Indexes During a Bear Market			
3 Years Ended 12/31/2002			
	Value	Blend	Growth
Large	S&P 500/Barra Value Index	S&P 500 Index	S&P 500/Barra Growth Index
	-18.90%	-22.24%	-27.65%
	32%	59%	78%
Mid	S&P MidCap 400/Barra Value Index	S&P MidCap 400 Index	S&P MidCap 400/Barra Growth Index
	-13.00%	-16.91%	-27.48%
	66%	61%	86%
Small	S&P SmallCap 600/Barra Value Index	S&P SmallCap 600 Index	S&P SmallCap 600/Barra Growth Index
	-10.30%	-15.57%	-28.37%
	28%	54%	95%

Sources: Lipper Inc., Standard & Poors, The Vanguard Group
Data are not adjusted for survivor bias

Performance Persistence

Academics who have evaluated the viability of active management have often examined active managers' ability to generate consistent (or persistent) performance. Persistence is defined as a positive relationship between performance in an initial ranking period and a subsequent evaluation period. Often persistence studies seek to solve the question: Do winners repeat? In other words, if a fund generates the best performance in the first period, will it produce the best performance in the second period and, as a result, can investors make decisions based on a fund's past performance?

The question of persistence has been an area of extensive academic study. While the results are mixed, most of these studies have found some evidence of persistence in fund performance. For example, although Jensen (1969) found no evidence of persistence, many others observed performance that persisted for one to three years. It is important to note that several of these studies found that the persistence phenomenon was mainly due to the persistent *underperformance* of the lowest returning funds. Table 6 is a graphic presentation of the major studies on performance persistence.

Table 6: Studies on Performance Persistence

Authors	Year Published	Funds Covered*	Dates	Evaluation Periods	Persistence Observed	Notes
Sharpe	1966	34	1954-63	1 Year	None	
Jensen	1968	115	1945-64	1 Year	None	
Carlson	1970	82	1948-67	5 Years & 10 Years	Partial	Yes, persistence in 5-year periods. None in 10-year risk-adjusted periods.
Grinblatt and Titman	1989	157	1974-84	5 Years	Partial	Explained by expenses.
Grinblatt and Titman	1992	279	1974-84	5 Years	Yes	Persistence for next 5 years. managers' ability to earn alpha.
Brown, Goetzmann, Ibbotson, and Ross	1992	153	1976-87	3 Years	Yes	Persistence in two of three periods.
Hendricks, Patel, and Zeckhauser	1993	165	1974-88	Quarterly	Yes	Persistence for next 2 years.
Grinblatt and Titman	1993	All U.S.	1976-85	Quarterly	Yes	
Goetzmann and Ibbotson	1994	728	1976-88	3 Years	Yes	Persistence for next 3 years.
Kahn and Rudd	1995	300 Equity & Fixed	1983-90	N/A	Partial	None for Equity. Yes for Fixed Income.
Brown and Goetzmann	1995	829	1976-88	1 Year	Yes	1-year persistence mainly for top performing funds. Also, persistence strong for bottom performers of study.
Malkiel	1995	724	1971-90	1 Year	Partial	Stronger in the '70s than '80s.
Elton, Gruber, and Blake	1996	188	1977-93	N/A	Yes	Observe persistence for 1 year in risk-adjusted performance.
Gruber	1996	270	1984-94	N/A	Yes	
Carhart	1997	All U.S.	1962-93	N/A	Yes	1-year persistence seen in 10% of the bottom performers.
Sauer	1997	All U.S.	1976-92	N/A	Partial	Persistence by style not by manager.
Phelps and Detzel	1997	87	1983-94	1 Year 2 Year 3 Year	No	Persistence not seen over 1, 2, or 3 year risk periods.
Wermers	1997	All U.S.	1975-94	N/A	Yes	
Jain and Wu	2000	294 Advertised Funds	1994-96	N/A	No	Once performance was good, it deteriorated.
Davis	2001	All U.S.	1962-98	1 Year	Negligible	Some persistence seen in top performing funds and worst-performing funds.
Wermers	2001	All U.S.	1974-94	1 Year 3 Year	Yes	1-year shows performance persistence. 3 years shows manager persistence.
Carhart, Carpenter, Lynch, and Musto	2001	All U.S.	1962-95	1 Year, 5 Years, 3-Year 4-factor alphas	Yes	Persistence seen in all periods. survivor bias.
Bollen and Busse	2002	230	1985-95	Quarterly	Yes	Finds persistence beyond 1 year in risk-adjusted returns of stocks.
Ibbotson and Patel	2002	All U.S.	1978-99	1 Year	Yes	Sees persistence after 1 year. Limiting "winners" to 10%.

*"All U.S." indicates that the author constructed a survivor-bias-free database.

A portion of the above table was excerpted from "A Review of Research on the Past Performance of Managed Funds," a report compiled by the Funds Research Centre (FMRC), September 2002. The Australian Securities and Investments Commission (ASIC) commissioned the report. Authors: Professor David Allen (University of Queensland), Professor Tim Brailsford (University of Queensland), Professor Emeritus Ron Bird (University of Technology Sydney), and Professor Robert Faff (Monash University).

Summary

Through examination of current and survivor-bias-minimized fund data, as well as other academic studies on this issue, we find that index management outperformed active management in most asset classes.

- Surprisingly, index management outperformed active management in the Small-Cap Value and Small-Cap Growth asset classes—precisely the asset classes where one would expect active management to outperform.
- In the areas where active management outperformed index management, there were signs that this trend may be nearing an end. For example, active management in Mid-Cap Value and Small-Cap Blend outperformed index management over longer periods of five and ten years, but underperformed index management in near-term one-year or three-year periods.
- As index funds can periodically be unsuccessful in replicating their respective indices, we also compared the active manager universe to the Standard & Poor's Blend and S&P/Barra Growth and Value indices. The S&P indices outperformed the majority of actively managed funds in all U.S. asset classes, including Mid-Cap Value and Small-Cap Blend.
- Finally, we reviewed academic studies that examined the "persistence" of investment manager performance. Often, persistence studies examine active manager's ability to generate consistent (or persistent) performance. While most of these studies found some evidence of persistence, it is important to note that several of these studies found that the persistence phenomenon was mainly due to the persistent underperformance of the lowest returning funds.

Practical Applications for Financial Planners

Given that index management has outperformed active management in most U.S. asset classes, financial planners can use index funds to improve their clients' pre-tax and after-tax performance, in addition to lowering portfolio expenses. (Please see Table 7, which contains the average expense ratios for the U.S. Large-Cap, Mid-Cap, Small-Cap, International Large-Cap and International Mid/Small-Cap asset classes.) For example, while the average expense ratio in the actively managed Large-Cap Blend asset class is 1.35 percent, diversified index funds managed by high-quality organizations can be accessed with expense ratios as little as .09 percent. Financial planners with clients in higher marginal tax brackets may also find that tax-managed index funds or separate accounts are attractive alternatives. While tax-managed index funds and separate accounts typically possess higher investment minimums (for example, \$10,000–\$1 million) as well as modestly higher expense ratios than typical index funds, many of these vehicles have successfully avoided capital gains distributions through active tax-loss harvesting.

Table 7: Average Net Expense Ratios for U.S. and International Asset Classes

Funds with minimum investment levels less than \$1 million

	Active Management Category Average	Index Management Category Average	Index Management Lowest 10 th Percentile
U.S. LARGE-CAP			
U.S. Large-Cap Blend	1.35%	0.58%	0.094%
U.S. Large-Cap Value	1.35%	0.61%	0.10%
U.S. Large-Cap Growth	1.50%	0.82%	0.136%
U.S. MID-CAP			
U.S. Mid-Cap Blend	1.54%	0.68%	0.10%
U.S. Mid-Cap Value	1.43%	0.35%	0.25%
U.S. Mid-Cap Growth	1.56%	0.80%	0.25%
U.S. SMALL-CAP			
U.S. Small-Cap Blend	1.50%	0.79%	0.15%
U.S. Small-Cap Value	1.57%	0.82%	0.175%
U.S. Small-Cap Growth	1.65%	0.81%	0.175%
INTERNATIONAL			
International Large-Cap Blend	1.65%	0.92%	0.145%
International Mid/Small-Cap Blend	1.72%	0.64%	0.64% (1 fund)

Data Source: Morningstar

In the Mid-Cap Value, Small-Cap Blend, and International Small-Cap asset classes, active management outperformed index management. But financial planners who allocate to active management in these asset classes will likely face unique challenges. As these asset classes have generated exceptional performance in the last five years, assets have streamed into them, causing many funds to close to new investors. Additionally, while active management has outperformed index management in these three asset classes, this trend may be nearing an end. Financial planners could choose to allocate to active managers within these asset classes until the trend of active management outperformance ends. However, planners must consider that once the trend ends, reallocation from active management to index management could result in greater turnover and realized gains than may be appropriate for their clients.

References

- Bollen, Nicolas P. B., and Jeffrey A. Busse. 2001. "On the Timing Ability of Mutual Fund Managers." *Journal of Finance* 56: 1075–1094.
- Brown, Stephen J., William N. Goetzmann, Roger G. Ibbotson, and Stephen A. Ross. 1992. "Survivorship Bias in Performance Studies." *Review of Financial Studies* 5: 553–580.
- Brown, Stephen J., and William N. Goetzmann. 1995. "Performance Persistence." *Journal of Finance* 50: 679–698.
- Busse, Jeffrey A., and Paul J. Irvine. 2002. "Bayesian Alphas and Mutual Fund Persistence." Working paper. Goizueta Business School, Emory University, Atlanta, GA.

- Carhart, Mark. 1997. "On Persistence in Mutual Fund Performance." *Journal of Finance* 52: 57–82.
- Carhart, Mark, Jennifer Carpenter, Anthony W. Lynch, and David K. Musto. 2001. "Mutual fund Survivorship." Unpublished manuscript, New York University.
- Carlson, Robert. 1948–1967. "Aggregate Performance of Mutual Funds." *Journal of Financial and Quantitative Analysis* 5: 1–32.
- Davis, James L. 2001. "Mutual Fund Performance and Manager Style." *Financial Analysts Journal*: 19–27.
- Elton, Edwin J., Martin J. Gruber, and Christopher R. Blake. 1996. "The Persistence of Risk-Adjusted Mutual Fund Performance." *Journal of Business* 69: 133–157.
- Elton, Edwin J., Martin J. Gruber, and Christopher R. Blake. 2001. "A First Look at the Accuracy of the CRSP Mutual Fund Database and a Comparison of the CRSP and Morningstar Mutual Fund Databases." *Journal of Finance* 6: 2415–2430.
- Goetzmann, William N., and Roger G. Ibbotson. 1994. "Do Winners Repeat? Patterns in Mutual Fund Performance." *Journal of Portfolio Management* 20: 9–18.
- Grinblatt, Mark, and Sheridan Titman. 1989. "Mutual Fund Performance: An Analysis of Quarterly Portfolio Holdings." *Journal of Business* 62: 393–416.
- Grinblatt, Mark, and Sheridan Titman. 1992. "The Persistence of Mutual Fund Performance." *Journal of Finance* 47: 1977–1984.
- Grinblatt, Mark, and Sheridan Titman. 1993. "Performance Measurement without Benchmarks: An Examination of Mutual Fund Returns." *Journal of Business* 66: 47–68.
- Grinblatt, Mark, Sheridan Titman, and Russ Wermers. 1995. "Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior." *American Economic Review* 85, 5: 1088–1105.
- Gruber, Martin. 1996. "Another Puzzle: The Growth in Actively Managed Mutual Funds." *Journal of Finance* 51.
- Hendricks, Darryll, Jayendu Patel, and Richard Zeckhauser. 1993. "Hot Hands in Mutual Funds: Short-Run Persistence of Performance, 1974–88." *Journal of Finance* 48: 93–130.
- Ibbotson, Roger G., and Amita K. Patel. 2002. "Do Winners Repeat with Style? Summary of Findings." Ibbotson Associates. <http://www.ibbotson.com/Research/papers/toc.asp>.
- Jensen, M. 1968. "The Performance of Mutual Funds in the Period 1945–1964." *Journal of Finance* 23, 2: 389–416.
- Jain, Prem C., and Joanna Shuang Wu. 2000. "Truth in Mutual Fund Advertising: Evidence on Future Performance and Fund Flows." *Journal of Finance* 55: 937–958.
- Kahn, Ronald, and Andrew Rudd. 1994. "Does Historical Performance Predict Future Performance?" *Financial Analysts Journal* November/December: 43–52.
- Malkiel, Burton G. 1995. "Returns from Investing in Equity Mutual Funds 1971–1991." *Journal of Finance* 50: 549–572.

Phelps, S., and L. Detzel. 1997. "The Non-persistence of Mutual Fund Performance." *Quarterly Journal of Business and Economics* 36: 55–69.

Sauer, D.A. "Information Content of Prior Period Mutual Fund Performance Rankings." *Journal of Economics and Business* 549–567.

Swenson, David. 2000. *Pioneering Portfolio Management*, New York: The Free Press.

Vanguard Group. Catherine Gordon, principal and department head of Investment Counseling and Research.

Wermers, Russ. 1997. "Momentum Investment Strategies of Mutual Funds, Performance Persistence, and Survivorship Bias." Working paper. University of Colorado at Boulder, Boulder, CO.

Wermers, Russ. 2000. "Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transaction Costs, and Expenses." *Journal of Finance* 55: 1655–1695.

Wermers, Russ. 2001. "Predicting Mutual Fund Returns." Working paper. University of Maryland.

Appendix

Information on Index Management Versus Active Management Study Sample Sizes, Dispersion, and Sample Error (at 95% Confidence Level), +/- Basis Points

Asset Class	Sample Size 1 Year	Dispersion High • Low 1 Year	Sample Error Estimate 1 Year	Sample Size 3 Years	Dispersion High • Low 3 Years
LC Blend Index	185	11.30% • -1.40%	0.28%	166	7.00% • -1.6%
LC Blend Active	507	14.00% • -4.80%	0.26%	433	11.60% • -6.4%
LC Value Index	19	11.80% • 0.88%	1.39%	14	7.12% • 1.9%
LC Value Active	502	15.70% • -0.25%	0.25%	391	14.30% • -3.4%
LC Growth Index	35	6.80% • -1.20%	0.81%	28	1.50% • -2.3%
LC Growth Active	513	12.60% • -6.90%	0.28%	434	6.80% • -6.0%
MC Blend Index	21	13.90% • 5.90%	0.72%	19	10.10% • 7.0%
MC Blend Active	94	17.50% • 3.50%	0.58%	71	12.40% • -0.2%
MC Value Index	6	16.30% • 11.80%	N/A	4	12.80% • 4.6%
MC Value Active	58	17.00% • 5.97%	0.76%	48	17.60% • 5.3%
MC Growth Index	14	12.00% • 2.42%	N/A	8	6.40% • 1.5%
MC Growth Active	257	15.90% • -3.30%	0.42%	222	11.00% • -7.2%
SC Blend Index	30	15.50% • 10.70%	0.51%	25	27.10% • 7.5%
SC Blend Active	122	19.80% • 3.09%	0.64%	100	17.00% • 2.3%
SC Value Index	17	17.70% • 7.95%	1.34%	12	18.80% • 7.5%
SC Value Active	83	18.70% • 1.20%	0.63%	57	24.00% • 1.2%
SC Growth Index	8	14.40% • 9.20%	N/A	6	10.40% • 4.7%
SC Growth Active	238	16.90% • -22.90%	0.62%	197	13.10% • -23.6%
International LC Blend Index	46	14.10% • 6.20%	0.53%	43	12.00% • -1.1%
International LC Blend Active	289	15.90% • 3.81%	0.30%	237	16.70% • 0.9%
International MC/SC Blend Index	1	N/A	N/A	1	N/A
International MC/SC Blend Active	29	23.70% • 6.40%	1.67%	24	23.60% • 13.4%

Asset Class	Sample Size 5 Years	Dispersion High • Low 5 Years	Sample Error Estimate 5 Years	Sample Size 10 Years	Dispersion High • Low 10 Years
LC Blend Index	116	3.90% • -4.00%	0.18%	38	10.50% • 8.8%
LC Blend Active	314	10.90% • -10.30%	0.35%	130	17.20% • -0.4%
LC Value Index	7	6.10% • -1.00%	N/A	2	9.90% • 9.5%
LC Value Active	277	14.10% • -5.70%	0.34%	120	13.60% • 4.0%
LC Growth Index	12	-4.70% • -12.80%	N/A	1	N/A
LC Growth Active	337	4.60% • -16.50%	0.37%	114	13.90% • -3.6%
MC Blend Index	10	8.30% • 0.48%	N/A	2	12.50% • 9.8%
MC Blend Active	46	14.80% • -4.40%	1.20%	12	14.40% • -6.1%
MC Value Index	2	4.90% • 4.80%	N/A	0	N/A
MC Value Active	32	20.50% • 4.80%	1.11%	0	N/A
MC Growth Index	0	N/A	N/A	0	N/A
MC Growth Active	0	N/A	N/A	0	N/A
SC Blend Index	15	20.30% • 3.60%	N/A	7	10.80% • 7.9%
SC Blend Active	68	16.30% • 0.58%	0.83%	14	13.70% • 6.3%
SC Value Index	6	16.30% • 12.10%	N/A	2	15.30% • 15.1%
SC Value Active	46	23.20% • -4.10%	1.66%	11	13.10% • 8.7%

