

Three Challenges of Investing: Active Management, Market Efficiency, and Selecting Managers

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A Dialogue with Barr Rosenberg
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1. Passive vs. Active Management—What's There to Debate About?

Back in 1992, the organizer of an investment conference telephoned legendary portfolio manager (and my good friend) John Neff and invited him to debate with me the issue of passive vs. active management. John, his candor springing eternal, fired back: Jack's going to say 'most managers can't beat the index' and that's true. I'm going to say 'some managers can,' and that's true too. "What's there to debate about?" He was right, but he was also wrong. There *is* an issue worthy of debate: "How large is the margin by which the market index beats the managers?"

No Debate: Passive Wins

Conceptually, there's no reason to debate whether or not passive management beats active management. *Passive must win*. Why? Because if we take all stocks as a group, or any discrete aggregation of stocks in a particular style, an index that holds all of those stocks at their market capitalization weights will precisely track their return. Therefore the index must, and will, outpace the return of the totality of investors who *own* that same aggregation of stocks, but incur management fees, administrative costs, trading costs, taxes, and sales charges.

As a group, active managers will fall short of the index return by the *exact* amount of the costs that they incur. The central fact of investing, then, is this simple proposition: Investment success is defined by the allocation of financial market returns—stocks, bonds, and money market instruments alike—between investors and financial intermediaries. Gross return minus cost equals net return. *If the data we have available to us do not reflect that self-evident truth, well, the data are wrong.*

There are infinite ways in which the available data can mislead. Consider mutual fund returns: We count each mutual fund as a single unit in calculating average returns, while the industry's actual aggregate record is better reflected in an asset-weighted return. Funds rarely stay rigidly confined to their style boxes; a growth fund may own some value stocks; a small-cap fund may own

mid-cap and large-cap stocks. Some fund records are hyped when they are small and will never again recur. Few funds are ever fully invested in stocks, and cash is a drag in up markets and a benefit in market declines.

Of course, it is at least theoretically possible that mutual fund managers as a group may be smarter than other investors, and in fact consistently outpace the market by an amount sufficient to overcome their substantial costs. But let's think about that. It seems highly unrealistic to believe that fund managers, who—including the pension accounts they manage—control the investment process applicable to upwards of 35% of the value of all U.S. equities, can outpace other managers, advisers, and individuals.

For example, for fund managers to outpace the market by 1% annually after costs of, say, 2% (excluding taxes) would require an excess return of 3%. In that case, the individuals who hold the remaining 65% of equities would, as a group, lose to the market by about 2% per year, or by 4% after costs. Not only does that seem improbable on the face of it, but, there is no evidence that individuals fall short of the market. The limited data we have available suggest that amateurs match the market before costs and lose after costs. By definition, then, their professional cousins must do the same.

Worth Debating: By How Much?

But there *is* something to debate, and it is important: *How big is the gap between the market's returns and the returns earned by investors as a group?* Put another way, how much of their return do investors relinquish to financial intermediaries? I estimate that the total cost of investment advice, marketing, administration, brokerage, etc., in the U.S. currently comes to something like \$300 billion per year. With the market capitalization of U.S. equities now at about \$12 trillion, such an annual cost would represent about 2.5% of that total, or 25% of an assumed total return on equities of 10% per year.

I don't believe that cost figure is far-fetched. Mutual funds alone carry management fees and expenses of some \$65 billion, and incur portfolio transaction costs estimated at another \$40 billion. Even the Investment Company Institute, a vigorous industry advocate, places the total *direct* shareholder costs of publicly-available managed equity mutual funds, weighted by sales volume, at 1.6% per year. (The unweighted average is considerably higher, about 2.0%.) Add to that about 0.8% in unseen, but nonetheless real, cost of portfolio transactions, and we're at 2.4% (unweighted, 2.8%). Add in opportunity cost (equity funds are rarely fully-invested) and out-of-pocket fees and the like, and 2.5% seems more akin to an informed but conservative estimate than a crude guess. At those levels, obviously, *cost matters*.

Mutual Fund Costs		
	Sales Weighted	Average Fund
Direct Costs*	1.6%	2.0%
Transaction Costs (est.)	0.8	0.8
Sub-Total	2.4%	2.8%
Other Costs (est.)	0.4	0.4

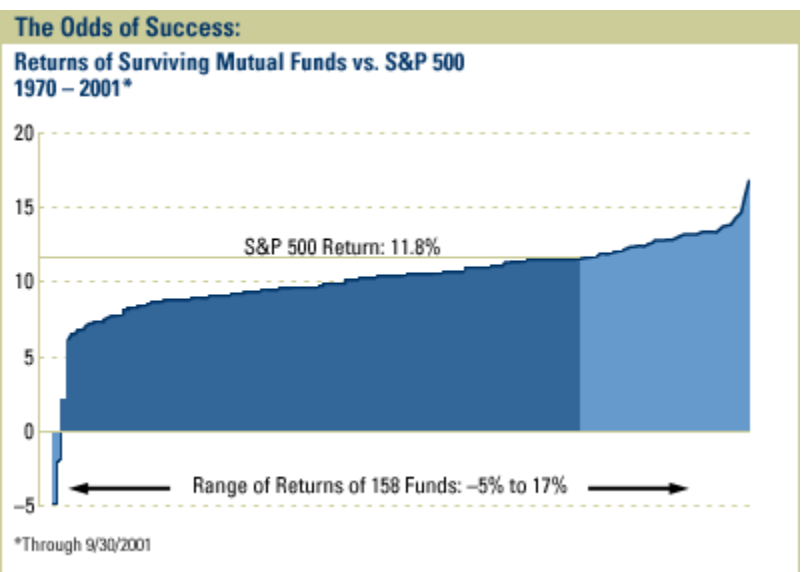
Total	2.8%	3.2%
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* Expense ratio plus amortized sales charges.

The Proof of the Pudding

Unless fund managers have superior stock-picking ability, then, it follows that they, like all investors, will lag the market by the amount of their costs. How much is that lag? Well, I've produced the data literally hundreds of times for thousands of funds over a whole variety of time periods going all the way back to 1940. It all shows essentially the same thing: The gap between stock market returns and fund net returns is roughly equal to the costs the funds incur. *Practice confirms theory.*

Let me present to you just one of those studies, for the period from the start of 1970 through September 30, 2001. The results: 355 funds began the race; 197 (more than half, surely the poorer performers) dropped out; only 158 survived the competition. Average annual return of the survivors, 10.4%; S&P 500 return, 11.8%. Gap 1.4%. If we assume, conservatively, an annual survivor bias of just 1.5%¹, the fund return would be 8.9%, and the index advantage would be increased to 2.9% per year. Since the volatility of the Index during that period was lower than that of the funds, that remarkable 2.9% annual advantage for passive investing was achieved without the assumption of additional risk.



The Odds of Success: Returns of Surviving Mutual Funds vs. S&P 500 1970-2001 *			
Number of Equity Funds		Average Annual Return	
1970:	355	S&P 500:	11.8%
2001:	158	Avg. Fund:	10.4%
Non-Survivors:	197	Index Advantage:	1.4%

* Through 9/30/2001

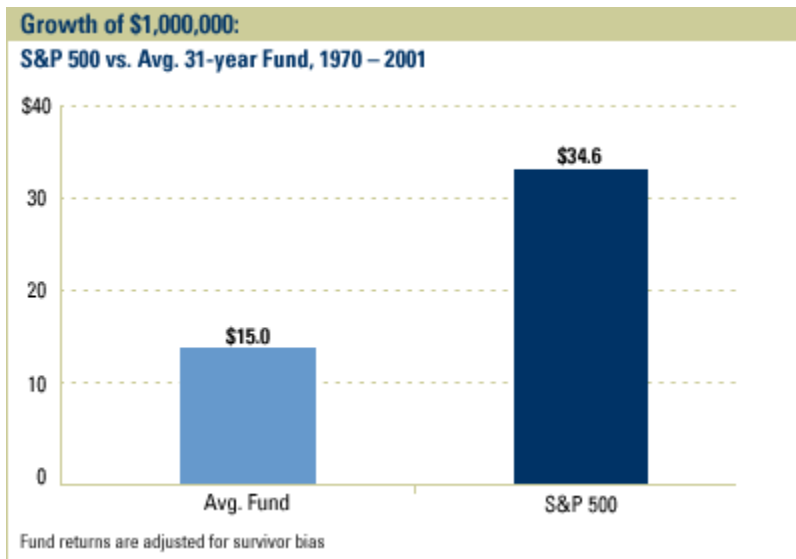
Over that 32-year period, 39 of the surviving funds outpaced the Index and 119 failed to do so—apparent odds of about three to one against the investor. They jump to almost ten to one if we take into account the number of funds that began the period, which is, after all, the universe from which the investor would have made his initial selection. *But the odds against winning meaningfully are in fact far larger.* Half of the winners—16 of the 39—won by less than a single percentage point, a market-equivalent return. Thus only 23 funds—one in fifteen—won by a significant margin. And a mere two out of the 355 funds—less than 1%—won by three or more percentage points. *Those odds are not good.*

The Odds of Success: Mutual Fund Returns vs. S&P 500 1970-2001*		
Odds of:	Number of Funds	All Funds
At Inception	355	100%
Surviving	158	44.5%
Beating the Market	39	11.0%
Beating the Market by more than 1%	23	6.5%
Beating the Market by more than 3%	2	0.6%

* Through 9/30/2001

How Much Does Cost Matter?

Since my 2 ½% cost estimate tracks the 2 ½% performance lag, cost is clearly the culprit. It accounts for the difference in return, and for the resultant windfall gain for the passive strategy. *Cost matters.* Indeed for the long-term investor, cost is the difference between success and failure. Consider the thirty-plus-year record I've presented, and compound an initial investment of \$1,000,000 made back in 1970. At a return of 8.9%, the terminal value for the average managed fund came to \$15.0 million. At a return of 11.8% for the Standard & Poor's 500 Index, the terminal value came to \$34.6 million. *Let's face it: Two-for-one is a staggering difference in capital, and \$19,600,000 is serious money.*



For taxable investors, the gap would be far *wider*, for with their high portfolio turnover—100% last year alone—mutual funds are notoriously tax-*inefficient*. They probably surrender another 1 ½ to 2 percentage points of return to tax-*efficient* passive strategies. By merely guaranteeing investors of their fair share of the returns earned in the stock market, passive investing deserves a major place in the portfolio of individuals and institutions alike.

2. The Stock Market: More Efficient or Less?

The digital computer has enabled us to catalog a vast and readily accessible library of financial information on virtually every publicly-held common stock listed on the U.S. market. Public policy and the democratization of the stock market have caused corporations to become more open and forthcoming about their financial results. The great bull market has helped to fund an enormous community of investment professionals—buy-side and sell-side alike—to analyze and evaluate that information. And the rise of the Internet has facilitated the spread of that information into the marketplace with lightning speed. Taken together, these developments would suggest that the stock market is more efficient today than ever before.

And so we have a better case than ever for the strong form of the efficient market (or random-walk) hypothesis: *That absolutely nothing that is already known or knowable about a company will benefit the fundamental analyst.* Why? Because all of this information is reflected in the price of its stock. Result, according to the theory: Fundamental analysis cannot produce investment recommendations that will enable an investor consistently to outperform a buy-and-hold strategy in managing a portfolio.

Yet years before the information revolution and the great bull market, the growth of the professional investment community, the entry of stock prices into the daily consciousness of others of millions of investors, and the omnipresence of CNBC, CNN, Fox, and Bloomberg on our television screens, a grizzled veteran of the stock market wars came to the same conclusion:

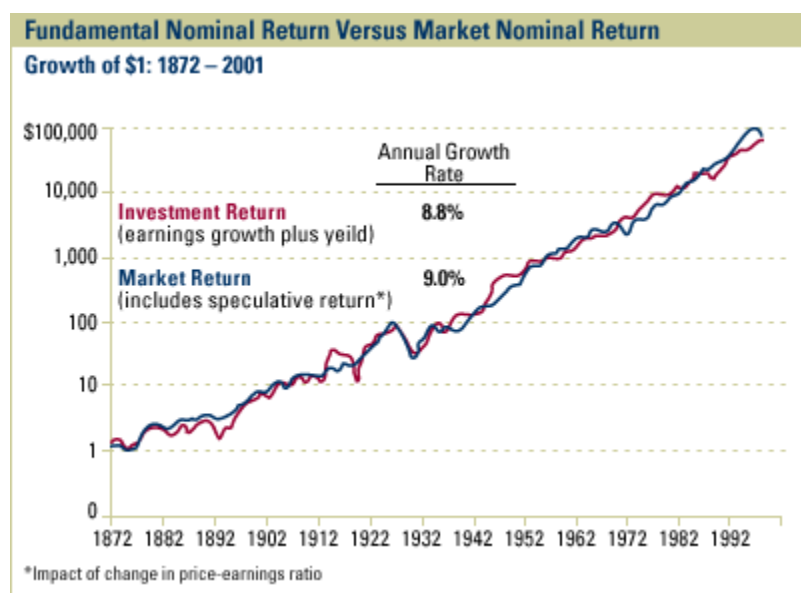
In general, no. I am no longer an advocate of elaborate techniques of security analysis in order to find superior value opportunities. This

was a rewarding activity, say, 40 years ago, when our textbook "Graham and Dodd" was first published; but the situation has changed a great deal since then. In the old days any well-trained security analyst could do a professional job of selecting undervalued issues through detailed studies; but in the light of the enormous amount of research now being carried on, I doubt whether in most cases such extensive efforts will generate sufficiently superior selections to justify their cost. To that very limited extent I'm on the side of the "efficient market" school of thought now generally accepted by the professors.

The year was 1976. The grizzled veteran was Benjamin Graham, Warren Buffett's mentor and one of the great investment minds of the 20th century.

As far as the theory goes, I agree with the efficient market school: Picking stocks is a zero sum game. How could it be otherwise? Benjamin Graham agreed. Here's how he answered the question, "Can the average manager win?:" *No. That would mean that the stock market experts as a whole could beat themselves—a logical contradiction.*

But I do not buy the efficient market theory *in its entirety*. Why? *Because markets are themselves inefficient.* In the very long run stock prices are clearly driven by investment fundamentals. It is the earnings and dividends generated by America's corporations that without a doubt govern the markets total returns. Since 1872, the cumulative annual return of the U.S. stock market has averaged 9.0%, and dividend yields and earnings growth combined have produced the lion's share—8.8 percentage points—of that total. And it is the investment fundamentals—the evaluation of a corporation's balance sheet, cash flows, earnings, and future prospects—that are the focus of professional investors and the foundation of the efficient market theory.



But in the shorter-run, stock returns are driven not only by those *investment* fundamentals, but by *speculation*: The change in the prices that investors are willing to pay for each dollar of earnings (the P/E ratio). If stocks yield 2% at the start of a year and earnings grow by 8%, the *investment* return will be

10%. If the opening P/E ratio of 20 times rises to 22 times, *add a speculative* return of 10%, for a total return of 20% for the market. If the P/E drops to 18 times, *deduct* 10%. Market return: Zero. What a difference! It is investor emotions, often inexplicable for individual stocks and for the market alike, that drive the market in the short run, and sometimes for remarkably extended periods. *But not forever.*

Consider the period 1980 through 1999. The initial annual dividend yield on the S&P 500 Stock Index was 5.7%; the annual earnings growth rate of those stocks was 6.1%. Total *investment* return on the Index: 11.8%. Its price-earnings ratio at the outset was 9 times; at the end 30 times. That 233% increase, spread over 20 years, added a speculative return of 6.2% a year to the investment total, including a total stock market return of 18.0% for the period: *66% investment, 34% speculation.* (The actual return on the Index was 17.8%.)

Unsurprisingly, the chickens soon came home to roost, and the retribution for that explosion of speculative enthusiasm was swift. The initial dividend yield at the end of 1999 was down to 1%, and earnings growth through September 2001 was zero. Result: An investment return of only 1%. But the 30% tumble in the P/E—from 30 times to 21 times—took an annualized 19 percentage points from that return, for an annualized market return of -18%. Such a swing in the market pendulum from optimism to pessimism—perhaps from greed to fear would be more accurate—is just the kind of emotional swing that has generated short-term market movements since time immemorial, shifting the focus of the market away from the generally high efficiency of investment fundamentals.

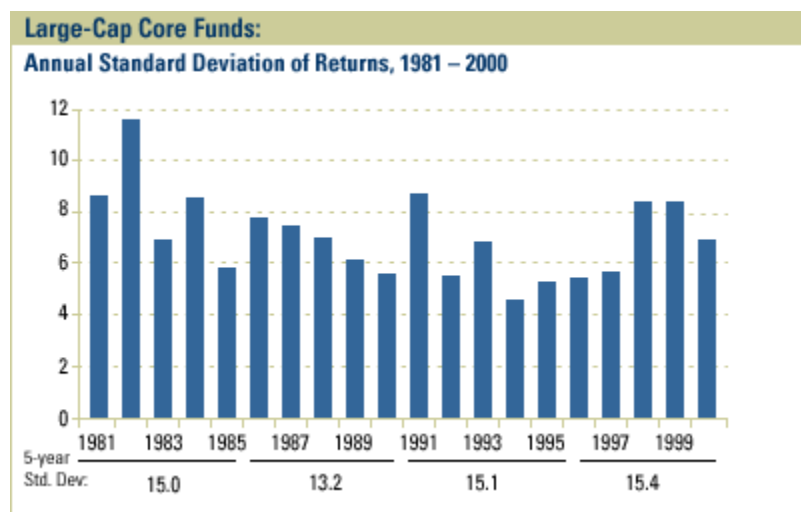
Components of Stock Market Return			
	1980-1999	1999-2001	1980-2001
Initial Dividend Yield	+5.7%	+1.2%	+5.7%
Earnings Growth	+6.1	0.0	+5.5
Investment Return	+11.8%	+1.2%	+11.2%
Speculative Return*	+6.2%	-19.4%	+3.9%
Calculated Market Return	+18.0%	-18.2%	+15.1%
Initial Earnings	\$14.82	\$48.17	\$14.82
Initial P/E Ratio	9.2x	30.5x	9.2x
Final Earnings	\$48.17	\$48.00	\$48.00
Final P/E Ratio	30.5x	21.0x	21.0x

* Impact of P/E Change

How might we go about determining whether or not the stock market has

become more efficient? One might suppose that in more efficient markets the difference between returns earned by the best-performing and the worst-performing funds would decline, so I studied that issue. To avoid distortions caused by large variations in annual returns offered by different styles (i.e., large-cap vs. small-cap, growth vs. value), I focused on the largest, most homogenous, and most centrist group of funds: Large-Cap Core funds (funds that hold both growth and value stocks), a large group, now 607 funds in number, that is generally comparable to the S&P 500 Index in composition.

The study showed little pattern of change in the standard deviation of fund annual returns over the past 20 years. While the highest standard deviation was in 1982 (11.6%), all other years ranged between 8 ½% (in 1981, 1984, 1991, 1998 and 1999) and 4 ½% (1994). Examining the standard deviation of five-year returns showed, if possible, even less change. It was 15.0% in the earliest period, 15.4% in the latest, and 15.1% in 1991-95. The 13.2% figure for 1986-90 looks like an unusual aberration. In all, there is nothing in the record of these standard deviations to conclude that the efficiency of the market has changed very much. You can look at the chart for yourselves and decide whether you can see any pattern.



I must add that, whether the stock market is growing more or less efficient is irrelevant to the basic mathematics of passive investing. Yes, theory suggests that in inefficient markets the winners will win bigger—and the loser's will lose bigger—but winners are never easy to identify in advance. And in efficient and inefficient markets alike, all investors as a group share the markets returns before costs, and lose to the market in the exact amount of those costs.

3. Selecting An Active Manager: Damn Hard? Damn Right!

In his book *Damn Right!*, Charlie Munger, Warren Buffett's partner at Berkshire-Hathaway, says, "if in your thinking you rely on others, often through purchase of professional advice, you will suffer much calamity . . . not from malfeasance, but because (the professional adviser) has a subconscious bias (arising from) financial incentives different from yours." He continues, "How to select a manager who almost surely will invest money better than average . . . is one of those questions that make life interesting."

It's not only interesting, but hard. Selecting a winning active manager is hard simply because successful investing in liquid, active, well-informed financial markets is itself hard. Brilliant, well-educated, serious professionals compete with one another, but with the knowledge certain that since investing is a zero sum game before costs and a loser's game after costs, only a tiny proportion of them can win the competition to beat the market in the long run. 100% of managers expect to win; in the long run, less than 5% succeed.

How do we pick winning managers? Why, we analyze their past performance, and far more often than not, invest with those who have performed best in past. How often do past winners repeat their winning ways in the future?

Do Winners Repeat?

Not very often! Let's look at the record. In my first book, *Bogle on Mutual Funds*, I tested the top 20 equity funds during the 1972-82 decade against their returns during the next decade. Result: Their average rank in the next decade was #142 among 309 funds (par would be #155)—a tiny margin of advantage. But the range of their ranking went from #2 to #245—a huge premium for making the right selection, and a big risk in making the wrong one. But the average return of the winning funds was 14.3%, a nice premium of 1.2% above the average fund.

Ten-Year Rank of Top 20 Equity Funds		
1972-1982 Rank	1982-1992 Rank	
1	128	
2	34	
3	148	
4	220	
5	16	
6	2	
7	199	
8	15	
9	177	Number of funds: 309
10	245	
11	222	Avg. follow up rank: 142
12	5	
13	118	
14	228	
15	205	
16	78	
17	209	
18	237	

19	119	
20	242	

Pretty much the same pattern emerged when I recently updated the study by testing the 1982-2001 period. The 20 winners in 1982-92 had an average rank of #350 out of 841 funds (par would be #421) during 1992-2001. But once again a wide spread—from #14 to #823. Their average return was 11.1%, or 0.9% above the return of 10.2% for the average fund. Conclusion from the two studies: Winners over the previous decade win again on average, suggesting some momentum effect.

Ten-Year Rank of Top 20 Equity Funds		
1982-1992 Rank	1992-2001 Rank	
1	769	
2	183	
3	823	
4	560	
5	614	
6	64	
7	735	
8	95	
9	245	Number of funds: 841
10	264	
11	369	Avg. follow up rank: 350
12	176	
13	400	
14	80	
15	14	
16	51	
17	48	
18	316	
19	693	
20	501	

Of course, the winning margins of the top 20 funds dwindle sharply from the first period to the second. In the first study, from 8.3% above the average fund in 1972-82 to 1.2% in the next decade. In the second study, from 4.9% above the average fund in 1982-92 to 0.9% in 1992-2001. This reversion to the mean is hardly surprising, but buying the winners might nonetheless seem like a reasonable strategy. But given the wide range of future returns, only if the investor is willing to buy at least 20 funds. And only if sales charges and taxes are ignored, which the statistics do, but the investor cannot. Why risk that

strategy when in both subsequent periods the S&P 500 Index outpaced the repeating winners? The Index provided an annual return of 16.1% vs. 14.3% for the winning funds in 1982-92, and 12.6% vs. 11.1% in 1992-2001. Simply put: While on average winners seem to generate momentum, outpacing their peers by a marginal account, the passive strategy trumps the winner strategy, and without all of those added sales charges and taxes.

Follow up Performance: Top 20 Equity Funds vs. the S&P 500	
	1982-1992 Return
S&P 500:	16.1%
Top Funds, 1972-1982:	14.3%
Index Advantage:	1.8%
	1992-2001 Return
S&P 500:	12.6%
Top Funds, 1982-1992:	11.1%
Index Advantage:	1.5%

I've also looked at performance momentum on a *one-year* basis going back to 1982. Through 1998 the results confirm the 10-year findings. Buying the winning 20 funds each year produces an *excess return* of 1.1% over the average fund in the subsequent year, but a *deficit* of 2.0% to the S&P 500 Index. In the NASDAQ boom of 1999, however, the average return of the top 20 funds was a cool +204.9%, a huge victory over the Index, followed by a relatively modest loss of 21.8% in 2000. These are odd data, for the top 20 funds of 1999 tumbled to an average rank of 3622 out of 4407 funds in 2000, with 15 of the original top 20 holding rankings below #3881, and three holding ranks of 4403, 4404, and 4405. But if this data on buying past winners impresses you, *be my guest!*

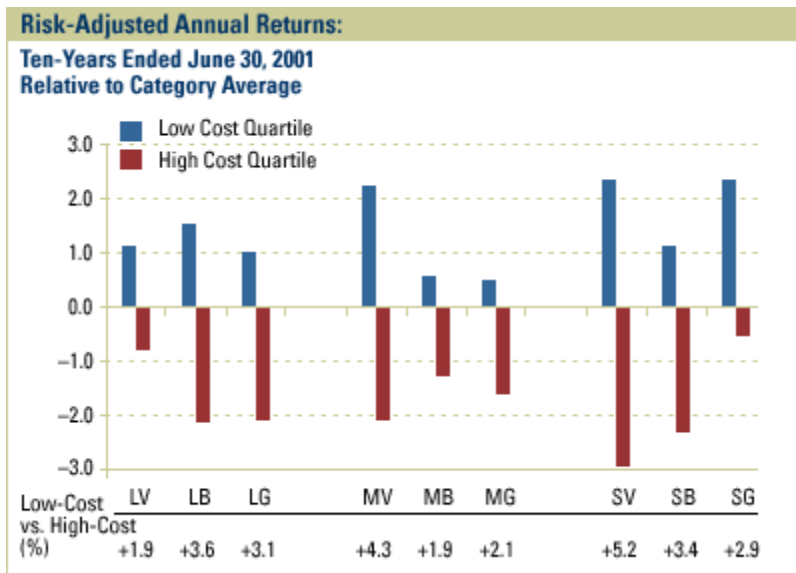
One-Year Rank of Top 20 Equity Funds		
1999 Rank	2000 Rank	
1	3,962	
2	4,028	
3	4,166	
4	3	
5	4,303	
6	4,405	
7	2,670	
8	4,403	
9	3,885	Number of funds: 4,407
10	2,425	

11	4,299	Avg. follow up rank: 3,622
12	4,404	
13	4,167	
14	4,324	
15	4,155	
16	4,169	
17	4,227	
18	2,619	
19	1,975	
20	3,881	

There Is An Answer

Don't lose heart, however. I've studied fund data for decades, and I have found what appears to be a sure way to pick winning equity funds in advance. And when Mr. Munger talked about the advisers' financial incentives, he hit the nail on the head. For it turns out that investment costs—advisory fees, administrative and marketing costs, portfolio brokerage costs—provide an astonishingly universal guideline for manager selection. For there is a direct, seemingly causal relationship between *low* costs and *high* returns, and between *high* costs and *low* returns. The obvious conclusion: *Do your fishing in the low-cost pond.*

The evidence is compelling. During the decade ended June 30, 2001, the equity mutual funds in the *lowest* cost quartile turned in a market-risk-adjusted return of 13.8%, compared to 10.8% for the funds in the *highest* cost quartile—a return advantage of an astonishing three full percentage points per year. That relationship persists with remarkable consistency irrespective of investment style: Using the nine Morningstar style boxes (sorting funds into large-, medium-, and small-cap on one axis; and value, blend, and growth on the other axis), the *low-cost funds win in all nine style boxes*, and by significant and roughly comparable magnitudes. In six of the nine boxes, the low-cost fund performance advantage ranges between 1.9 percentage points and 5.2 percentage points per year. Here are the data:



It may seem intuitively obvious that funds with expense ratios of more than, say, 2% per year are apt to fall behind funds with ratios of less than 1%. What is truly remarkable, as I noted earlier, is that the cost advantage of 1.2% held by the low cost quartile (expense ratio 0.6%) over the higher-cost quartile (expense ratio 1.8%) is associated with, not a 1.2% advantage in return, but a 3.0% advantage. While it's not clear why this leverage exists, some of the difference appears to be accounted for by higher portfolio turnover. The high cost group, almost systematically, turns its portfolios over at a higher rate than the low cost group—on average 98% versus 63%—thus incurring a higher level of transaction costs, but the source of the remaining gap must, at least for now, remain a mystery. But the fact is that owning lower cost funds provides a *measurable*, and to an important degree *predictable*, advantage to investors.

In all, we can fairly draw three conclusions about using past data to help us select winning managers: 1) Funds with superior longer-term past performance have, on average, provided a marginal advantage over the average fund. 2) Choosing passive strategies reflected in index funds has provided an even *larger* advantage. 3) Selecting low-cost funds has proven to be a major indicator of future superiority. Generally, index funds are the lowest-cost among all funds, so these conclusions are mutually reinforcing. Given the wide spread in future returns generated by past winners, the safest way to assure a market return, and to eliminate the risk of materially under-performing the market, passive investing seems the obvious answer.

* * *

Ten days ago, the Nobel Prize for Economics was awarded to three Americans who challenged the notion of efficient markets. Rather than operating on homogeneous information, they postulated, many markets were inefficient, operating with asymmetric information in which buyers know something sellers do not, or vice versa. It seems clear, however, that the U.S. stock market and the mutual fund market largely fall, not into the asymmetric category, but into the homogeneous category.

As I've noted earlier, a huge volume of financial information flows freely among

market participants, suggesting that the stock market is highly efficient in its appraisal of fundamental corporate values. The consistency in variations among mutual fund returns over the years often provides credible evidence to reinforce that case. And while far too few investors are apparently aware of the considerable weight that fund costs must be given in assessing the prospects for future returns, the principal costs of mutual funds—expense ratios and sales charges—are readily ascertainable. The industry knows the facts about costs and is required to disclose them. But the overwhelming majority of fund firms is unwilling to express these facts, to highlight them, to acknowledge their importance, or even to face them. As Upton Sinclair wrote in his introduction to *Main Street*, "it is difficult to get a man to understand something when his salary depends on his not understanding it."

1. Studies by Princeton's Burton G. Malkiel and University of Southern California's Mark Carhart place survivor bias from 1.5% to 3.1% per year. [Back](#)

Note: Unless stated otherwise, all return data are through 9/30/2001.

Note: The opinions expressed in this article do not necessarily represent the views of Vanguard's present management.

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