

HAIFC Research Note

Why Indexing Makes Sense

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OVERVIEW

The decision of whether to employ active or index managers is one of the more important decisions an investor can make. Index managers simply try to match the returns of their appointed benchmark, which is frequently accomplished by holding all of the securities in the index. Indexing guarantees a return close to that of the benchmark, but in return, investors sacrifice the prospect of “beating the market.” Active managers, on the other hand, hold a subset of the available securities in an attempt to beat the market. Difficulty arises for active managers because they are competing against many other active managers. When there are thousands of informed, intelligent investment professionals spending their careers analyzing the market, it is difficult for any single manager to consistently outperform the others.

In this research note, we will recap the reasons for indexing and address some of the common critiques of this form of management. As we will discuss, lower costs give index funds a structural performance advantage over actively managed funds; consequently, it should be unsurprising that the typical active manager has difficulty persistently beating the market. Even in inefficient markets, index managers should be able to outperform active managers because of this cost advantage. While there are individual active managers who have outperformed the market in the past, picking these “winners” in advance is difficult, if not impossible. The most popular tool to pick active managers, past performance, has repeatedly proven to be unreliable.

WHY INDEXING MAKES SENSE

An increasing number of investors have elected to bypass the underperformance that dogs active managers. According to the Vanguard Group, domestic indexed assets as a percentage of U.S. market capitalization has risen from just under 1% in 1981 to 8% by 1998. The growth in indexing has been most prominent among institutions. A Pension & Investments’ Annual Survey reported that 13.1% of institutional tax-exempt assets were indexed in 1996, which is a two-fold increase since 1990. The retail investor has been slower to index. Lipper Analytical reports that in 1997 S&P 500 index funds made up only 3.3% of investments in retail equity mutual funds. Nonetheless, this represents a significant increase over the 1% of investments they indexed in 1990.

The trend towards indexing has been reinforced by the recent dismal performance many active managers have experienced relative to the most watched benchmark, the S&P 500. Over the past ten years, the S&P 500 has outperformed over 80% of the *surviving* active large-cap equity managers in Morningstar. Will the trend towards indexing continue? In this section, we will outline the reasons why indexing may be preferable to active management. We will also comment on the recent outperformance by index funds.

Index Funds have a Cost Advantage

Perhaps the most compelling reason to index is the cost advantage. Costs are a structural impediment to active manager outperformance. It is difficult to dispute the cheaper cost of indexed management. The Vanguard 500 Index fund, which is the most popular S&P 500 index fund, has an annual expense ratio of less than two-tenths of one percent. That expense ratio is inclusive of all commission costs and management fees. The institutional version of the fund, which is often used in large plans, charges

only 0.06% per year, which is only 6 cents per \$100 investment. On the other hand, the average active large-cap manager charges 1.1%, which is nearly 6 times(!) the cost of Vanguard's retail 500 index fund.¹ Even index funds that track smaller company stocks are available at relatively low expense ratios. The Vanguard Small Cap index, which tracks the Russell 2000 index, has an annual expense ratio of only 0.24%, which compares favorably to the 1.44% cost for the average active small-cap manager.²

Index funds enjoy their cost advantage for two predominant reasons. One is that they do not have to pay a high-priced manager and a team of analysts to perform extensive company analyses. A second reason is low turnover, which refers to the frequency of purchases and sales of securities. Low turnover benefits index funds because commission costs and other forms of trading costs (bid-ask spreads and market impact) are lower.³ Despite the periodic reconstitution of indices, turnover generally remains low. The Vanguard 500 Index fund had a turnover of only 6% during 1998, meaning that only 6% of the fund was bought and sold during the year. The average turnover among large-cap funds, according to Morningstar, was 78% in 1998, meaning that they on average will turn over their portfolios more than 10 times as often as will index funds.

Will the story change during a bear market if investors liquidate shares of index funds? Turnover may increase in index funds during a bear market, as jittery investors reduce their equity allocations. However, we would expect active funds to feel the same effect.⁴ As will be discussed later, there is little evidence that active funds perform better than

index funds during bear markets; therefore, we would expect the same selling pressures on active managers as experienced by index managers, thereby negating any benefit to active managers.

Managers Cannot Collectively Beat the Market

Can the typical active manager overcome the costs of active management and add value? According to William Sharpe (winner of the Nobel Prize for Economics in 1990), the average actively managed dollar *must* underperform the market by the cost of active management. This is because active management is a zero sum game, meaning that for every winner, there must be a loser. It is impossible for all the investors in a market to collectively outpace the market, because it is the weighted-average return of all investors that defines the market. This does not mean that individual managers cannot outperform, but that, *on average*, active managers will underperform after costs. For an individual active manager to outperform, the manager must be able to identify and capitalize on mistakes made by other investors or simply be lucky.

Recent Performance

As a result of the higher costs of active management, the failure of most mutual funds to beat the market should not be a surprise. What is a surprise is the magnitude of underperformance. The average surviving active large-cap manager in Morningstar has underperformed the S&P 500 by 590 basis points (5.9 percent) annually over the last five years. Even after accounting for the higher costs of active management, S&P 500 index funds have trounced active managers recently. Why is this the case? The typical active domestic mutual fund is not reflective of the average actively managed dollar.

Mutual funds (even those classified as large-cap managers) tend to have a greater bias toward smaller-capitalization stocks than the market as a whole; therefore, when small-caps underperform large-caps, which has occurred recently, the median mutual fund will tend to underperform the market by a wide margin. During a period in which small-caps outperform large-caps, we would expect to see active mutual funds close the gap. If the magnitude of outperformance by small-caps is great enough, the median manager may actually overcome the costs of active management and beat the S&P 500. But the reason for the outperformance would not be skillful

¹ Source: Morningstar

² Source: Morningstar

³ Studies have suggested that commissions are just a small part of total trading costs. Bid-ask spreads and market impact are much more costly. It is important to note that only commissions are included in fund expense ratios. This means that index funds have an even greater cost advantage over active funds than would be suggested by the difference in the expense ratio alone.

⁴ For investors that are concerned about the prospect for future liquidations, SPDRs (pronounced "spiders") may be appropriate. SPDRs are index funds that trade on the American Stock Exchange. They have characteristics similar to closed-end mutual funds that makes them immune from forced liquidation as a result of share holder redemptions.

stock picking, rather it would be the small-cap bias. For investors that desire a small-cap bias, we would suggest purchasing a small-cap stock index fund instead.

Survivorship Bias

One pervasive problem in evaluating active managers over longer time periods is survivorship bias. Survivorship bias refers to the observation that poorly performing active managers cease to exist, leaving only the winners. This means that historical active manager performance has an upward bias.

For example, let's go back ten years and assume there is an available universe of 1,000 active managers. Let's further assume that the bottom 10% of managers are eliminated each year because of poor performance. After ten years there would only be 348 managers still remaining. Since none of these active managers ever appeared in the bottom 10%, it is safe to say that they were, in general, better performers. If we then ranked the index versus these 348 *survivors* (we cannot compare the index to all 1,000 managers at the end of the ten year period because they do not have a complete return stream), it is likely that the index would appear less favorable, meaning that the index may rank below the median *surviving* manager. However, the results are not really meaningful because they exclude the 652 managers that did not last for ten years.

The table below ranks the performance of various indices versus their peer group. Even with survivorship bias, only 24% of surviving active U.S. large-cap managers have beaten the S&P 500 index over 20 years. In U.S. small-caps, 50% of surviving active managers have outperformed the Russell 2000 index. We expect that less than half of the managers would have outperformed the index were it not for survivorship bias. Again, the conclusion is that indexing is the safer bet over long time periods.

Table 1: Percentage of Surviving Active Managers that Outperformed Benchmark

Benchmark	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	15 Yrs (%)	20 Yrs (%)
S&P 500	13	7	16	12	24
Russell 2000	51	49	62	65	50

Indexing Isn't Limited to the S&P 500

One common misconception is that indexing means buying an S&P 500 Index fund. While the S&P 500 is the most popular indexing option, indexing is by

no means limited to the S&P 500. Index funds are available across all asset classes throughout the world. Many of the common criticisms of indexing are truly criticisms of indexing to the S&P 500. Investors today have the ability to create a globally diversified portfolio of index funds.

**USING ACTIVE
MANAGEMENT IN
INEFFICIENT ASSET
CLASSES**

Some concede that indexing U.S. large-caps is sensible, but active managers should be used in less efficient asset classes such as U.S. small-caps and international markets. While this does have some intuitive appeal (after all, active managers should be able to exploit inefficient markets), further analysis suggests that the same rules that apply to efficient markets also apply to inefficient markets. As mentioned in the prior section, the only way for one manager to outperform a given market is for another manager to underperform. After netting the winners and losers, all that remains is the cost of management. Consequently, even in inefficient markets, active managers should not be able to collectively outperform the market.

When the cost of active management is analyzed, the case for indexing may even be *stronger* in inefficient markets. In inefficient markets there are greater information barriers that must be overcome, plus higher trading costs. Indeed, the average foreign stock fund has an expense ratio of 1.4%, while international markets may be indexed for only 0.3% or less. The table below shows the cost of indexing versus active management in U.S. large-caps and three asset classes often considered inefficient. As the table shows, the fee differential between active and indexed management in asset classes commonly considered inefficient is greater than the differential in U.S. large-cap stocks, meaning that active managers have a higher cost hurdle to overcome in inefficient asset classes.

Table 2: Comparison of Expense Ratios⁵

	Average Active Mutual Fund (%)	Index Mutual Fund (%)	Difference (%)
U.S. Large-Cap Stocks	1.11	0.19	0.92
U.S. Small-Cap Stocks	1.45	0.25	1.20
Int'l Stocks	1.44	0.32	1.12
Int'l Emerging Mkt Sks	1.88	0.61	1.27

IS IT POSSIBLE TO PICK WINNING ACTIVE MANAGERS IN ADVANCE?

As established earlier, it is possible for individual active managers to outperform the market, but is it possible to pick the winners in advance? Obviously, it is easy to identify the best performing active managers of the past, but picking the winners of the future is much more troublesome. As previously mentioned, for an individual active manager to outperform the market the manager must be either: (1) lucky, or (2) exploit the mistakes made by other managers. Of course, it is impossible to consistently select in advance the managers who will be lucky in the future since, by definition, their performance is not predictable. If active managers that outperform by skill do indeed exist, is it possible to identify them in advance?

Past Performance Unreliable

Evaluating past performance is the most popular method by which active managers are selected; however, empirical studies have repeatedly demonstrated that past performance is an unreliable predictor of future performance. Indeed, the SEC requires managers to disclose this fact on their marketing literature. Ernest Ankrum of Frank Russell Company researched mutual fund performance between 1984 and 1991. He found that managers that outperformed the benchmark in the period from 1984 to 1987 had roughly a 52% chance of outperforming from 1987 to 1991, which is not too different from a coin toss.

In 1989, Collins Associates performed a study where they examined the top quartile and bottom quartile funds from the 1979-1983 period to see how they performed over the ensuing five-year period (1984-1988). They found that only 17% of the top quartile

managers in the first period appeared in the top quartile during the second period (25% of the managers should have appeared in the top quartile during the second period by chance alone). Of the bottom quartile funds in the first period, 25% appeared in the *top* quartile during the second period. This suggests that investors that desired to pick a top quartile manager for the 1984-1988 period would have been more successful by picking a *bottom* quartile manager from 1979-1983 than a top quartile manager

Skill vs. Luck

Why is past performance such an unreliable predictor of future performance? One dilemma in using past performance is that it is difficult to determine with certainty whether the top performers of the past did so through luck or skill. Of course, any outperforming manager will be able to give a detailed explanation of why their particular strategy worked in the past and why it will continue to do so in the future. Still, it is hard to know with certainty whether top performers are skillful or lucky. Some argue that even the “super-winners,” such as Peter Lynch or Warren Buffett, might have simply been lucky. For example, if you had 2,000 people flipping a fair coin, it is likely that eight of the 2,000 people will flip heads eight consecutive times. Are these eight coin flippers skillful? No, they were simply lucky. The fact that they flipped heads eight consecutive times does not mean they are more likely to flip heads on the next toss, because their past performance does not predict future success. Considering that there are over 5,000 mutual funds in existence, it is unsurprising that a relatively small number of funds have managed to consistently post exceptional index-relative returns; in fact, we would expect this.

Even Skillful Managers of the Past May Not Persist

Assuming managers that outperformed due to skill in the past can be identified, does that provide any information for the future? One problem with outperforming managers is that they are easily observable. Hot managers attract additional money, which may make it difficult to implement the strategy that they once used with success. A manager that was successful with a \$100 million portfolio may not be successful with a \$10 billion portfolio, because the manager is more likely to

⁵ Source: Morningstar

move the market with trades. A second problem is that successful managers can be imitated. A manager that found success with a particular strategy may find that competitors sprout up using a similar strategy, thereby pricing away any advantage.

HOW DO INDEX FUNDS PERFORM ON A RISK-ADJUSTED BASIS?

Some argue that while index funds may outperform active funds on an *absolute* basis, active funds outperform on a *risk-adjusted* basis. Historical data do not support this conclusion. The table below compares the Vanguard 500 Index versus the average surviving large-cap manager contained in Morningstar.

Table 3: Return and Risk Comparison⁶

		Annual Return (%)	Annual Standard Deviation (%)	Sharpe Ratio
3 Yrs	Vanguard 500 Index	29.0	21.0	1.3
	Average Large-Cap Mgr	23.2	20.9	1.0
5 Yrs	Vanguard 500 Index	26.8	17.1	1.3
	Average Large-Cap Mgr	21.7	17.2	1.0
10 Yrs	Vanguard 500 Index	18.7	15.7	0.9
	Average Large-Cap Mgr	16.1	15.9	0.7

As the table shows, the annual standard deviation, which is the most common measure of risk, of the average large-cap manager is virtually identical to that of the index fund over each period; therefore, active managers have experienced just as much risk as the index fund. On a risk-adjusted basis, the index fund has posted superior results in all three periods, since the index fund has achieved higher returns with commensurate risk.

By examining the Sharpe Ratio, we can quantify the historical risk-adjusted advantage of index funds. The Sharpe Ratio represents the amount of return above the risk free rate achieved for each unit of risk incurred; therefore, the higher the Sharpe Ratio the better. Over three years, the index fund has a 30% higher Sharpe Ratio than active managers (1.3 vs. 1.0). The index fund has a 28% higher Sharpe Ratio over ten years (0.9 vs. 0.7).

Given that active managers generally maintain a cash balance, is it a surprise that they are just as

risky as the index? Financial theory tells us the answer to that question is no. When a manager holds only a subset of the market (ten to one hundred stocks, for example), the subset is exposed to diversifiable risk. Diversifiable risk is risk that may be eliminated by holding the market portfolio. Since this risk may be diversified away, it is an unrewarded risk, meaning that on average no additional return is available by accepting such risk. It may be that the diversifiable risk that active managers accept negates the cushioning effect of a cash balance.

WILL ACTIVE MANAGEMENT FARE BETTER DURING A BEAR MARKET?

Index funds, of course, are not immune to bear markets, and will fall in lockstep with the market, but will active funds perform any better? The case for this argument is based on the fact that index funds are usually entirely invested, while active managers maintain a cash balance. Furthermore, active managers have the perceived ability to time the market by going to cash in advance of a bear market. In reality, the performance of active managers during down markets has been mixed. The table below summarizes the performance of the S&P 500 versus the average equity fund during down markets.

Table 4: Performance Comparison in Down Markets⁷

	S&P 500 Index (%)	Average Equity Fund (%)
1/30/73 through 9/30/74	-42.5	-47.9
9/30/87 through 11/30/87	-32.1	-28.7
7/16/98 through 8/31/98	-19.0	-22.2

As the table shows, during the 1973/1974 bear market, the S&P 500 actually lost less than the average equity fund. In 1987, the average equity fund did fall less than the S&P 500, but during the latter half of July and August of 1998, S&P 500 index funds again fell less than the average equity fund.

These results may seem counterintuitive since active managers maintain a cash position that should cushion declines. We postulate that the reason active

⁶ Source: Morningstar

⁷ Source: Lipper Analytical and The Vanguard Group

managers do not provide protection during bear markets is that, as mentioned previously, they tend to have unrewarded (diversifiable) risk, and a smaller-capitalization bias than the index. Small-cap stocks tend to decline more than large-cap stocks during market upheavals, thus negating the cash cushion. Moreover, it is apparent that the typical mutual fund is not successful at market timing.

IS THE S&P 500 INDEX MANAGED?

A criticism of indexing to the S&P 500 that does have merit is that it is a managed index. A five-member committee selects the stocks that will be added to and deleted from the index each year. In 1998, there were 48 changes in the S&P 500, of which 42 were caused by merger and acquisition activity (when a company in the S&P is bought out, a spot is opened) or restructuring (i.e., spin-offs). The remaining six companies were removed because the committee decided that the stocks no longer met the criteria for inclusion. The number of changes in the index has increased over recent years, but most of that increase can be attributed to an increase in merger and acquisition activity.

Despite the managed nature of the index, the S&P 500 is representative of the U.S. stock market, as it captures approximately 80% of the market's capitalization. The managed index criticism is much more applicable to S&P's MidCap 400 and SmallCap 600 indexes. The selection committee's decision to add or remove companies from these two indexes can have a significant impact on performance.

Still, there is a simple solution for those that do not approve of S&P's construction methodology—index to a different benchmark. The Wilshire 5000 index has gained in popularity recently because the index is broader than the S&P 500, containing over 7,000 securities (not 5,000 as the name would imply). Indexing to the Wilshire 5000, which can be achieved by purchasing the Vanguard Total Stock Market fund, means that an investor holds essentially the entire U.S. stock market.

IS INDEXING DRIVING THE MARKET?

Finally, some argue that the run-up in the S&P 500 over the past several years is attributable to the cash

flows into index funds. In other words, investors are chasing the hot performance of the S&P 500 by investing in S&P 500 index funds; thereby, creating a self-reinforcing trend. There are two factors that make this argument illogical. One is that if only 8% of the U.S. stock market capitalization is indexed, is it possible that it would cause 20% plus annual returns over each of the last four years? We are doubtful that such a small percentage of the stock market could result in such substantial gains, particularly when index funds tend to trade less than their active counterparts.

Secondly, if S&P 500 indexing is the predominant driver of the market, we would expect all of the small-sized, mid-sized, and large-sized companies in the S&P 500 to benefit equally. Stated differently, if cash flows into S&P 500 were driving the returns, the returns of all the market capitalization ranges would have been similar. This has certainly not been the case. During 1998, as the table below shows, only the largest 100 companies in the index enjoyed returns in excess of 20%. The smallest 100 companies, on the other hand, returned only 0.3%. After reviewing the data, it is difficult to make the case that indexing is driving the market's return.

Table 5: S&P 500 1998 Performance by Market Capitalization⁸

<i>Market Capitalization</i>	<i>1998 Return (%)</i>
Largest 100	36.5
101-200	18.2
201-300	9.7
301-400	7.3
401-500	0.3

CONCLUSION

In this research note, we have summarized some of the reasons why investors should consider employing index funds. In addition, we have addressed some of the common criticisms of indexing. The most compelling reason for the use of indexed management is the cost advantage. The cost of indexing is much lower than the cost of active management. Indexing even makes sense in asset classes generally thought of as inefficient. There will always be individual managers that outperform the market; however, it is difficult to select such managers in advance.

⁸ Morgan Stanley Dean Witter

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