Statement of John C. Bogle

Founder and Former Chief Executive of the Vanguard Group and

President of the Bogle Financial Markets Research Center

Before the U.S. House of Representatives

Sub-Committee on Capital Markets, Insurance and

Government Sponsored Enterprises of the

Committee on Financial Services

March 12, 2003

Summary

1. **Higher costs lead to lower investment returns—immediately in the case of money market funds, promptly in the case of bond funds, and over time in equity funds, irrespective of style and risk. Over the past twenty years, costs have deprived the average equity fund investor of nearly one-half of the stock market's return. Costs matter.**
2. **Over the years, the mutual fund industry has changed in many ways that have ill-served fund investors. With substantially rising expense ratios and portfolio turnover, the gap between equity fund returns and stock market returns has doubled.**
3. **Despite the industry's 114-fold increase in assets—from $56 billion in 1978 to $6.4 trillion in 2002—the huge economies of scale involved, and the addition of much lower cost bond and money market funds, the expense ratio of the average mutual fund during this period has risen from 0.91% to 1.36%, an increase of 49%. There is, however, at least one exception to this trend of rising costs. The expense ratio of the average Vanguard fund during the same period has declined 58%, from 0.62% to 0.26%.**
4. **Mutual fund costs include not only expense ratios, but sales charges, portfolio transaction costs and other expenses. In fact, expense ratios represent less than one-half of the all-in costs incurred by fund investors.**

5. **Powerful evidence shows that, despite the staggering growth in mutual fund assets and huge economies of scale in fund operations, fund expense ratios have risen sharply over the years, meaning that the aggregate dollar amount of fees have risen even more rapidly than fund assets.**
6. **Given the impact of fund costs, their rise over the years, and the apparent near-obliviousness of investors to these factors, far better cost disclosure is required. Including information about the dollar amount of an investor's specific costs in shareholder statements is an important first step, and can be accomplished efficiently and economically.**
7. **Fund annual reports should prominently feature data showing fund returns, expense ratios, portfolio turnover, the costs of such turnover, and total expenses paid by the fund.**
8. **We have far too little solid information about the nature and extent, and sources and uses, of the expenses fund investors incur. It's high time for an economic study of the mutual fund industry.**
9. **Particularly in areas where relative cost is virtually the sole difference between success and failure (i.e. money market funds), disclosure of the costs that *managers* incur for each of the services they provide is essential.**
10. **Given the obvious success that true arms-length negotiation of advisory fees has enjoyed in the few instances where it is practiced, methods of providing such negotiations between funds and their advisers should be fostered. Increasing the participation of independent directors, providing them with their own staff, and requiring that the chairman of the fund's board be an independent director would all be constructive steps.**

The better the investing public is informed about mutual fund costs, the more likely it is that these costs will at last be forced to return to reasonable levels and redress the inbalance between the interests of fund investors and the interests of fund managers. Giving fund boards true independence from the fund's adviser would be a major step forward.

Statement

I have been both a student of, and an active participant in, the mutual fund industry for more than half a century. My interest began with an article in the December 1949 issue of *Fortune* magazine that inspired me to write my Princeton University senior thesis ("The Economic Role of the Investment Company") on this subject. Upon graduation in 1951, I joined Wellington Management Company, one of the industry pioneers, and served as its chief executive from 1967 through January 1974. In September 1974, I founded the Vanguard Group of Investment Companies, heading the organization until February 1996, and remaining as senior chairman and director until January 2000. Since then I have served as president of Vanguard's Bogle Financial Markets Research Center.

Vanguard was created as a *mutual* organization, with its member mutual funds as the sole owners of the management company, Vanguard Group, Inc. The company operates the funds on an "at-cost" basis. Essentially, we treat our clients—the fund shareholders—as our owners, simply because they *are* our owners. We are the industry's only *mutual* mutual fund enterprise

Recognizing the simple mathematics of the financial markets is our stock in trade. If a market's annual return, for example, is 10% and the total cost of financial intermediation is 2½%, then the net annual return to investors in that market is 7½%—75% of the market's return. These mathematics are eternal, immutable, and unarguable. So the firm that I created is dedicated above all to minimizing the operating expenses, the management fees, and the portfolio transaction costs that our shareowners incur. The objective is to deliver to our investors a return that is as close as humanly possible to 100% of the return of any market in which they chose to invest.

I believe it is fair to say that we have succeeded in minimizing the costs of fund ownership. Since Vanguard's creation, the Vanguard fund expense ratios have steadily declined, from 0.73% in 1974 to 0.60% in 1985, to 0.30% in 1994, to 0.27% in 1999, when they leveled off. **Exhibit I.** Last year, the operating expenses and management fees paid by our funds came to 0.26% of their net assets, the lowest "expense ratio" of any firm in this industry. During 2002 the average expense ratio reported by Lipper Inc. for all stock, bond, and money market mutual funds was 1.36%. That 1.10% cost saving, applied to our present fund net assets of $550 billion, results in *annual* savings for our owners of $6 billion.

Recognizing the critical nature of the link between mutual fund costs and mutual fund returns has been central to Vanguard's rise to industry leadership in asset growth, cash flows, and market share. (Our share of industry assets has risen for twenty consecutive years, from 1.9% in 1982 to 8.7% in 2002.) That growth has come largely in areas where the link between cost and return is virtually causal: Stock index funds (in 1975, we created the first index mutual fund); index and index-like bond funds (we also created the first such funds); and money market funds, which are sufficiently commodity-like to assure that their net yields hold a direct, virtual one to one, relationship to costs: *The lower the cost, the higher the yield to investors.* The net assets of the Vanguard funds in these three categories total $425 billion, or 77% of our asset base.

Costs Matter

This linkage between cost and return is not just academic theory. It appears most clearly in money market funds, whose *gross returns* inevitably cluster around the interest rate for short-term commercial and bank paper. But when the *net yields* of money market funds are considered, the variations are enormous. With a correlation of 0.96 (1.00 is perfect), the rankings of money fund *yields* during the five years 1997-2002 closely paralleled the rankings of money fund *costs* during the same period. Simply put, the *lowest*-cost decile of funds earned a gross return of 4.80% and deducted an expense ratio of 0.37%, for a net yield of 4.43%. The *highest*-cost decile earned 4.67%, deducted 1.74%, and produced a net yield of 2.93%. **Exhibit II**. *Money fund investors could have improved their annual yield by 51% simply by choosing the lowest-cost funds.*

While the correlation between the costs and returns of actively-managed equity funds is less visible, it is nonetheless powerful and profound. A study of stock fund returns during the decade ended June 30, 2001, for example, showed that the low-cost quartile of funds earned an average net return of 14.5% per year, while the average high-cost fund earned an average of 12.3%, a 2.2% gap that was even *larger* than the 1.2% expense ratio gap between the two groups (0.64% vs. 1.85%). **Exhibit III, Appendix**.

An additional statistical test showed that this clear linkage between cost and return prevailed even more strongly when fund returns were adjusted for risk. The higher-cost funds were clearly assuming *higher* risks, and the return gap in favor of the low-cost quartile rose to 3.0% per year.

The cost-return relationship also prevailed when funds were grouped by their investment styles (large-cap growth, small-cap value, etc.), using the nine "Morningstar boxes." Significantly, the low-cost advantage prevailed **in** *all nine* of the style boxes, with eight of the comparisons yielding a risk-adjusted return advantage for the low-cost funds in the narrow range of 1.9% to 4.3%. (In the small-cap value group, there were only six funds in each quartile. Here, the low-cost funds produced 5.3% per year in extra return.) **Exhibit III, Page 3**.

Risk-Adjusted Returns
Ten Years Ended June 30, 2001

	Low-Cost Quartile	High-Cost Quartile	Low-Cost Advantage
Large-Cap Value	**15.3%**	**13.4%**	**1.9%**
Large-Cap Blend	**14.6**	**11.0**	**3.6**
Large-Cap Growth	**13.3**	**10.2**	**3.1**
Mid-Cap Value	**15.8**	**11.5**	**4.3**
Mid-Cap Blend	**14.3**	**12.4**	**1.9**
Mid-Cap Growth	**13.7**	**11.6**	**2.1**
Small-Cap Value	**15.9**	**10.6**	**5.3**
Small-Cap Blend	**15.1**	**11.8**	**3.3**
Small-Cap Growth	**16.6**	**13.7**	**2.9**
All Funds	**13.8%**	**10.8%**	**3.0%**

In both theory and practice, therefore, *costs matter*. It therefore follows that fund investors should have full disclosure of all investment costs.

A Changing Industry

The mutual fund industry that I read about in *Fortune* magazine in 1949 is almost unrecognizable today. Over and over again, the article spoke of "trustee," "trusteeship," "the investment trust industry," words that we rarely see today. Over the half-century-plus that followed, in my considered judgment, the fund industry has moved from what was largely a business of stewardship to a business of salesmanship, a shifting of our primary focus from the management of the assets investors have entrusted to our care to the marketing of our wares so as to build the asset base we manage.

While there may be room to argue about the exact nature of the change in industry *intangibles*, there can be no question about the change in industry *tangibles*. These changes can be easily measured. **Exhibit IV.** In summary:

1. Today's mutual fund industry is far larger ($6.5 trillion of assets vs. $2 *billion*), and offers more asset allocation choices (then 90% stock funds, now 50% bond and money market funds).

2. Equity funds are more risk-oriented, with only one of eight among 3,650 equity funds generally reflecting the broad stock market today, compared with *nine* out of ten of all 75(!) equity funds doing so in 1949.

3. Then, funds were managed by investment committees. Now, the individual portfolio manager is the *modus operandi.*

4. Measured by annual portfolio turnover—then 16%, now 110%—our equity fund investment philosophy has moved from long-term *investing* to short-term *speculation.*

5. With that change, we have moved away from our earlier active role in corporate governance to a role that is largely passive.

6. Our shareholders, on average, now hold their *fund* shares for much shorter periods—just over two years, compared to 16 years in the 1950s and 1960s.

7. As the creation of new funds (often speculative funds, formed to capitalize on the market fads of the day) has soared, the fund failure rate has risen to an all-time high. (At present rates, fully one-half of all of today's funds won't be around a decade hence.)

8. The costs of fund ownership have also soared, with expense ratios of the largest funds rising 134%—from 0.64% in 1951 to 1.50% in 2002.

9. Once a profession practiced almost entirely by privately-held enterprises, the management of mutual funds has largely become the business of giant financial conglomerates, which own 36 of the 50 largest fund managers.

The question is: Have these changes in the fund industry been a service to fund shareholders? Or have they been counterproductive to their interests?

Mutual Fund Expenses

The final section of Exhibit IV endeavors to answer that question: *These changes have adversely affected the returns earned by equity fund investors*. Largely because of far higher

costs, the returns earned by the average mutual fund in the "new" industry has lagged the returns of the stock market itself (measured here by the Standard & Poor's 500 Stock Index) by a substantially larger amount than the lag during the era of the "old" industry.[1] Specifically, the performance lag has nearly doubled, from 1.6 percentage points per year to 3.1 percentage points per year. Here are the figures:

	Annual Rate of Return	
	Old Industry	**New Industry**
	1950-1970	**1982-2002**
Stock Market	**12.1%**	**13.1%**
Average Equity Fund	**10.5**	**10.0**
Lag	**1.6%**	**3.1%**
% of Return Captured by Average Fund	**87%**	**76%**

When the impact of these returns and these lags are compounded over time, the shortfall in the returns earned by fund investors is dramatic. This example shows the returns on a $10,000 initial investment at the start of each period:

	Profit on $10,000 Initial Investment	
	1950-1970	**1982-2002**
Stock Market	**$88,820**	**$105,250**
Average Equity Fund	**63,670**	**56,765**
Total Shortfall	**$25,150**	**$48,485**
% of Cumulative Market Profit Captured by Average Fund	**72%**	**54%**

It is the investor who puts up 100% of the capital and takes 100% of the risk. Yet in this example, the investor in the average mutual fund received only a bit over one-half of the market's profit in the recent bull market. It would seem obvious that we ought to know *why*.

Fund Costs Make the Difference

As it turns out, the major reason that the return of the average equity fund lagged the stock market by 3.1% is the costs that investors' funds incur—the management fees, the operating

[1] To make matters worse, the return of the average mutual fund *shareholder* fell far short of the return earned by the average *fund*. While the average fund earned 10% during the past two decades, the average fund investor earned only 2.0%. (See Exhibit IV, pages 15-16.)

expenses, the-out-of-pocket fees, the portfolio transaction costs, the sales charges, and the "opportunity cost" represented by the significant cash positions typically held by funds. I estimate the *average* annual impact of these costs over the past 20 years as follows:

Cost Category	Amount
Management Fees	**0.9%**
Other Operating Expenses	**0.4**
Expense Ratio	**1.3%**
Portfolio Transaction Costs (estimated)	**0.8**
Sales commissions (annualized)	**0.5**
Opportunity Cost[2]	**0.5**
Total	**3.1%**

It may be coincidental that the fund costs *exactly* match the fund lag, but it is *not* coincidental that the two numbers are *similar*. For intuition tells us, and the record confirms, that equity mutual funds as a group produce *before-cost* returns that are similar to the returns earned by the stock market itself. After all, when funds buy and sell stocks, it is often among one another and with other financial institutions. It would strain credulity to imagine that an entire giant equity fund industry—now owning nearly *one-fourth* of all of the stocks in the market—could provide a higher return (or, for that matter, a lower return), before costs, than the return of the very equity market in which it invests.

Trends in Fund Expenses

It seems obvious not only that it is costs that make the difference between success and failure in investing, but that fund costs have been in an upward trend over the long-term and are today at the highest levels in history. Certainly we *know* that the expense ratio of the average equity fund has risen from 0.98% in 1978 to 1.61% in 2002, a 64% increase. **Exhibit V**. (Source: Lipper Inc.)

[2] In this two-decade period in which annual stock returns averaged 13%, short-term investments earned an average of about 5%, an eight percentage point differential. A typical fund with about 6% in cash reserves, therefore, would have incurred an opportunity cost about 48 "basis points" (one-half of one percent per year).

Such sweeping industry averages, heavily weighted by the thousands of new funds that entered the industry, present one perspective on the rise in fund costs. Another perspective shows an even larger increase. An examination of the changes in the expense ratios of the 25 funds that dominated the "old" industry back in 1951 shows that, despite the fact that the average assets of these funds had risen nearly 60-fold, their average expense ratio had risen 66%—from just 0.64% to 1.06%. Of the 20 funds that survived this half-century era, only three (Vanguard Wellington, Fidelity Fund, and American Fundamental) reduced their expense ratios. The average expense ratio of the other 17 funds rose from 0.60% in 1951 to *1.16%* in 2002, an increase of nearly 100%. **Exhibit VI.**

This substantial increase in expense ratios, combined with the staggering growth of fund assets, means that the revenues generated to fund managers rose almost exponentially. Specifically, these 25 original funds were operated at an average cost of just $520 *thousand* in 1951; in 2002, the average cost of the 20 remaining funds came to $44 *million*, a 85-fold increase, dwarfing the 57-fold increase in assets.

Of course, like the Consumer Price Index, fund operating costs have risen during this long era, and of course funds are providing more investor services than heretofore (though modern information technology has created substantial efficiencies). But the fact is that there are *staggering* economies of scale involved in the investment management process. (When a fund grows from $500 million to $5 billion, the manager hardly requires ten times as many security analysts.) *There is no evidence whatsoever that fund managers have shared these economies of scale with fund owners*. Indeed, the evidence presented in Exhibit VI clearly shows that the preponderance of managers have not only arrogated these savings to themselves, *but have increased fees as well*, adding to their already substantial profit margins.

Following the Money

I estimate that the direct expenses incurred by *all* mutual funds of *all* types in 2001 amounted to about $73 billion dollars (1.1% of average fund assets of $6.7 trillion), of which about $15 billion represented direct operating costs and $58 billion represented fees paid to fund managers. Based on the pre-tax profit-margin of 45%, typical of publicly-held fund managers, we can estimate that the profits of fund managers total about $26 billion. Thus the managers' costs of operating the funds came to about $32 billion. Some $27 billion was probably

represented by marketing costs and other operating costs, with no more than $5 billion—about 7% of total fund costs—expended on portfolio management and research services, the principal service that fund investors seek.

The foregoing figures are, I believe, reasonable estimates. But the fact of the matter is that we simply *don't know* nearly as much as we should about where the money goes in the mutual fund industry. *We ought to know*. It is high time that either the SEC or General Accounting Office conduct an economic study of this industry, showing the specific sources and uses of shareholder dollars. Given the obvious and crucial role of fund costs in shaping fund returns, it is high time to "follow the money," wherever the trail may lead.

Other Studies of Costs

The Investment Company Institute has produced numerous studies of mutual fund costs over the years. They purport to show that what they refer to as "the cost of fund ownership" is not only far below the cost figures presented earlier in this statement, but reflects a long-term secular downtrend. But because of a flawed statistical approach and an remarkably narrow definition of "cost," the ICI conclusions are not supportable. **Exhibit VII.** In brief:

1. By weighting the data, not by the average *fund* or by fund *assets*, but by *sales*, the ICI captures, not a long-term reduction in the costs charged by the industry, but investors' ever-increasing selection of lower cost funds. Price competition, however, is properly defined, *not by the action of consumers, but by the action of producers*.

2. The ICI's original 1998 study noted that the cost reduction had come largely in funds with extremely high costs, and that the lowest-cost decile actually *increased* costs by an estimated 27%. (This analysis was subsequently dropped.)

3. The study acknowledged that much of the cost reduction was attributable to index funds and funds sold to large institutions; costs for regular equity fund investors were 10% higher than the reported figure.

4. The ICI data also *exclude* many of the costs of fund ownership, including the substantial costs of portfolio turnover. I estimate that these other costs would increase their (flawed) 2001 annual cost figure of 1.28% for equity fund ownership to 2.70%, an increase of more than 100% (i.e. the ICI understates fund costs by fully 50%). If *unweighted*, the cost would rise to another 0.61% to 3.31%, 160% above the ICI figure.

Cost Disclosure

Investors are largely unaware of the high level of mutual fund costs, and even less aware of the powerful effect of these costs on the compounding of their returns over the long-term. Since managers have an obvious vested interest sustaining this ignorance, I believe that we urgently need new SEC rules that require greater cost disclosure. Some recommendations:

1. Annual mutual fund shareholder statements should inform each fund owner as to the *dollar amount* of expenses he or she is incurring through the fund's expense ratio. This figure should not be *backward*-looking, for the calculation complexities are truly awesome. It should be *forward*-looking, showing the expected annual expense based on the value of the shareholder's investment at year-end. At the same location where the statement presents the year-end dollar value of the account, it should also present the dollar amount of expenses expected during the coming year. That figure would simply be the product of multiplying the account balance by the fund's most recent annual expense ratio, or, if materially different, a reasonable estimate of the projected expense ratio during the coming year. A footnote would present both the calculation methodology and the expense ratio used to make the calculation. For example, if a shareholder's year-end value were $11,212 and the expense ratio were 1.58%, an annual expense of $177 would be projected on the shareholder's statement.

2. The present prospectus cost-impact statement combining expense ratio and sales charges and providing costs on a $10,000 investment over three-, five-, and ten-year periods should be modified by adding transaction costs so the "all-in" cost of fund ownership is fully disclosed. This disclosure should be included in both the annual report and prospectus. I emphasize that these transaction costs go well beyond mere commission costs, to market spreads, market impact, etc., even as I recognize that these costs are difficult to measure with precision. But even a rough estimate (although I believe most managers have much better information than that) would be better than no estimate at all. Once we have had some experience with the reporting of these transaction cost data, we should consider adding transaction costs to the direct expenses presented in the shareholder statement. For example, using the above example, if estimated transaction costs were equal to 1.00% of net assets, all-in costs would be 2.58%, or $289 in annual costs for the shareholder.

3. Cost disclosure in fund annual reports must be enhanced, so that shareholders can relate fund cost to fund returns. Funds should be required to present a table, either on the inside cover of the report or the immediately facing page, the following information:

a) The fund's total return for the year, compared to a) whatever market sector benchmark (if any) it deems appropriate, *and* b) the annual return of the broad market in which it invests (i.e. the *total* stock market, *total* taxable bond market, *total* exempt bond market), etc.

b) Rate of portfolio turnover during the year, and the estimated impact of transaction costs on returns (i.e., the ratio of transaction costs to net assets).

c) *Total* costs for the year as a percentage of net assets, including a) the expense ratio, and b) the transaction cost ratio.

d) The total *dollar amount* of costs incurred by the fund during the year, including the amount of the management fee, the amount of the 12b-1 fee, and other operating expenses.

Like the disclosure of each investor's costs in the annual shareholder statement, this added disclosure in the annual report and would enhance the investors' understanding of the amount of costs they are incurring and the impact of costs on the returns they receive.

A Money Market Fund Example

Cost disclosure is important because cost plays such a crucial role in shaping the returns earned by fund owners. While the importance of cost applies to all types of mutual funds, it is most obvious in money market funds. There, the tension between operating a fund in the interest of shareholders and operating it in the interests of management companies can be measured directly. *The impact is virtually dollar-for-dollar*. There is simply no way to seriously allege that a money fund's portfolio manager can outguess in a meaningful way the vast, efficient and professional market for short-term funds. (In fact, the record is clear that in the few cases where managers have attempted to do so, they have lowered quality standards, resulting in substantial losses for the fund, typically made whole by its management company.)

As shown earlier in Exhibit I, money fund performance comes down almost entirely to relative costs. While there are few examples about the nature of the costs that money funds incur, those that we have are instructive. The Vanguard money market funds, for example, are operated *at cost* by their own employees, and report the exact amount of costs that they incur on each of the principal activities involved: 1) investment management; 2) distribution of shares; and 3) shareholder services and operations. The Smith Barney money market funds, on the other hand, are among a handful of money funds that pay separate fees to their external service providers for each of these three services. Thus, we can make a fair comparison of where the money goes. During 2000, the money fund assets of the two groups were virtually identical, so the comparison is striking. **Exhibit VIII**.

The aggregate assets of the Smith Barney money funds in 2000 were $64.8 million compared to $67.4 million for the Vanguard money funds. *Yet the expenses of the two organizations were radically different.* Smith Barney's costs totaled almost $380 million, nearly 90% higher than Vanguard's costs of just over $200 million. The former's expense ratio was

0.59%, nearly *double* the latter's. Specifically, under their investment management contracts, the funds paid Smith Barney $257 million to "select the fund's investments and oversee (their) operations." The actual cost of Vanguard's analysts and portfolio managers was $8 million. Adding in another $8 million for management overhead brought the total to almost $16 million. What could *possibly* account for this gap of $241 million? It couldn't be distribution or shareholder services for, they are accounted for separately. A money market fund requires only so much management, and it can't cost but a small fraction of a quarter of a billion dollars. To the extent that $241 million gap between Vanguard's *costs* and Smith Barney's *fees* represent a profit to Citicorp, those profits come at the direct cost of the return earned by the funds' shareholders.

It is for this obvious reason that shareowners deserve complete information, not only about the costs incurred by their *funds* in the form of management fees, but the costs incurred by their *managers* in return for providing those services. Simply providing this information to investors should help bring the fees that mutual funds pay to their service providers into a more reasonable relationship to the actual costs those providers incur, especially in commodity type funds where the ability of managers to add sustained value is not a possibility. (Or, if it is argued that there is a small possibility, it is dwarfed by the size of the fees themselves.)

Fee Negotiations

The cost example used above is, in a sense, unfair. Of course a *mutual* at-cost organization such as Vanguard should deliver lower costs than one operated by a profit-making firm such as Smith Barney. But the gap seems, well, disproportionate. What is more, while Vanguard operates its money funds, most bond funds, and all index funds at cost, it also has entered into numerous contracts with external investment advisers—profit-making entities—all who provide their services to Vanguard's *actively managed* funds, engaging in arms-length negotiations to establish appropriate fees.

The fee scales we have negotiated over the years go back to Vanguard's founding in 1974, when our investment management fees were reduced in an amount more-than-commensurate with the direct costs that the funds would incur when the firm assumed the responsibility for Vanguard's operations. They were reduced again in 1977, and again by an amount more-than-commensurate with the extra costs incurred, when Vanguard assumed the

responsibility for distribution. At that point, controlling its own operations and distribution, Vanguard was in a position to negotiate with its former management company, Wellington, *solely* on the basis of its investment advisory services, just as do the trustees of large corporate pension funds.

As circumstances changed and fund assets grew over the years, Vanguard negotiated frequent fee reductions with the external independent investment managers responsible for its actively-managed funds. Taking into account not only these fee reductions but the economies of scale involved in Vanguard's shareholder services and other operations, the average expense ratio for the equity funds (including index funds) in the Vanguard Group *declined* from 0.74% in 1978 to 0.66% in 1984, to 0.38% in 1994, and to 0.33% in 2002. During the same period, the expense ratio of the industry's average equity fund actually increased from 0.98% in 1978 to 1.61% in 2002. **Exhibit IX**.

Credit for much of this 55% *drop* in Vanguard's unit costs in face of a 64% *increase* in the unit costs of other equity funds came from unremitting arms-length negotiations with our external advisers, the most recent of which took place in 1995. Our goal was to adopt steeply-sliding fee scales that would not require negotiations as assets grew, in effect to demand that our investors receive their fair share of the advisers' economies of scale, and in part to anticipate future growth that would not require the give-and-take tension of frequent fee renegotiations. For example, the Vanguard Wellington Fund effective fee rate, paid to adviser Wellington Management Company, was reduced as follows:

1978	-30%
1983	-6%
1986	-15%
1991	-26%
1995	-17%

At the fund's 2002 asset total of $22 billion, with a base fee of $8.5 million, and each additional billion-dollar increase in assets resulting in an additional fee of just $300,000 (three basis points), the advisory fee average rate is 0.04%. In 2002, the fund's expense ratio (the fund's share of Vanguard's costs of 0.30%, plus the advisory fee of 0.04%) was 0.34%, 70% below the 1.18% expense ratio of its balanced fund peer group. *If Wellington were today paid under the 1975 fee scale, its fee would have been $92 million, or $83.5 million larger than the $8.5 million actually paid to its external advisor.*

The Vanguard GNMA fund presents a similar, if starker, illustration. Following its founding in 1980, the fund grew substantially, and both its advisory fee and its expense ratio dropped steadily, from 0.65% at the outset to 0.34% in 1990, to 0.24% in 2002. The fund's advisory fee scale was reduced as follows:

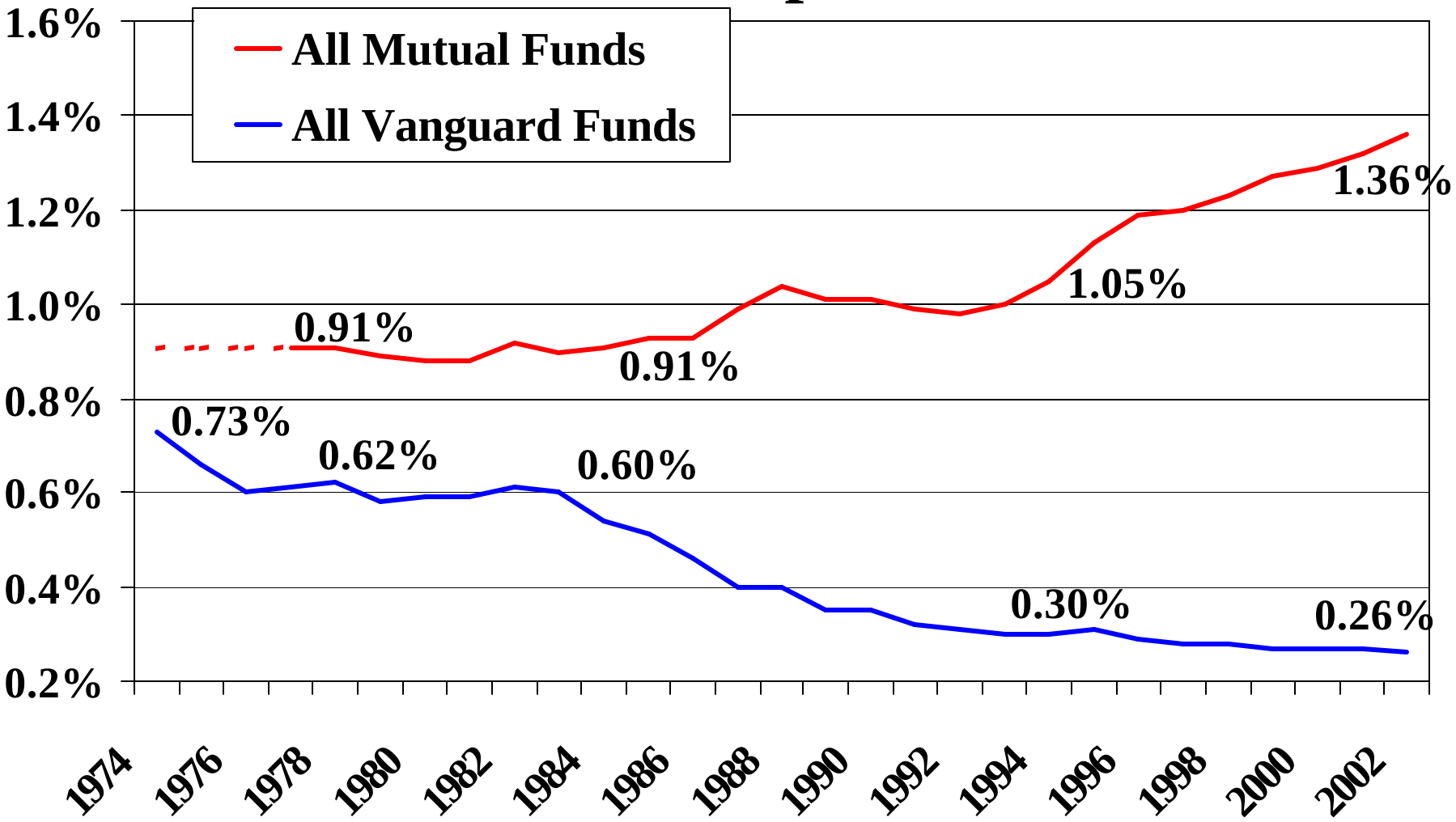
1983	-56%
1986	-12%
1991	-14%
1995	-48%

For 2002, the advisory fee amounted to 0.009% of the fund's assets (i.e., less than *one basis point*). (The average management fee on other GNMA funds appears to be about 0.45%.) At the fund's present size of $27 billion, it generates fully $2,600,000 in advisory fees to Wellington's fixed-income group, doubtless well in excess of their costs. While each additional $1 billion of assets produces an added fee of only $90,000, the extra assets—invested as they are in securities whose principal value is guaranteed and interest payments are guaranteed by the U.S. Government—creates no extra costs for credit research. This miniscule fee rate, added to the fund's share of Vanguard's operating expenses of 0.23%, brings its total expense ratio to 0.24%, fully 77% below the expense ratio of the average GNMA fund, a major advantage to investors. *If the Vanguard GNMA fund had adhered to its original fee schedule, its fee last year would have been $21 million, more than $18 million larger than the $2.6 million fee actually paid to its external advisor.* **Exhibit X** presents the actual fee schedules for Vanguard's Wellington Fund and GNMA Fund over the years.

Lower fees have been heavily responsible for the fact that both our Wellington and GNMA funds have provided superior returns to their shareholders over the years. *In 1987 – 2002, for example, Wellington outperformed 90% of all balanced funds, and GNMA outperformed 99% of all GNMA funds.* Yet our fee *rate* reductions are normally very small, and only nominally erode huge *increases* in the *dollar amount* of fees received by our external advisers. But the examples in Exhibit X clearly illustrate both the tremendous cumulative impact a number of reductions can have over time, and the huge value fee negotiations can have for fund investors. Such arms-length negotiation, however, is conspicuous only by its absence in the mutual fund industry. Establishing some way for funds to negotiate with advisers is a change long overdue.

Exhibit I

Mutual Fund Expense Ratios



Source: Lipper Inc.

Lipper data are not available until 1978. Thus, ERs for 1974 – 1977 are assumed to be the same as 1978's, 0.91%.

Exhibit II

Money Market Fund Gross Returns, Expense Ratios, and Net Returns; 1998 - 2002

Please note the consistency between each fund's rank in net return and expense ratio (ER). While 94% of the funds earned *gross returns* between 4.90% and 4.60%, the top decile of funds earned *net returns* averaging 4.43%, while the bottom decile earned 2.93%. The difference between the two deciles: expense ratios averaged 0.37% for the top group; expense ratios averaged 1.74% for the bottom group. (The statistical correlation between costs and net returns was 0.96.)

Net Return Rank	Expense Ratio Rank (1 is lowest)	Fund Name	Gross Avg Ann Return 1998 - 2002	Avg ER 1998 - 2002	Net Avg Ann Return 1998 - 2002
1	1	Elfun Money Market	4.77	0.19	4.58
3	2	Transam Prem:Csh R;Inv	4.75	0.25	4.50
12	2	INVESCO Treas MM R;Inv	4.68	0.25	4.43
5	4	Scudder MM;Prem S	4.75	0.27	4.48
6	5	TIAA-CREF:Money Market	4.77	0.29	4.48
2	6	ScudderYldWise Money	4.80	0.29	4.51
7	7	Bunker Hill Money Mkt;R	4.75	0.30	4.45
16	8	McMorgan:Prin Pres	4.72	0.30	4.42
4	9	Vanguard Prime MM;Inv	4.82	0.33	4.49
21	10	ABN AMRO:Money Mkt;I	4.72	0.34	4.38
11	11	Deutsche Mny Mrkt	4.78	0.35	4.43
17	12	Strong Heritage Mny;Inv	4.78	0.36	4.42
19	13	Fremont:Money Market	4.78	0.38	4.40
35	14	Mercantile:Prime MM;Inst	4.70	0.38	4.32
22	15	SSgA:MM;A	4.77	0.39	4.38
68	16	Capital Cash:Mgt;Org	4.58	0.40	4.18
10	17	CitiFunds Prem:Liq Rsvs	4.83	0.40	4.43
20	18	Schwab:Val Adv Mny;Inv	4.81	0.41	4.40
29	19	Active Assets Money Tr	4.77	0.42	4.35
15	20	Flex-funds:Money Market	4.84	0.42	4.42
9	21	Marshall:MM;Inv	4.87	0.43	4.44
13	22	Fidelity Cash Reserves	4.85	0.43	4.42
14	23	Fidelity Sprt Money Mkt	4.86	0.44	4.42
28	24	Scudder Money Market Fd	4.81	0.45	4.36
18	25	T Rowe Price Sum:Cash	4.86	0.45	4.41
8	26	Dreyfus BASIC MM	4.90	0.45	4.45
34	27	Harbor:Money Market;Inst	4.77	0.45	4.32
24	28	Amer Cent:Premium MM;Inv	4.82	0.45	4.37
43	29	Nicholas Money Market	4.75	0.46	4.29
45	30	Managers:Money Market	4.74	0.46	4.28
33	31	Preferred:Money Market	4.79	0.46	4.33
51	32	Excelsior:Money	4.71	0.47	4.24
53	33	Vision:Inst Prime MM	4.72	0.48	4.24
27	34	Fidelity Sel Money Mkt	4.84	0.48	4.36
26	35	WellsFargo:CI MM;S	4.85	0.48	4.37
30	36	Finl Insts:Summit Cash;A	4.82	0.48	4.34
36	37	Putnam Money Mkt;A	4.80	0.48	4.32
23	38	USAA Money Market	4.87	0.49	4.38
25	39	RBB:Money Mkt;Sansom St	4.86	0.49	4.37
49	40	GE Funds:Money Market;A	4.75	0.49	4.26
48	41	UBS PACE MM	4.77	0.50	4.27
91	42	Sit Money Market Fund	4.64	0.50	4.14
32	43	Eclipse:MM;NL	4.83	0.50	4.33
46	44	WT:Wilm Prime MM;Inv	4.79	0.51	4.28
88	45	UMB Scout Mny Mrkt:Prime	4.66	0.51	4.15
72	46	ABN AMRO:CC Mny Mkt;N	4.68	0.51	4.17
50	47	Eureka:Prime Money;Tr	4.76	0.52	4.24
44	48	Command Money Fund	4.82	0.54	4.28
39	49	Harris Ins:Mny Mkt;N	4.84	0.54	4.30
31	50	Merrill Retire:Rsvs;I	4.88	0.54	4.34
60	51	AXP:Cash Management;A	4.74	0.54	4.20
47	52	Amer AAdv:MM;Plan	4.81	0.54	4.27
79	53	Salomon Bros:Csh Mgt;2	4.70	0.54	4.16
80	53	Salomon Bros:Csh Mgt;A	4.70	0.54	4.16
81	53	Salomon Bros:Csh Mgt;B	4.70	0.54	4.16
86	53	Salomon Bros:Csh Mgt;O	4.69	0.54	4.15
70	57	PaineWbr Cashfund	4.73	0.55	4.18
38	58	Northern Fds:Money Mkt	4.86	0.55	4.31
64	58	Crdt Suis Cash Rsv	4.74	0.55	4.19

Net Return Rank	Expense Ratio Rank (1 is lowest)	Fund Name	Gross Avg Ann Return 1998 - 2002	Avg ER 1998 - 2002	Net Avg Ann Return 1998 - 2002
84	60	Members:Csh Reserves;A	4.70	0.55	4.15
40	61	CMA Money Fund	4.85	0.56	4.29
66	62	Sm Barney Money:Cash;L	4.75	0.56	4.19
57	63	First Funds:Cash Rsv;C	4.78	0.57	4.21
42	64	ING:Aeltus Money Mkt;I	4.86	0.57	4.29
104	65	Pac Cap:Cash Assets;Orig	4.67	0.57	4.10
41	66	ING:Aeltus Money Mkt;A	4.86	0.57	4.29
82	67	Armada:Money Market;A	4.72	0.57	4.15
54	68	Amer Cent:Prm MM;Inv	4.80	0.58	4.22
52	69	Morg Stan Liquid Asset	4.83	0.59	4.24
128	70	American Funds Cash;A	4.63	0.59	4.04
85	71	Neuberger Cash Rsvs;Inv	4.74	0.59	4.15
67	72	UBS PW RMA Money	4.78	0.59	4.19
119	73	AIG Money Market;B	4.66	0.59	4.07
87	74	Sm Barney Money:Cash;A	4.75	0.60	4.15
96	75	Amer Perform:Cash Mgmt	4.72	0.60	4.12
105	76	PIMCO:Money Mkt;C	4.70	0.60	4.10
108	76	PIMCO:Money Mkt;A	4.69	0.60	4.09
55	78	Janus Money Market;Inv	4.82	0.60	4.22
98	79	Columbia Daily Income;Z	4.71	0.60	4.11
75	80	Enterprise:MM;C	4.78	0.61	4.17
69	81	Enterprise:MM;A	4.79	0.61	4.18
74	81	Enterprise:MM;B	4.78	0.61	4.17
62	83	STI Classic:Prm MM;Tr	4.81	0.61	4.20
71	84	Strong Money Market Fund	4.79	0.61	4.18
125	85	Perform:Money Mkt;A	4.67	0.62	4.05
59	86	ARK Fds:Mny Mkt;A	4.82	0.62	4.20
56	87	T Rowe Price Prm Rsv	4.84	0.62	4.22
63	88	Amer AAdv Mile:MM;Mile	4.82	0.63	4.19
95	89	Scudder Cash Rsrv;A	4.76	0.63	4.13
78	90	Putnam Money Mkt;M	4.79	0.63	4.16
99	91	Great Hall:Prime MM:Inv	4.74	0.63	4.11
131	92	PBHG:Cash Reserves;PBHG	4.67	0.64	4.03
61	93	Merrill Ready Assets	4.84	0.64	4.20
90	94	Franklin Money Fund	4.78	0.64	4.14
127	95	Vision:MM;A	4.69	0.64	4.05
113	96	Galaxy:Money Mkt;Rtl A	4.72	0.64	4.08
130	97	Gartmore:MM;Prm	4.68	0.65	4.03
209	98	Seligman Cash Mgmt;A	4.34	0.65	3.69
58	99	Nations Cash Rsv;Inv A	4.86	0.65	4.21
107	100	Golden Oak:Pr Ob MM;A	4.74	0.65	4.09
189	101	Reynolds:MM	4.44	0.65	3.79
73	102	Cash Accum:Natl MM	4.82	0.65	4.17
106	103	Scudder Cash Rsrv;Prm	4.76	0.66	4.10
111	104	WM:MM;A	4.75	0.66	4.09
116	105	MFS Money Market	4.74	0.66	4.08
147	106	Value Line Cash Fund	4.66	0.66	4.00
76	107	Centennial MM Trust	4.83	0.67	4.16
77	108	Prudential MoneyMart;A	4.83	0.67	4.16
122	109	SS Research MM;E	4.73	0.67	4.06
109	110	Principal Cash Mgmt;A	4.76	0.67	4.09
97	111	Fidelity:Prime;Dly Mny	4.80	0.68	4.12
37	112	Touchstone Inv:MM;A	5.00	0.68	4.32
102	113	Victory:Financial Rsvs	4.79	0.68	4.11
142	114	Riggs:Prime MM;Y	4.69	0.68	4.01
123	115	Expedition:MM;Insv	4.74	0.69	4.05
118	116	WM Blair:Ready Rsvs;N	4.77	0.69	4.08
114	117	MainStay:MM;A	4.78	0.70	4.08
115	117	MainStay:MM;B	4.78	0.70	4.08
139	119	ABN AMRO:Money Mkt;S	4.71	0.70	4.01
89	120	CitiFunds:Cash Resrv;N	4.84	0.70	4.14
83	121	Dreyfus MM Reserves;Inv	4.85	0.70	4.15
144	122	Wayne Hummer Money Mkt	4.71	0.70	4.01
92	123	Special:Mny Mkt;B	4.84	0.70	4.14
65	124	Dreyfus Liquid Assets	4.89	0.70	4.19
157	125	Legg Mason Cash Reserve	4.67	0.71	3.96
129	126	Fifth:Prm MM;Inv A	4.75	0.72	4.03
153	127	AAL Funds:MM;A	4.69	0.72	3.97
155	128	Heritage Cash Tr:MM;A	4.70	0.73	3.97
156	128	Heritage Cash Tr:MM;C	4.70	0.73	3.97
94	130	Marshall:MM;Adv	4.86	0.73	4.13

Net Return Rank	Expense Ratio Rank (1 is lowest)	Fund Name	Gross Avg Ann Return 1998 - 2002	Avg ER 1998 - 2002	Net Avg Ann Return 1998 - 2002
137	131	UBS PW Retire Mny	4.75	0.73	4.02
93	132	CBA Money Fund	4.87	0.74	4.13
110	133	TD Waterhouse:Mny Mkt	4.83	0.74	4.09
100	134	Oppenheimer Money Market	4.86	0.75	4.11
161	135	Liberty:Mny Mkt;A	4.68	0.75	3.93
112	136	Dreyfus Worldwide Dlr MM	4.83	0.75	4.08
133	137	Deutsche Cash Mgmt;Inv	4.77	0.75	4.02
121	138	Schwab:Money Mkt	4.82	0.75	4.07
120	139	Eclipse:MM;Serv	4.82	0.75	4.07
201	140	Alger:Money Market	4.49	0.75	3.74
158	141	BNY Hmltn:Money;Class	4.70	0.75	3.95
150	142	WellsFargo:Mny Mkt;A	4.75	0.76	3.99
124	143	One Group:Prime MM;A	4.81	0.76	4.05
171	144	Huntington:MM;Inv A	4.62	0.76	3.86
141	145	HighMark:Div MM;A	4.78	0.77	4.01
148	146	Victory:Prime	4.78	0.78	4.00
165	147	AmSouth:Prime MM;A	4.67	0.78	3.89
103	148	Dreyfus Gen Mny Mkt;A	4.88	0.78	4.10
136	149	STI Classic:Prm MM;Inv	4.80	0.78	4.02
146	150	Munder:Cash Invest;A	4.78	0.78	4.00
140	151	First Amer:Prme Oblg;A	4.80	0.79	4.01
170	152	Eaton Vance Cash Mgt	4.65	0.79	3.86
101	153	SAFECO MM Tr:MM;Inv	4.91	0.80	4.11
135	154	Homestead:Daily Income	4.82	0.80	4.02
206	154	Ivy:Money Market Fd;B	4.51	0.80	3.71
152	156	First Inv Cash Mgmt;A	4.78	0.80	3.98
164	156	MFS Cash Reserve;A	4.72	0.80	3.92
149	158	Phoenix-Gdwn Mny Mkt;A	4.79	0.80	3.99
138	159	W&R Adv:Cash Mgmt;A	4.83	0.81	4.02
177	160	Pac Cap:Cash Assets;Srvc	4.66	0.82	3.84
143	161	Vintage Mut:Liqd Ast;T	4.83	0.82	4.01
117	162	SAFECO MM Tr:MM;Adv A	4.90	0.82	4.08
154	163	Cash Equiv:Money Market	4.79	0.82	3.97
162	164	Monarch:Cash Fund;Inv	4.76	0.83	3.93
216	165	Ivy:Money Market Fd;C	4.46	0.83	3.63
180	166	Drey/Founders:MM;F	4.65	0.83	3.82
151	167	BlackRock:MM;IA	4.82	0.84	3.98
163	168	Scudder Cash Inv;S	4.78	0.85	3.93
134	169	Evergreen MM;A	4.87	0.85	4.02
183	170	Guardian Cash Mgmt;A	4.66	0.85	3.81
176	171	Advantus Money Market	4.69	0.85	3.84
126	172	SAFECO MM Tr:MM;Adv B	4.90	0.85	4.05
160	173	CDC Nvest Cash:MM;B	4.78	0.85	3.93
159	174	CDC Nvest Cash:MM;A	4.78	0.85	3.93
132	175	Calvert Soc Inv:MM	4.87	0.85	4.02
145	176	Dreyfus MM Instr:MM	4.86	0.86	4.00
213	177	Ivy:Money Market Fd;A	4.52	0.87	3.65
194	178	INVESCO Cash Rsvs;Inv	4.65	0.88	3.77
182	179	Edward Jones Mny Mkt;Inv	4.70	0.89	3.81
166	180	Delaware Cash Rsv;A	4.78	0.89	3.89
185	181	Pioneer Cash Reserve;A	4.69	0.89	3.80
199	182	Hibrnia:Cash Reserve;A	4.65	0.90	3.75
196	183	Babson Money Mrket	4.66	0.90	3.76
181	184	NorthTrack:Cash;X	4.73	0.91	3.82
173	185	Van Kampen Reserve;A	4.77	0.91	3.86
197	186	J Hancock MM Fund;A	4.67	0.91	3.76
168	187	LIR Premier MM	4.79	0.91	3.88
169	188	Fidelity:Prime;Cap Res	4.80	0.93	3.87
179	189	SunAmerica Mny Mkt;A	4.77	0.93	3.84
175	190	BB&T:Prime Mny Mkt;A	4.79	0.94	3.85
178	191	ProFunds:Money Mkt;Inv	4.78	0.94	3.84
174	192	Amer AAdv:MM;Pltm	4.79	0.94	3.85
203	193	Security Cash Fund	4.69	0.95	3.74
191	194	Lutheran Bro:MM;B	4.73	0.95	3.78
188	195	Lutheran Bro:MM;A	4.74	0.95	3.79
187	196	Scudder Cash Rsrv;Qual	4.75	0.95	3.80
186	197	Putnam Money Mkt;B	4.78	0.98	3.80
192	198	Short Term Inc:MM;A	4.76	0.98	3.78
172	199	RBB:Money Mkt;Bedford	4.84	0.98	3.86
211	200	ING Lexington Money Mkt	4.66	0.99	3.67
198	201	Reserve Fd:Primary;R	4.75	0.99	3.76

Net Return Rank	Expense Ratio Rank (1 is lowest)	Fund Name	Gross Avg Ann Return 1998 - 2002	Avg ER 1998 - 2002	Net Avg Ann Return 1998 - 2002
190	202	Cortland Tr:General MM	4.77	0.99	3.78
215	203	AFD Exchange Rsvs;A	4.62	0.99	3.63
195	204	Alliance Cap Res:Capital	4.76	1.00	3.76
193	205	Alliance Cap Res:Money	4.77	1.00	3.77
202	206	Hartfd:Money Mkt;A	4.74	1.00	3.74
167	207	Dreyfus Gen Mny Mkt;B	4.88	1.00	3.88
204	208	Cash Acct Tr:MM;Svc	4.74	1.01	3.73
184	209	Federated Prime Csh	4.82	1.02	3.80
210	210	AIM Inv:Money Market;CRs	4.70	1.03	3.67
212	211	Riggs:Prime MM;R	4.72	1.05	3.67
200	212	Vintage Mut:Liqd Ast;S2	4.81	1.06	3.75
205	213	Amer AAdv Mile:MM;Pltm	4.79	1.08	3.71
208	214	Federated Money Mkt Mgmt	4.83	1.14	3.69
214	215	Delaware Cash Rsv;Con	4.78	1.14	3.64
207	216	Oppenheimer Cash Rsv;A	4.84	1.14	3.70
218	217	Liberty:Mny Mkt;C	4.65	1.14	3.51
217	218	Franklin/Temp Money;C	4.76	1.18	3.58
221	219	Guardian Cash Mgmt;B	4.65	1.21	3.44
230	220	EquiTrust MM Fund	4.54	1.23	3.31
223	221	Sm Barney Exchge Rsv;L	4.62	1.23	3.39
224	222	AFD Exchange Rsvs;C	4.61	1.24	3.37
222	223	AXP:Cash Management;B	4.71	1.29	3.42
225	224	Members:Csh Reserves;B	4.66	1.30	3.36
219	225	Vintage Mut:Liqd Ast;S	4.81	1.32	3.49
220	226	Principal Cash Mgmt;B	4.79	1.34	3.45
226	227	Scudder Cash Rsrv;B	4.74	1.38	3.36
241	228	ASAF:Money Mkt;A	4.58	1.46	3.12
234	229	WellsFargo:Mny Mkt;B	4.71	1.46	3.25
229	230	First Amer:Prme Oblg;B	4.79	1.47	3.32
227	231	BlackRock:MM;IB	4.81	1.49	3.32
228	232	BlackRock:MM;IC	4.81	1.49	3.32
238	233	AFD Exchange Rsvs;B	4.63	1.50	3.13
237	234	PIMCO:Money Mkt;B	4.68	1.50	3.18
233	235	One Group:Prime MM;B	4.79	1.51	3.28
232	236	Evergreen MM;C	4.84	1.55	3.29
231	237	Evergreen MM;B	4.84	1.55	3.29
236	238	First Inv Cash Mgmt;B	4.76	1.55	3.21
235	239	Phoenix-Gdwn Mny Mkt;B	4.77	1.55	3.22
242	240	Van Kampen Reserve;B	4.75	1.64	3.11
260	240	Seligman Cash Mgmt;D	4.38	1.64	2.74
259	242	Seligman Cash Mgmt;B	4.38	1.64	2.74
243	243	Van Kampen Reserve;C	4.75	1.65	3.10
246	244	SS Research MM;C	4.70	1.67	3.03
245	245	SS Research MM;B	4.70	1.67	3.03
240	246	Oppenheimer Cash Rsv;C	4.82	1.69	3.13
239	247	Oppenheimer Cash Rsv;B	4.83	1.70	3.13
244	248	Hartfd:Money Mkt;B	4.73	1.70	3.03
250	249	Eaton Vance Money Mkt	4.64	1.71	2.93
248	250	Liberty:Mny Mkt;B	4.69	1.71	2.98
249	251	Pioneer Cash Reserve;B	4.67	1.73	2.94
253	252	J Hancock MM Fund;B	4.66	1.76	2.90
251	253	Pioneer Cash Reserve;C	4.68	1.77	2.91
256	254	AIM Inv:Money Market;C	4.69	1.80	2.89
255	255	AIM Inv:Money Market;B	4.69	1.80	2.89
254	256	MFS Cash Reserve;B	4.70	1.80	2.90
257	256	MFS Cash Reserve;C	4.67	1.80	2.87
247	258	AAL Funds:MM;B	4.89	1.88	3.01
252	259	Delaware Cash Rsv;C	4.79	1.89	2.90
258	260	ProFunds:Money Mkt;Svc	4.78	1.94	2.84
261	261	ASAF:Money Mkt;C	4.57	1.96	2.61
262	261	ASAF:Money Mkt;X	4.57	1.96	2.61
263	263	ASAF:Money Mkt;B	4.56	1.96	2.60
		Average	4.75	0.84	3.91

Source: Lipper Inc.

Exhibit III

An Index Fund Fundamentalist

Goes back to the drawing board.

John C. Bogle

In 1997, I prepared a study of the returns for the mutual funds in each of the nine Morningstar "style boxes," a matrix with large-, mid-, and small-capitalization funds on one axis and value, blend, and growth funds on the other (Bogle [1998]). For the five-year period 1992 through 1996, the study presents powerful evidence that the low-cost quartile of funds in each box had earned not only higher returns than those in the high-cost quartile, but also returns that significantly exceeded the cost differential.

The results can be summarized as follows: average return of low-cost funds, 14.9%; average return of high-cost funds, 12.3%. This difference of 2.6 percentage points is *double* the 1.3 percentage point expense ratio differential of the funds (annual expense ratio of low-cost quartile, 0.7%; expense ratio of high-cost quartile, 2.0%). The differential *increases* slightly when risk-adjusted returns are substituted for total returns.

As a result, I concluded:

> An investor who doesn't seriously consider limiting selections to funds in the low-expense group and eschewing funds in the high-expense group is someone who should take off the blinders—perhaps even a bit of a fool [1998, p. 38].

THE ROLE OF COSTS

Emboldened by the magnitude and consistency across the nine style boxes, I then asked, in effect: *Since*

JOHN C. BOGLE is founder and former chairman of The Vanguard Group in Valley Forge, PA 19482.

the lowest-cost funds in the marketplace today are index funds, why not just buy index funds in each of the style boxes? I then tested that proposition, and I found the results equally compelling.

In seven of the nine boxes, the comparable-style index produced higher returns, and in all nine boxes, the index funds assumed lower risks. In terms of risk-adjusted returns, the index fund's superiority was substantial in eight boxes, and marginally lower in but one (small-cap growth). Holding risk constant, the indexes delivered a return surplus of 3.6 percentage points per year (16.5% versus 12.9%) in the large-cap group, 4.2 percentage points (18.0% versus 13.8%) in the mid-cap group, and 4.4 percentage points (19.5% versus 15.1%) in the small-cap group.

Armed with this evidence on the relationship between fund costs and fund performance, I then concluded: "The magnitudes . . . are so large and so consistent as to devastate the concept of high-cost active management."

Prudently, however, I added the caveat:

> We should go only so far with five-year numbers in a strong equity market . . . . But a shorter period . . . would be even less satisfactory, and a longer [ten-year] period . . . would cut the number of funds we could observe by half, making for a less reliable sample. . . . Analysis of the [five-year] data . . . deserves testing in other periods and under a variety of market conditions [1998, p. 40].[1]

This article does exactly that, using the ten-year period ending June 30, 2001.

RESULTS

The decade-long period from July 1, 1991, through June 30, 2001, covered in the new study clearly includes a variety of conditions—the quiet stock market of 1992-1994, the boom of 1995-1999, and the subsequent bust in 2000-2001. Interestingly, however, the annual return of the S&P 500 stock index was virtually the same during the past decade (15.1%) as during the earlier study (15.2%). The variation in actual returns between the best and the worst style boxes was wider in the prior study: 3.2 percentage points (15.1% to 11.9%). In the current study, the variation in average return between the extremes is remarkably slight: 1.3 percentage points (14.5% to 13.2%).

Exhibit 1 presents the data.

EXHIBIT 1
ANNUAL RATE OF RETURN
Ten Years Ended June 30, 2001*

	Value	Blend	Growth
Large-Cap	13.6%	13.2%	13.4%
Mid-Cap	14.4	14.5	13.8
Small-Cap	14.5	14.3	14.4

**Source: Morningstar. Includes 634 mutual funds in operation throughout the period.*

EXHIBIT 2
ANNUAL RATE OF RETURN
Ten Years Ended June 30, 2001

	Low-Cost Quartile	High-Cost Quartile	Low-Cost Advantage
Large-Cap Value	14.8%	12.8%	2.0%
Large-Cap Blend	14.7	10.9	3.8
Large-Cap Growth	14.2	11.2	3.0
Mid-Cap Value	15.3	12.5	2.8
Mid-Cap Blend	15.4	14.2	1.2
Mid-Cap Growth	14.7	12.5	2.2
Small-Cap Value	16.8	12.0	4.8
Small-Cap Blend	15.6	11.3	4.3
Small-Cap Growth	15.4	14.5	0.9
All Funds	14.5%	12.3%	2.2%

The hypothesis that the funds in the low-cost quartile would outperform those in the high-cost quartile was again clearly validated during this period, as Exhibit 2 shows. The expense ratio differential during this period was 1.2 percentage points (0.6% for the low-cost funds, 1.8% for the high-cost funds), about the same as the 1.3 percentage point spread in the prior study. But the performance differential is once again approximately double the cost differential, 2.2 percentage points. Each $1.00 of extra cost, then, resulted in a loss of $1.83 of return in the ten-year period, as compared to $2.00 in the five-year period.

Unlike the 1992-1996 period, when the risk exposure of the high-cost funds (standard deviation, 12.2%) was only slightly higher than for the low-cost funds (11.8%), the risk exposure differential during 1991-2001 has increased sharply. The standard deviation of the low-cost funds averaged 17.4%, versus 20.1% for the high-cost funds, a 15.5% greater risk exposure. As a result, the *risk-adjusted* returns of the low-cost funds averaged 13.8%, versus 10.8% for the high-cost funds, raising the performance differential to 3.0 percentage points annually during the past decade. That is, each $1.00 of extra cost resulted in a loss of $2.50 in risk-adjusted return.

It is not possible to understate the significance of

EXHIBIT 3
RISK-ADJUSTED RETURNS
Ten Years Ended June 30, 2001*

	Low-Cost Quartile	High-Cost Quartile	Low-Cost Advantage
Large-Cap Value	15.3%	13.4%	1.9%
Large-Cap Blend	14.6	11.0	3.6
Large-Cap Growth	13.3	10.2	3.1
Mid-Cap Value	15.8	11.5	4.3
Mid-Cap Blend	14.3	12.4	1.9
Mid-Cap Growth	13.7	11.6	2.1
Small-Cap Value	15.9	10.6	5.3
Small-Cap Blend	15.1	11.8	3.3
Small-Cap Growth	16.6	13.7	2.9
All Funds	13.8%	10.8%	3.0%

**Calculation method described in Modigliani and Modigliani [1997]. Style-specific benchmarks are used to calculate risk-adjusted returns. See the appendix for detailed figures.*

these differences. *Costs matter*, and they matter even more now than the 1992–1996 study suggests.[2]

The consistency of the advantage in risk-adjusted return that low-cost funds have achieved over high-cost funds is remarkable, as Exhibit 3 shows.

The Sharpe ratio provides another way of viewing risk-adjusted returns. In the 1992–1996 study, the average Sharpe ratio for the low-cost funds was 1.13, or 35% higher than the 0.84 for the high-cost funds. Even this substantial difference widened in the ten-year study. The Sharpe ratio of 0.77 for the low-cost funds compares to 0.52 for the high-cost funds, an improvement of fully 48% (*Exhibit 4*).

This differential is even more consistent across the nine style boxes than was the case before, when eight of the nine style boxes fit the pattern. In the ten-year study, the low-cost funds demonstrate substantial superiority in all nine of the style boxes.

INDEX FUNDS

As a result of the powerful link between cost and return evidenced in the 1992–1996 study, I then asked if costs matter so much—as they obviously do—and if index funds are the lowest-cost funds—*why not just hold index funds that replicate each of the nine style boxes?*

That proved to be a profitable avenue of exploration. Taking all mutual funds as a group, and comparing them to a mix of comparable index funds, the earlier study shows the results in Exhibit 5.

As Exhibit 5 shows, the Sharpe ratio of the index funds (1.23) exceeds that of the average managed fund (0.99) by fully 24%; that of the high-cost funds (0.84) by 46%; and even that of the low-cost funds (1.13) by 9%.

The consistency of the relationship found between index funds and managed funds throughout the nine style boxes is remarkable. In eight of the nine boxes, the appropriate index fund Sharpe ratio exceeds that of the average managed fund by from 0.16 to 0.46. (In the four fund groups with the largest—and therefore more statistically significant populations—the range is narrower, +0.16 to +0.31.) Only in the small-cap growth fund segment does the small-cap growth index fund fall short, by 0.06. (More about that group later.)

The new study clearly confirms the finding of the earlier study. During the ten years ended June 30, 2001, the index fund advantage is again compelling, as summarized in Exhibit 6. The index fund advantage over the

EXHIBIT 4
SHARPE RATIOS
Ten Years Ended June 30, 2001

	Low-Cost Quartile	High-Cost Quartile	Low-Cost Advantage	5 Years Ended Dec. 31, 1996 % Difference
Large-Cap Value	0.91	0.74	23%	60%
Large-Cap Blend	0.82	0.51	61	24
Large-Cap Growth	0.62	0.40	55	33
Mid-Cap Value	1.01	0.60	68	63
Mid-Cap Blend	0.81	0.66	23	56
Mid-Cap Growth	0.48	0.35	37	45
Small-Cap Value	1.04	0.57	82	9
Small-Cap Blend	0.74	0.46	61	(7)
Small-Cap Growth	0.60	0.43	40	8
All Funds	0.77	0.52	48%	35%

average fund is slightly less than in the 1992-1996 study—18% above the Sharpe ratio of the average fund (0.79 versus 0.67) compared to 24%. The advantage *increases* from 46% to 52% over that of the high-cost funds (0.79 versus 0.52), but *declines* from 9% to 2% above that of the low-cost funds (0.79 versus 0.77).

Once again, the index funds prevail over active managers, albeit at somewhat lower margins of advantage (*Exhibit 7*). The uniformity of advantage is striking. The index funds provide higher risk-adjusted returns in eight of the nine style boxes. The sole exception is the apparent superiority of active managers in the small-cap growth category, as evidenced also in the earlier study.

SUMMING UP THE STUDIES

It is highly significant that the ten-year study so powerfully reinforces the findings of the five-year study. Once again, low-cost funds outpace high-cost funds. Once again, costs matter even more than we expect (i.e., a 1% reduction in costs generates an increase in risk-adjusted return that is much higher than 1%). Once again, index funds—the fund category with the lowest costs—give an excellent account of themselves.

The 1998 study concludes: 1) higher returns are directly associated with lower costs; and 2) the notion that indexing works only in large-capitalization markets no longer has the ring of truth. Both conclusions are reinforced in the current study.

MUTUAL FUND RETURNS ARE CONSISTENTLY OVERSTATED

However one regards the validity of these data, it must be recognized that *the average returns of the actively managed mutual fund that I have presented are significantly overstated.* First and foremost, they are *survivor-biased.*

Only the funds that survived through the decade to report their performance at the close of the period are included in the sample. The 634 funds for which Morningstar reported ten-year records represent the survivors of an estimated 890 funds that began the decade. The records of the remaining 256 funds are lost in the dustbin of history. It is reasonable to postulate that the poorer performers dropped by the wayside, thereby biasing the study results in favor of the manager.

How much bias? We can't be sure. Independent studies confirm that survivor bias is substantial. In Malkiel [1995] and Carhart et al. [2001], survivor bias ranges

EXHIBIT 5
FIVE YEARS ENDED DECEMBER 31, 1996

	Expense Ratio	Annual Return	Risk*	Sharpe Ratio
All Funds	1.25%	13.7%	11.9%	0.99
High-Cost Quartile	2.03	12.3	12.2	0.84
Low-Cost Quartile	0.69	14.9	11.8	1.13
Index Funds	0.25	15.1	9.7	1.23

**Standard deviation of returns, 1992–1996.*

EXHIBIT 6
TEN YEARS ENDED JUNE 30, 2001

	Expense Ratio	Annual Return	Risk*	Sharpe Ratio
All Funds	1.16%	13.7%	18.7%	0.67
High-Cost Quartile	1.85	12.3	20.1	0.52
Low-Cost Quartile	0.64	14.5	17.4	0.77
Index Funds	0.20	14.4	16.2	0.79

**Standard deviation of returns, 6/30/91 to 6/30/01.*

from 1.5% to 3.1% per year. If we were to assume a bias of 2% during the ten-year period ended June 30, 2001 (greater for each of the small-cap groups, less for the large-cap groups), the annual risk-adjusted return of the average managed fund would drop from 12.5% to 10.5%, a 3.9 percentage point shortfall to the 14.4% return of the total stock market, and more than double the active fund shortfall of 1.9 percentage points I have suggested. When they fail to acknowledge the role of survivor bias in the data, studies that purport to show that indexing doesn't work leave much to be desired.

Several years ago, Morningstar estimated the survivor bias for each of its style boxes over the five-year period 1992-1996 (see Barbee [1999]). Even in that relatively short period, the bias was equal to almost 1% per year. Interestingly, in the light of my earlier finding that only small-cap growth funds had succeeded in outpacing their target index, the annual survivor bias in that style box was 1.7%. If we assume, for the purposes of argument, that the (necessarily higher) ten-year bias is 3.0% per year, the data showing a 1.7 percentage point annual advantage over the index for small-cap managers becomes a 1.3% *disadvantage.*

SOME FUND RETURNS ARE INFLATED

Even the records of those funds that do survive are to some degree suspect. It is hardly without precedent for small funds, often those run by large advisors, to inflate

EXHIBIT 7
SHARPE RATIO: INDEX FUNDS VERSUS MANAGED FUNDS
Ten Years Ended June 30, 2001

	Index Fund	Managed Fund	Index Advantage	Index Advantage	Five Years Ended Dec. 31, 1996
Large-Cap Value	0.88	0.81	0.07	9%	25%
Large-Cap Blend	0.84	0.69	0.15	22	20
Large-Cap Growth	0.68	0.55	0.13	24	23
Mid-Cap Value	1.00	0.82	0.18	22	29
Mid-Cap Blend	0.87	0.74	0.13	17	30
Mid-Cap Growth	0.48	0.45	0.03	7	24
Small-Cap Value	1.06	0.84	0.22	26	40
Small-Cap Blend	0.73	0.67	0.06	9	20
Small-Cap Growth	0.38	0.48	(0.10)	(21)	(9)
All Funds	0.79	0.67	0.12	18%	24%

their records by purchasing IPOs, quickly flipping them, and generating returns that do not recur when the fund becomes large. Two managers have been fined by the SEC for this practice.

One managed a fund that reported a 62% return for 1996, an excess return largely accounted for by purchasing just 100 to 400 shares of 31 hot IPOs. The other rose 119% during the 18 months following its initial offering, 83 percentage points of which came from first-day gains realized on newly public stocks. In yet another case, a fund advertised (in boldface type) a 196.88% return in 1999, acknowledging (in small print) that a significant portion came from IPOs. Yet these records are included in the industry data as if they were holy writ.

Actively managed funds also surrender a substantially greater portion of their pre-tax performance to taxes, in an amount that could have increased index fund superiority by as much as another 1.5 percentage points per year or more during the past decade. The 13.7% pre-tax annual return reported by the average mutual fund fell to an after-tax return of 11.1%, a loss of fully 2.6 percentage points to taxes.

Since only one index fund has operated during the entire past decade, after-tax style-box returns for the indexes are not available. But the largest S&P 500 index fund bore a tax burden of just 0.9%—far lower than the tax burden for the average fund. Ignoring taxes represents one more overstatement of fund returns by most studies of manager performance.

Finally, fund sales charges are ignored in most fund comparisons (including my data). Nonetheless, sales charges represent a hidden reduction in reported returns. If we assume that a decade ago three-quarters of all funds carried an average initial sales charge of 6%, the cost, amortized over the ten years would reduce returns reported by funds by another 0.5 percentage point annually. The high turnover of fund shares by investors, however, indicates that the average holding period is no more than five years. Thus, the actual reduction in annual return engendered by sales charges would be significantly higher than that, another substantial reduction in the return of managed funds.

When we consider all these factors, it must be clear that, whatever the relationship between style-box returns in managed funds and index funds, the reported returns of managed funds are significantly overstated. And, even when we accept the overstated fund data as presented, mutual funds as a group, style box by style box, with only one exception, fall well short of their index fund benchmarks, largely as a result of the costs they incur. *Index funds win.*

THE DATA VERSUS THE FACTS

You might say: So what else is new? For it must be obvious that if we take all stocks as a group, or any discrete aggregation of stocks in a particular style, an index that owns all of those stocks and precisely measures their returns must, and will, outpace the return of the investors who own that same aggregation of stocks but incur management fees, administrative costs, trading costs, taxes, and sales charges. Active managers as a group will fall short of the index return by the exact amount of the costs the active managers incur. *If the data we have available to us do not reflect that self-evident truth—well, the data are wrong.*

There are infinite ways the data can mislead. We count each mutual fund as a unit in calculating average returns, while the industry's actual aggregate record is reflected only 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.

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. Let's think about that.

Is it realistic to believe that fund managers who—including the pension accounts they manage—control the investment process applicable to upward of 35% of the value of all U.S. equities can outpace other managers, advisors, and individuals? For example, for fund managers to outpace the market by 1 percentage point annually after costs of, say, 2% (excluding taxes) would require an excess return of 3%. In that case, all other investors as a group would then lose to the market by about 2 percentage points per year, or by 4 percentage points after costs.

In reasonably efficient markets such as those in the U.S., where prices are set largely by professional investors, such a gap would seem inconceivable. Further, the available data showing returns earned by individual investors give every indication that, like institutions, individuals match the market before costs and lose to the market after costs, a conclusion that would surprise no one who has ever examined performance data with care.

IMPORTANT SUCCESS

Even someone who has never plied the fund performance seas must understand this central fact of investing: *Investment success is defined by the allocation of financial market returns—stocks, bonds, and money market instruments alike—between investors and financial intermediaries.* Despite the elementary, self-evident, and eternal nature of this capital market equation—gross return minus cost equals net return—the dialogue between advocates of indexing and advocates of active management continues unabated, for there is a lot of money at stake—certainly well over $100 billion per year. Mutual fund direct costs alone (excluding sales charges and transaction fees) account for some $70 billion; fund trading costs likely account for an additional $50 billion or more.

The reality is that the horses ridden by the mutual fund jockeys are handicapped with so much weight that the entire fund industry cannot possibly win the race for investment success. Given the limitations on the data available that I have noted above, of course, if one searches long enough and hard enough, one can possibly identify interim periods when the equation will appear to be disproven.

But the reality is what it is. While there can be debate over the figures, there can be no debate over the facts: For investors in the aggregate, the capital market equation is unyielding. Yes, some managed funds can, and some do, outpace the indexes, but there is no sure way to identify them in advance.

INDEXING AND MARKET EFFICIENCY

There is one more misconception to put to rest. As Minor puts it:

> If [Bogle] is right [about the role of cost and the superiority of indexing], he will be wrong; and if he is wrong, he will be right. The more people become convinced they can beat the market (i.e, Bogle is wrong), the more efficient the markets become, as more intelligent and capable professionals enter the market. Ironically, it then becomes less likely they will outperform it. Or, if managers and investors come to believe that active management is a waste of money (i.e., Bogle is right), money managers will be replaced by index funds. This will reduce the number of market participants and hence worsen market efficiency. *The remaining minority of active money managers will then have a better chance of outperforming their respective markets* [2001, p. 49; emphasis added].

This allegation does not meet the test of simple logic. Whether the markets are efficient or not, as long as the index reflects the performance of the market (or any given segment of the market), it follows that the remaining participants (largely active managers) will also earn the market return (or market segment return) *before their intermediation costs are deducted.* The syllogism is 1) All investors as a group earn the market return. 2) Index funds earn the market return. Therefore: 3) All non-index investors earn the market return—but only before their costs are deducted. Result: The substantial costs of financial intermediaries doom active investors as a group to poorer returns.

Admittedly, if our markets turn inefficient—something that is hard to imagine in these days of infinite information—the "good" managers may be able to improve their edge over the "bad" managers. But it must be self-evident, that in effect each manager who succeeds in outpacing the stock market by, say, 4% per year before costs over a decade, must be balanced by another who falls short by 4%, again before costs.

Efficient markets or inefficient, active managers—good and bad together—lose. Such is the nature of financial markets.

APPENDIX

Supplemental Data

Equity Fund Data

Index Fund Data[a]

Low-Cost Quartile versus High-Cost

Number of Funds		Category Average 10-Year Return[b] %	10-Year Std Dev %	10-Year Sharpe Ratio %	10-Year Risk-Adj Return %	Expense Ratio %	% Return[b] Low Cost	% Return[b] High Cost	% Risk Low Cost	% Risk High Cost	Sharpe Ratio Low Cost	Sharpe Ratio High Cost	% Risk-Adj Return Low Cost	% Risk-Adj Return High Cost	Expense Ratio Low Cost	Expense Ratio High Cost		Index Fund Data[a] 10-Year Return[b] %	10-Year Std Dev %	10-Year Sharpe Ratio %	10-Year Risk-Adj Return %	Expense Ratio %
139	LV	13.62	14.48	0.81	14.20	1.06	14.80	12.81	14.72	14.40	0.91	0.74	15.28	13.39	0.63	1.61	LV	14.98	15.43	0.88	14.98	0.20
155	LB	13.17	16.08	0.69	13.09	1.02	14.70	10.89	16.10	15.70	0.82	0.51	14.59	10.98	0.45	1.73	LB	14.90	15.93	0.84	14.90	0.20
119	LG	13.40	21.49	0.55	12.28	1.26	14.20	11.23	20.74	22.21	0.62	0.40	13.28	10.21	0.73	2.26	LG	14.37	18.70	0.68	14.37	0.20
45	MV	14.40	15.96	0.82	13.61	1.36	15.29	12.55	13.97	16.87	1.01	0.60	15.79	11.52	0.82	2.05	MV	15.82	14.64	1.00	15.82	0.20
25	MB	14.50	18.02	0.74	13.70	1.24	15.37	14.24	18.36	20.53	0.81	0.66	14.31	12.40	0.74	1.71	MB	15.60	16.53	0.87	15.60	0.20
62	MG	13.82	27.25	0.45	13.26	1.22	14.66	12.54	28.24	28.88	0.48	0.35	13.72	11.65	0.84	1.69	MG	14.05	25.54	0.48	14.05	0.20
24	SV	14.49	15.71	0.84	13.55	1.26	16.81	11.97	15.39	17.46	1.04	0.57	15.86	10.62	0.87	1.80	SV	16.07	14.18	1.06	16.07	0.20
26	SB	14.33	19.09	0.67	14.09	1.15	15.63	11.32	19.49	20.06	0.74	0.46	15.14	11.79	0.64	1.72	SB	15.03	18.61	0.73	15.03	0.20
39	SG	14.38	27.75	0.48	14.30	1.34	15.36	14.48	24.67	29.86	0.60	0.43	16.58	13.72	0.91	1.85	SG	12.62	27.52	0.38	12.62	0.20
634	All[c]	13.69	18.73	0.67	12.48	1.16	14.48	12.29	17.45	20.11	0.77	0.52	13.78	10.82	0.64	1.85	All	14.36	16.18	0.79	14.36	0.20

[a] *S&P indexes for large-cap funds, Russell Mid-Cap for mid-cap funds, Russell 2500 for small-cap funds, and Wilshire 5000 for all funds; returns adjusted for estimated expenses.*

[b] *Annual rate of return (after expenses) June 30, 1991–June 30, 2001.*

[c] *Average, weighted by number of equity funds.*

Source: Morningstar. Prepared by The Vanguard Group, July 2001.

ENDNOTES

[1]Minor [2001] responded to that challenge by presenting data for the 1992–1996 period that seemed to contradict my conclusions.

[2]One explanation for this leverage effect, where the performance shortfall bears a 2½:1 ratio to cost, may be higher portfolio turnover. The annual turnover of the high-cost funds averaged 98%, more than 50% higher than the 63% turnover of the low-cost funds.

REFERENCES

Barbee, Olivia. "Numbers Do Lie." *Morningstar FundInvestor*, October 1999, pp. 1–13.

Bogle, John C. "The Implications of Style Analysis for Mutual Fund Performance Evaluation." *The Journal of Portfolio Management*, Summer 1998, pp. 34–42.

Carhart, Mark, Jennifer Carpenter, Anthony Lynch, and David Musto. "Mutual Fund Survivorship." Working paper, New York University, Stern School of Business, 2001.

Malkiel, Burton G. "Returns from Investing in Equity Mutual Funds 1971 to 1991." *Journal of Finance*, Vol. L, No. 2 (1995).

Minor, Dylan. "Beware of Index Fund Fundamentalists." *The Journal of Portfolio Management*, Summer 2001, pp. 45–50.

Modigliani, Franco, and Leah Modigliani. "Risk-Adjusted Performance." *The Journal of Portfolio Management*, Winter 1997.

To order reprints of this article please contact Ajani Malik at amalik@iijournals.com or 212-224-3205.

Contact The Vanguard Group for information and prospectuses on the mutual funds we advise and distribute. Our phone number is 1-800-523-1036. © 2002 The Vanguard Group, Inc. All rights reserved. Vanguard Marketing Corporation, Distributor.

Exhibit IV

The Mutual Fund Industry in 2003:

Back to the Future

Remarks by John C. Bogle

Founder and Former Chairman, The Vanguard Group

Before the Harvard Club of Boston,

the Harvard Business School Association of Boston,

and the Boston Security Analysts Society

Boston, Massachusetts

January 14, 2003

It was just over 53 years ago when my career was determined by a fortuitous but life-altering moment in Princeton University's Firestone Library. Ever the contrarian, I was eager to find a topic that had not previously been the subject of a Princeton thesis when, in the December 1949 issue of *Fortune* magazine, I stumbled upon an article describing the mutual fund industry.

The title of the article was "Big Money in Boston." It featured the nation's oldest and largest mutual fund, Massachusetts Investors Trust (M.I.T.). The story described it as "the leader of a rapidly expanding and somewhat contentious industry of great potential significance to U.S. business." I immediately realized that I had found my topic.

The extensive study of the industry that followed led me to four conclusions: One, that mutual funds should be managed "in the most efficient, honest, and economical way possible," and that fund sales charges and management should be reduced. Two, mutual funds should not lead the public to the "expectation of miracles from management," since funds could "make no claim to superiority over the (unmanaged) market averages." Three, that "the principal function (of funds) is the management of their investment portfolios"—the trusteeship of investor assets—focusing "on the performance of the corporation . . . (not on) the short-term public appraisal of the value of a share (of stock)." And four, that "the prime responsibility" of funds "must be to their shareholders," to *serve* the individual investor and the institutional investor alike.

When I graduated in 1951 my work was rewarded with a job at Wellington Management Company, one of the industry pioneers, then with some $140 million of our assets under management. I became head of Wellington in 1965, and in 1967 merged it with a then-small

Boston manager named Thorndike, Doran, Paine, and Lewis. In January 1974, I was fired for my efforts. (It's a long story!) Painful as it was for me, I pulled myself together and by September of that year had founded Vanguard. As they say, "the rest is history." In short; no thesis, no career in the mutual fund industry; no firing, no Vanguard. There's a lot of luck in life! (Although I'm not sure our competitors would consider it *good* luck!)

In retrospect, that seminal *Fortune* article that inspired my thesis described an industry that is barely recognizable today. Not just in size, for, as I predicted, an era of growth lay ahead for this industry. If "Big Money" described a *tiny* industry, I'm not sure what adjective would be adequate to describe today's giant. And while more than one-half of fund assets were managed "in Boston" then, that share is now down to one-sixth. The mutual fund industry today is international in scope.

The vast changes in the size of this industry and in the types of funds we offer today—the difference between funds *past* and funds *present*—are but one reflection of the radical change in the very character of this industry. What *Fortune* described a half-century ago was an industry in which the idea was to sell what we made: *Funds that offer the small investor peace of mind,* an industry that focused primarily on stewardship. By contrast, the industry we see today is one focused primarily on salesmanship, an industry in which marketing calls the tune in which we make what will sell, and in which short-term performance is the name of the game.

This change in character is not an illusion. Since that *Fortune* article was published slightly over a half-century ago, there are specific, quantifiable ways in which this industry has changed. Today I'll examine nine of them, and then conclude with an appraisal their impact on the effectiveness with which mutual funds serve their shareholders: *Have these changes been good for our investors or not*? I'll be using industry averages to measure these changes. Of course some fund firms—but not nearly enough, in my view—have strived to retain their original character. But overall, the mutual fund industry has changed radically. Let me count the ways:

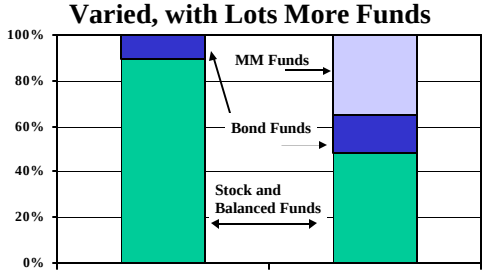
1. Funds are Far Bigger, More Varied, and More Numerous

The mutual fund industry has become a giant. From its 1949 base of $2 *billion*, fund assets soared to $6.5 *trillion* at the outset of 2003, a compound growth rate of 16%. If we'd grown at the 7% nominal growth rate of our economy, assets would be just $72 *billion* today. (Such is the magic of compounding!). Then, 90% of industry assets were represented by stock

funds and stock-oriented balanced funds. Today such funds compose only about half of industry assets. Bond funds now represent one-sixth of assets, and money market funds—dating back only to 1970—constitute the remaining one-third. Once an equity fund industry, we now span the universe of major financial instruments—stocks, bonds, and savings reserves—a change that has been a boon not only to fund managers, but to fund investors as well.

So too has the number of funds exploded. Those 137(!) mutual funds of yesteryear have soared to today's total of 8,300. More relevantly, the total number of common stock funds has risen from just 75 to 4,800, although it is not at all clear that the *nature* of this increase has created investor benefits, for, in retrospect, "choice" has done investors more harm than good.

1. The Industry: Bigger and More Varied, with Lots More Funds



	1949	2002
Total Net Assets	$2.2b	$6,500b
# of Funds	137	8,300
# of Stock Funds	75	4,800

2. Stock Funds: From the Middle-of the-Road to the Four Corners of the Earth

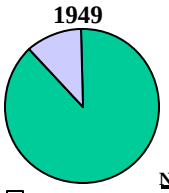
For as the number of stock funds soared, so did the variety of objectives and policies they follow. In 1950, the stock fund sector was dominated by funds that invested largely in highly-diversified portfolios of U.S. corporations with large market capitalizations, with volatility roughly commensurate with that of the Standard & Poor's 500 Stock Index. Today such middle-of-the-road funds represent a distinct minority of the total, and most other categories entail higher risks. Only 560 of the 3,650 stock funds measured by Morningstar now closely resemble their blue-chip ancestors.[1]

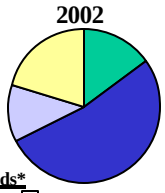
[1] The accepted terminology in equity funds reflects this change. We have come to accept a nine-box matrix of funds arranged by *market capitalization* (large, medium, or small) on one axis, and by *investment style* (growth, value, or a blend of the two) on the other. Yesteryear's middle-of-the-road funds would today find themselves in the "large-cap blend" box, constituting just 23% of the funds in the diversified U.S. fund category, and 15% of the Morningstar all-equity fund total.

What's more, we now have 450 specialized funds focused on narrow industry segments, from technology to telecommunications (particular favorites during the late bubble), and 750 international funds, running the gamut from diversified funds owning shares of companies all over the globe to highly specialized funds focusing on particular nations, from China to Russia to Israel. Among our 4,800 stock funds, there must now be one for every purpose under heaven.

A half-century ago, investors could have thrown a dart at a list of stock funds and had nine chances out of ten to pick a fund whose return was apt to parallel that of the market averages. Today, they have just one chance out of eight! When that old *Fortune* article noted that most funds did no more than give investors "a piece of the Dow Jones Average," it presciently added, "the average is not a bad thing to own." But today, for better or worse—probably worse—selecting mutual funds has become an art form.

2. Stock Funds: From Middle-of-the-Road to the Four Corners of the Earth





Number of Equity Funds*			
Large-Cap Blend	66	560	Large-Cap Blend
Specialized	9	1,890	Other Div. Equity
		450	Specialized
		750	International
Total	75	3,650	Total

*2002 total is number covered by Morningstar

3. From Investment Committee to Broadway Stardom

These vast changes in fund objectives have led to equally vast changes in how mutual funds are managed. In 1950, the major funds were managed almost entirely by *investment committees*. But the demonstrated wisdom of the collective was soon overwhelmed by the perceived brilliance of the individual. First, the "Go-Go" era of the mid-1960s and then the recent bubble brought us hundreds of more aggressive "performance funds," and the new game seemed to call for free-wheeling individual talent. The term "investment committee" vanished, and "portfolio manager" gradually became the industry standard, now the model for some 3,200 funds of the 3,650 stock funds listed in Morningstar. ("Management teams" run the other 450 funds.)

The coming of the age of portfolio managers whose tenure lasted only as long as they produced performance moved fund management from the stodgy old consensus-oriented investment committee to a more entrepreneurial, free-form, and far less risk-averse approach. Before long, moreover, the managers with the hottest short-term records had been transformed by their employers' vigorous public relations efforts and the enthusiastic cooperation of the media, into "stars," and a full-fledged star-system gradually came to pass. A few portfolio managers actually *were* stars—Fidelity's Peter Lynch, Vanguard's John Neff, Legg Mason's Bill Miller, for example—but most proved to be *comets*, illuminating the fund firmament for a moment in time before they flamed out. Even after the devastation of the recent bear market, and the stunning fact that the tenure of the average portfolio manager is just five years, the system remains largely intact.

3. Committees, Stars, and Comets

Management Mode		
1950: Almost Entirely Investment Committees		
2002*:	**Investment Committee -**	**0 (?)**
	Single Portfolio Manager -	**1,600**
	Multiple Port. Managers -	**1,550**
	Management Team -	**450**

***Source: Morningstar. No manager listed for 50 funds.**

4. Turnover Goes Through the Roof

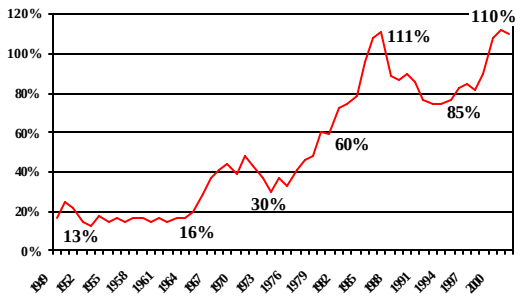
Together, the coming of more aggressive funds, the burgeoning emphasis on short-term performance, and the move from investment committees to portfolio managers had a profound impact on mutual fund investment strategies—most obviously in soaring portfolio turnover. M.I.T. and the other funds described in that *Fortune* article didn't even *talk* about long-term investing. They just *did* it, simply because that's what trusteeship is all about. But over the next half-century that basic tenet was turned on its head, and short-term speculation became the order of the day.

Not that the long-term focus didn't resist change. Indeed, between 1950 and 1965, it was a rare year when fund portfolio turnover much exceeded 16%, meaning that the average fund held its average stock for an average of about six years. But turnover then rose steadily and surely and fund managers now turn their portfolios over at an astonishing average annual rate of 110%(!). Result: Compared to that earlier six-year standard that prevailed for so long, the average stock is now held for just eleven months.

The contrast is stunning. At 16% turnover, a $1 billion fund sells $160 million of stocks in a given year and then reinvests the $160 million in other stocks, $320 million in all. At 110%, a $1 billion fund sells and then buys a total of $2.2 billion of stocks each year—nearly seven *times* as much. Even with lower *unit* transaction costs, it's hard to imagine that such turnover levels aren't a major drain on shareholder assets.

Let me be clear: If a six-year holding period can be characterized as long-term investment and if an eleven-month holding period can be characterized as short-term speculation, mutual fund managers today are not investors. We are speculators. When I say that this industry has moved from investment to speculation, I do not use the word "speculation" lightly. Indeed, in my thesis I used Lord Keynes' terminology, contrasting *speculation* ("forecasting the psychology of the market") with *enterprise* ("forecasting the prospective yield of an asset"). I concluded that as funds grew they would move away from speculation and toward enterprise (which I called "investment"), focusing, not on the price of the share, but on the value of the corporation. As a result, I concluded, fund managers would supply the stock market "with a demand for securities that is *steady*, *sophisticated*, *enlightened*, and *analytic*." I was dead wrong. We are no longer stock *owners*. We are stock *traders*, as far away as we can possibly be from investing for investment icon Warren Buffett's favorite holding period: *Forever*.

4. Turnover Goes Through the Roof

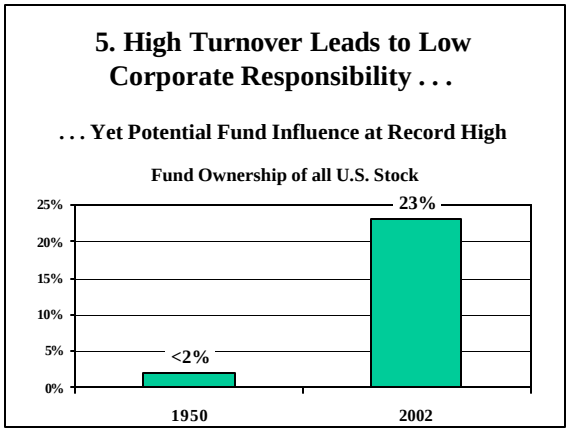


5. High Stock Turnover Leads to Low Corporate Responsibility

Whatever the consequences of this high portfolio turnover are for the shareholders of the funds, it has had dire consequences for the governance of our nation's corporations. In 1949, *Fortune* wrote, "one of the pet ideas (of M.I.T.'s Griswold) is that the mutual fund is the ideal champion of . . . the small stockholder in conversations with corporate management, needling corporations on dividend policies, blocking mergers, and pitching in on proxy fights." And in my ancient thesis that examined the economic role of mutual funds, I devoted a full chapter to their role "as an influence on corporate management." Mr. Griswold was not alone in his activism, and I noted with approval the SEC's 1940 call on mutual funds to serve as "the useful role of representatives of the great number of inarticulate and ineffective individual investors in corporations in which funds are interested."

It was not to be. Just as the early hope I expressed that funds would continue to invest for the long term went aborning, so did my hope that funds would observe their responsibilities of corporate citizenship. Of course the two are hardly unrelated: A fund that acts as a trader, focusing on the price of a share and holding a stock for but eleven months, may not even own the shares when the time comes to vote them at the corporation's next annual meeting. By contrast, a fund that acts as an owner, focusing on the long-term value of the enterprise, has little choice but to regard the governance of the corporation as of surpassing importance.

While funds owned but two percent of the shares of all U.S. corporations a half-century ago, today, they own 23 percent. They could wield a potent "big stick," but, with few exceptions, they have failed to do so. As a result of their long passivity and lassitude on corporate governance issues, we fund managers bear no small share of the responsibility for the ethical failures in corporate governance and accounting oversight that were among the major forces creating the recent stock market bubble and the bear market that followed. It is hard to see anything but good arising when this industry at last returns to its roots and assumes its responsibilities of corporate citizenship.

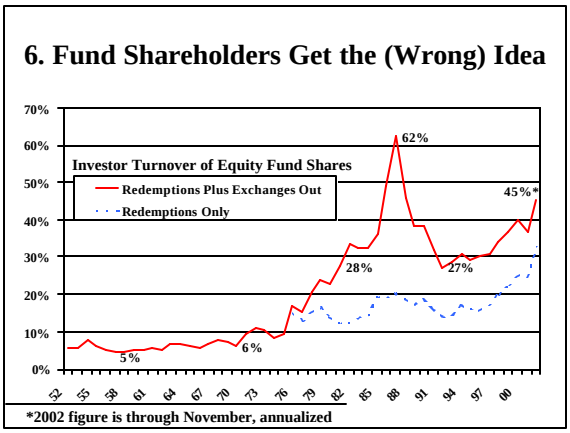


6. The Fund Shareholder Gets the (Wrong) Idea

The change in this industry's character has radically affected the behavior of the mutual fund shareholder. In the industry described in the *Fortune* article as having "tastes in common stocks that run to the seasoned issues of blue-chip corporations," shareholders bought fund shares and held them. In the 1950s, and for a dozen years thereafter, fund redemptions (liquidations of fund shares) averaged 6% of assets annually, suggesting that the average fund investor held his or her shares for 16 years. Like the managers of the funds they held, fund owners were investing for the long pull.

But as the industry brought out funds that were more and more performance-oriented, often speculative, specialized, and concentrated—funds that behaved increasingly like individual stocks—it attracted more and more investors for whom the long-term didn't seem to be relevant. Up, up, up went the redemption rate. Last year it reached 45% of assets, an average holding period of slightly more than two years. The time horizon for the typical fund investor had tumbled by fully 90%.

As "buy and hold" turned to "pick and choose," the average fund owner who once held a single equity fund came to hold four. *Freedom of choice* became the industry watchword, and "fund supermarkets," with their "open architecture," made it easy to quickly move money around in no-load funds. Trading costs are hidden in the form of access fees for the shelf-space offered by these supermarkets, paid for by the funds themselves, so that swapping funds seemed to be "free," tacitly encouraging fund shareholders to trade from one to another. But while picking tomorrow's winners based on yesterday's performance is theoretically attractive, in practice it is a strategy that is doomed to failure.

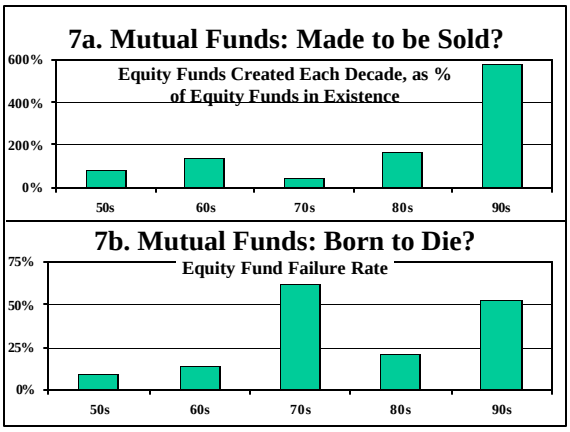


7. The Modern Mutual Fund . . . Made to be Sold

It is easy to lay the responsibility for this astonishing telescoping of holding periods on gullible, flighty, and emotional fund investors, or on the change in the character of our financial markets, especially in the boom and bust in the stock market bubble of 1997-2002. It was clearly a mania driven by the madness of crowds. But by departing from our time-honored tenet, "we sell what we make," and jumping on the "we make what will sell" bandwagon, creating new funds to match the market mania of the moment, this industry was a major contributor to that bubble. As technology and telecom stocks led the way, we formed 494 new technology, telecom, and internet funds, and aggressive growth funds favoring these sectors. In all, the number of stock funds, which grew by 80% in the 1950s and 48% in the 1970s, burgeoned almost 600% in the 1990s.

Not only did we form these funds, we marketed them with vigor and enthusiasm, through stock brokers and through advertising. Case-in-point: Right at the market peak, 44 mutual funds advertised their performance in the March 2000 issue of *Money*. *Their average return over the previous twelve exuberant months came to +85.6%*! Small wonder that this industry took in $555 billion of new money—more than a *half-trillion dollars*—during 1998-2000, overwhelmingly invested in the new breed of speculative high-performance funds. Most of the money, of course, poured into those winners of yesteryear *after* they led the market upward. So their assets were huge when they led the market on the way down, the investors' money gone up in smoke. First the cash flow stopped, and then it turned negative—an $18 billion *outflow* in the year just ended. Today, it is not *irrational exuberance* but *rational disenchantment* that permeates the community of fund owners, many of whom, unaware that the great party was almost over and that a sobering hangover lay ahead, imbibed far too heavily at the punch bowl.

It was not long until this flagrant formation of opportunistic new funds soon began to unwind. Fund deaths began to match, and will surely soon exceed, fund births. But it is not the old middle-of-the-road funds that are dying; it is largely the new breed of funds—those that sought out the exciting stocks of the new economy and hyped their records. While those conservative early funds were, as the saying goes, "built to last," their aggressive new cousins seemed "born to die." The fund failure rate soared. While only 10% of the funds in the 1950s were no longer in business at the end of that decade, more than half of the funds that existed during the past decade are in not business today. And this trend shows no signs of slowing, with nearly 900 funds giving up the ghost in the past three years alone, a rate that, if it continues, will produce another decade in which more than half of all equity funds cease to exist.



8. The Costs of Fund Ownership Have Soared

When "Big Money in Boston" featured Massachusetts Investors Trust, it was not only the oldest and largest mutual fund, but the least costly. The *Fortune* article reported that its annual management and operating expenses, paid at the rate of just 3.20% of its investment income, amounted to just $827,000. In 1951, its expenses come to just 0.29% of its assets. The average expense ratio for the 25 largest funds, with aggregate assets of but $2.2 billion, was only 0.64%.

What a difference five decades makes! In 2001, M.I.T.'s expense ratio had risen to 1.20%, and its $141 million of expenses consumed 87%(!) of its investment income. The average expense ratio for the equity funds managed by the 25 largest fund complexes has risen 134% to 1.5%, despite the fact that their assets have soared 845-fold, to $1.86 *trillion*. The dollar amount of direct fund expenses borne by shareholders of *all* equity funds has risen from an estimated $15 *million* in 1950 to something like $35 *billion* in 2002. Despite the truly staggering economies of

scale in mutual fund management, fund investors have not only *not* shared in these economies. They have been victims of far higher costs.

The fund industry reports that the costs of fund ownership have steadily declined, but it is difficult to take that allegation seriously. The decline, if such it be, arises from investors increasingly choosing no-load funds and low cost funds, *not* from substantial management fee reductions. But even accepting the industry data at face value, the cost of mutual fund ownership is vastly understated. Why? *Because management fees, operating expenses and sales charges constitute only a fraction of fund costs*. Portfolio transaction costs—an inseparable part of owning most funds—are ignored. Out-of-pocket costs paid by fund investors are ignored. Fees paid to financial advisers to select funds (partly replacing those front-end loads) are ignored. Put them all together and it's fair to estimate that the all-in annual costs of mutual fund ownership now runs in the range of 2½% to 3% of assets.

What does that mean? While 2½% may look like small potatoes compared to the value of a typical fund investment, such a cost could cut deeply into the so-called "equity-premium" by which investors expect stock returns to exceed bond returns, giving the average equity fund investor a return little more than a bondholder, despite the extra risk. Looked at another way, 2½% would consume 25% of an annual stock market return of 10%. Over the long-term, $1 compounded in a 10% stock market would grow to $17.50 over 30 years; compounded at 7½%—a typical fund's return *after* such costs—would reduce that value by exactly one-half, to $8.75. *Costs matter!* Yet costs rise and sharply, one more indication that the fund industry has veered from its roots as an investment *profession*, moving ever closer to being just another consumer products *business*.

8. The Costs of Fund Ownership

	1951: Top 25 Equity Funds	2002: Top 25 Fund Mgrs.	Change
Total Assets (Bil)	**$2.2**	**$1,860**	**845x**
Average Exp. Ratio	**0.64%**	**1.50%**	**+134%**
		Total Equity Funds	
Fees and Op. Expenses (e)	**$15 Mil.**	**$35 Bil.**	**2,300x**

9. The March of the Entrepreneur

The industry that *Fortune* described all those years ago clearly placed the emphasis on fund management as a profession—the trusteeship of other people's money. The article is peppered with the words "trust" and "trustee," and frequently refers to the "investment-trust industry." Today, it seems clear that salesmanship has superseded trusteeship as our industry's prime focus. What was it that caused this sea change? Perhaps it's that trusteeship was essential for an industry whose birth in 1924 was quickly followed by tough times—the Depression, and then World War II. Perhaps it's that salesmanship became the winning strategy in the easy times thereafter, an era of almost unremitting economic prosperity. But I believe that the most powerful force behind the change was that mutual fund management emerged as one of the most profitable businesses in our nation. *Entrepreneurs could make big money managing mutual funds.*

The fact is that, only a few years after "Big Money in Boston" appeared, the whole dynamic of entrepreneurship in the fund industry changed. Up until 1958, a trustee could make a tidy profit by managing money, but could not *capitalize* that profit by selling shares of the management company to outside investors. The SEC held that the sale of a management company represented the payment for the sale of a fiduciary office, an illegal appropriation of fund assets. If such sales were allowed, the SEC feared, it would lend to "trafficking" in advisory contracts, leading to a gross abuse of the trust of fund shareholders.

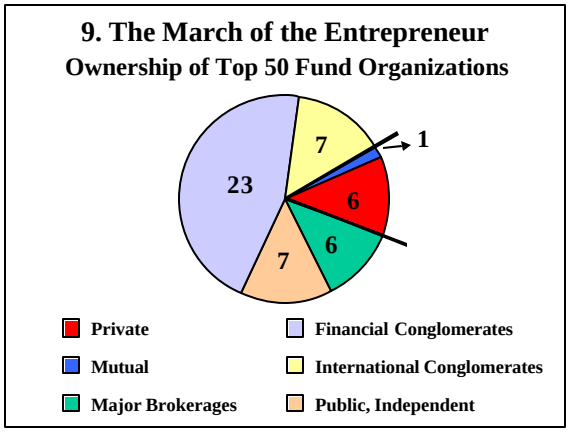
But a California management company challenged the SEC's position. The SEC went to court, and lost. As 1958 ended, the gates that had prevented public ownership since the industry began 34 years earlier came tumbling down. *Apres moi, le deluge!* A rush of initial public offerings began with the shares of a dozen management companies quickly brought to market. Investors bought management company shares for the same reasons that they bought Microsoft and I.B.M. and, for that matter, Enron: Because they thought their earnings would grow and their stock prices would rise accordingly.

But the IPOs were just the beginning. Even *privately-held* management companies were acquired by giant banks and insurance companies, taking the newly-found opportunity to buy into the burgeoning fund business at a healthy premium—averaging 10 times book value or more. "Trafficking" wasn't far off the mark; there have been at least 40 such acquisitions during the past decade, and the ownership of some firms has been transferred several times. Today, among the 50 largest fund managers, only six(!) are privately-held, plus mutually-owned Vanguard. 23

managers are owned by giant U.S. financial conglomerates, six are owned by major brokerage firms, and seven by giant foreign financial firms. (In 1982, even the executives of M.I.T. and its associated funds sold their management company to Sun Life of Canada.) The seven remaining firms are publicly-held.

It must be clear that when a corporation buys a business—whether a fund manager or not—it expects to earn a hurdle rate of, say, 12% on its capital. So if the acquisition cost were $1 billion, the acquirer would likely defy hell and high water in order to earn at least $120 million per year. In a bull market, that may be an easy goal. But when the bear comes, we can expect some combination of (1) slashing management costs; (2) adding new types of fees (distribution fees, for example); (3) maintaining, or even increasing, management fee rates; or even (4) getting its capital back by selling the management company to another owner. (The SEC's "trafficking" in advisory contracts writ large!)

It's not possible to assess with precision the impact of this shift in control of the mutual fund industry from private to public hands, largely those of giant financial conglomerates, but it surely accelerated the industry to change from profession to business. Such a staggering aggregation of managed assets—often hundreds of billions of dollars—under a single roof, much as it may serve to enhance, to whatever avail, the marketing of a fund complex's "brand name" in the consumer goods market, it seems unlikely to make the money management process more effective, nor to drive investor costs down, nor to enhance this industry's original notion of stewardship and service.



Summing Up the Half-Century: For Better or Worse?

In short, this industry is a long, long way from the industry described in "Big Money in Boston" all those years ago. While my characterization of the changes that have taken place may be subjective, the factual situation I've described is beyond challenge. This *is* an infinitely larger industry. The variety of funds *has* raised the industry's risk profile. The management mode *was* largely by committee but *is* overwhelmingly by portfolio manager. Fund turnover *has* taken a great upward leap. Fund investors *do* hold their shares for far shorter periods. Marketing *is* a much more important portion of fund activities. Fund costs, by any measure, *have* increased , and sharply. And those closely-held private companies that *were* once the industry's sole modus operandi *are* an endangered species.

All this change has clearly been great for fund managers. The aggregate market capitalization of all fund managers 50 years ago could be fairly estimated at $40 *million*. Today, $240 *billion* would be more like it. Way back in 1967, Nobel Laureate Paul Samuelson was smarter than he imagined when he said, "there was only one place to make money in the mutual fund business—as there is only one place for a temperate man to be in a saloon, behind the bar and not in front of it . . . so I invested in a management company."

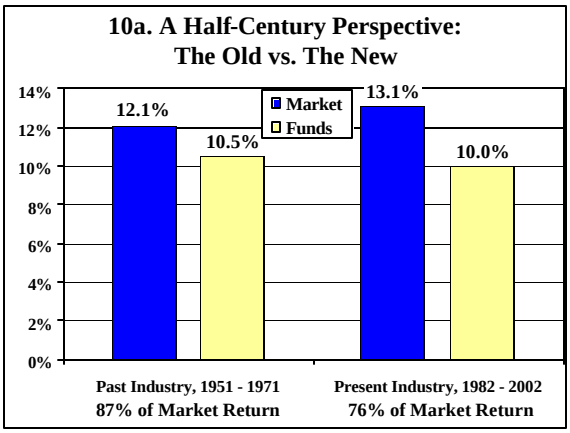
But our charge is to answer the question posed at the start of this speech. Have these nine changes served the interest of the mutual fund investor? The answer is a resounding no. It's a simple statistical matter to determine how well those on the other side of the bar in that saloon, using Dr. Samuelson's formulation, have been served, first by the old industry, then by the new.

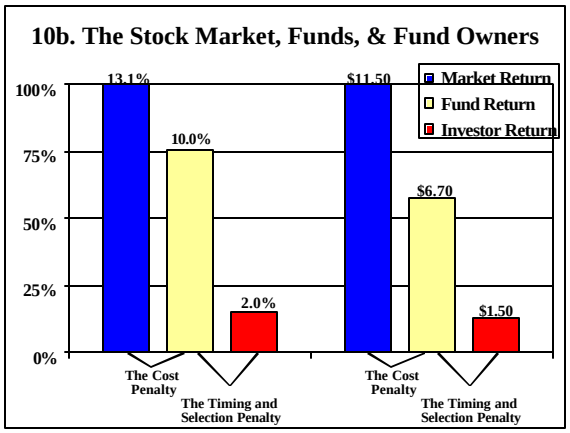
- During the first two decades of the period I've covered today (1950-1970), the annual rate of return of the average equity fund was 10.5%, compared to 12.1% for Standard & Poor's 500 Stock Corporate Index, a shortfall of 1.6 percentage points, doubtless largely accounted for by the then-moderate costs of fund ownership. The average fund delivered 87% of the market's annual return.

- During the past 20 years (1982-2002), the annual rate of return of the average equity fund was 10.0%, compared to 13.1% for the S&P 500 Index, a shortfall of 3.1 percentage points, largely accounted for by the now-far-higher levels of fund operating and transaction costs. The average fund delivered just 76% of the market's annual return.

It is the increase in *costs*, largely alone, that has led to that substantial reduction in the share of the stock market's return that the average fund has earned. But it is the change in the industry's *character* that has caused the average fund *shareholder* to earn far less than the average *fund*. Why? First, because shareholders have paid a heavy *timing* penalty, investing too *little* of their savings in equity funds when stocks represented good values during the 1980s and early 1990s. Then, enticed by the great bull market and the wiles of mutual fund marketers as the bull market neared its peak, they invested too *much* of their savings. Second, because they have paid a *selection* penalty, pouring money into "new economy" stocks and withdrawing it from "old economy" stocks during the bubble, at what proved to be precisely the wrong moment.

The result of these two penalties: While the stock market provided an annual return of 13% during the past 20 years, and the average equity *fund* earned an annual return of 10%, the average fund *investor*, according to recent estimates, earned just 2% per year. It may not surprise you to know that, compounded over two decades, the 3% penalty of costs is huge. But the penalty of character is even larger—another 8 percentage points. *$1 compounded at 13% grows to $11.50; at 10%, to $6.70; and at 2%, to just $1.50.* A profit of just fifty cents!





The point of this exercise is not precision, but direction. It is impossible to argue that the totality of human beings who have entrusted their hard-earned dollars to the care of mutual fund managers has been well-served by the myriad changes that have taken place from mutual funds past to mutual funds present. What about mutual funds yet to come? My answer will not surprise you. It is time to go back to our roots; to put mutual fund shareholders back in the driver's seat, to put the interests of shareholders ahead of the interests of managers and distributions, just as the 1940 Investment Company Act demands.

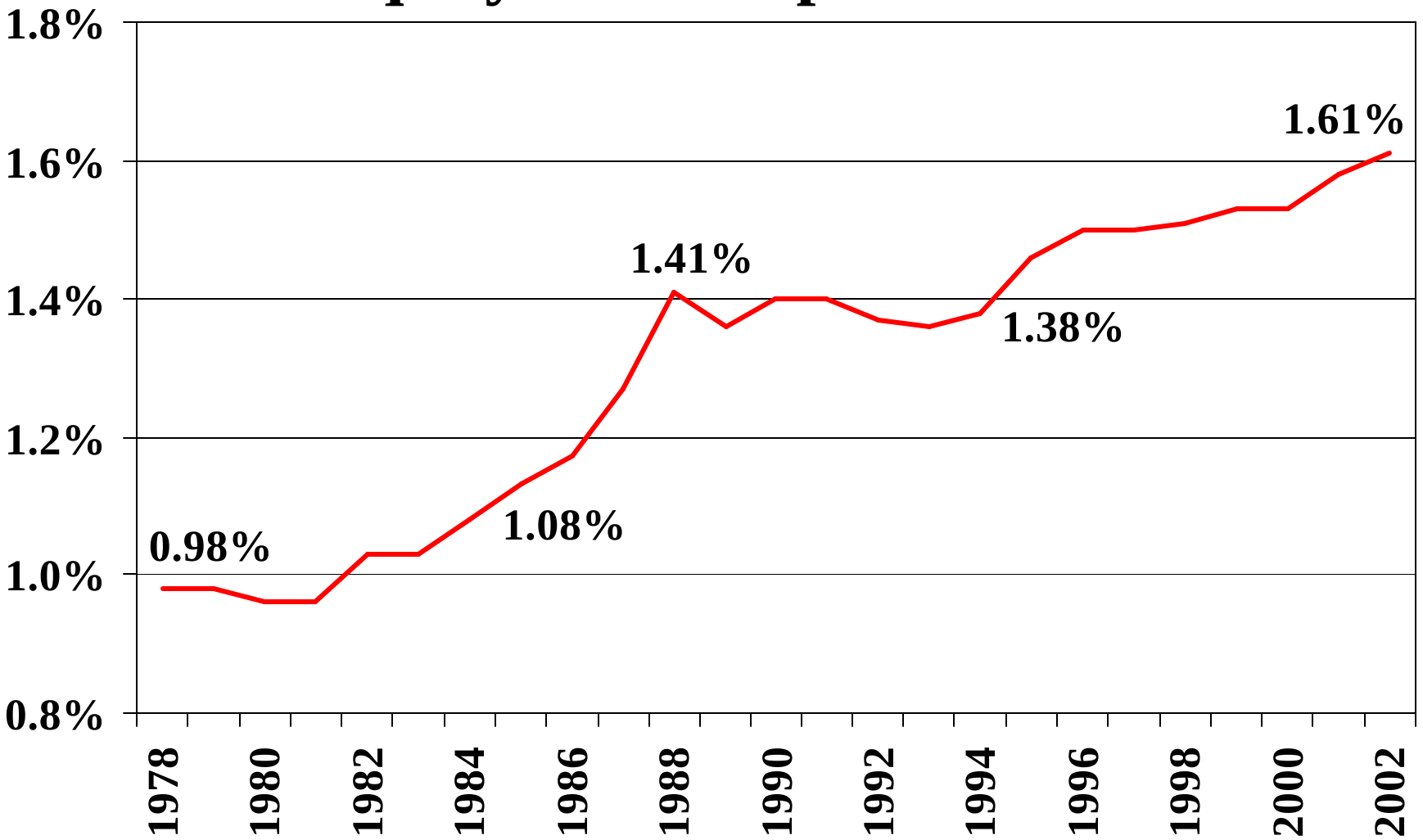
This industry must return to its focus on broadly-diversified funds with sound policies, sensible strategies, long-term horizons, and minimal costs. Some of the steps we must take are relatively painless—reducing turnover costs, by bringing turnover rates down to reasonable levels, for example—and some would be very painful—reducing management fees and sales commissions, and cutting our operating costs. But such cost reductions are necessary if we are to increase the portion of the stock market's return earned by our *funds*.

To enhance the share of our *fund* returns earned by our *shareholders*, on the other hand, we need to reorder our "product line" strategies by taking our foot off the marketing pedal, and pressing our foot down firmly on the stewardship pedal, giving the investor better information about asset allocation, fund selection, risks, potential returns, and costs, all with complete candor. After the market devastation of the past three years, I have no doubt that is what shareholders will come to demand. After all, as an article in the current issue of *Fortune* notes, "people won't act contrary to their own economic interests forever."

Fifty-plus years ago, the headline in that original *Fortune* article read: **The Future: Wide Open**. So it was then. I leave you with the same headline today. **The Future: Wide Open**. For it remains wide open, but only if we go back to the future—only if we return funds present to funds past—to our original character of stewardship and prudence. If funds come yet again to focus above all on serving our shareholders—serving them "in the most efficient, honest, and economical way possible"—the future for this industry will be not just bright, but brilliant.

Exhibit V

Equity Fund Expense Ratios



Source: Lipper Inc.

Exhibit VI

1951's Twenty-Five Largest Funds: Then and Now

	Fund	1951 Assets (million)	1951 Expense Ratio	1951 Revenue (million)	2002 Assets (million)	2002 Expense Ratio	2002 Revenue (million)	1951 to 2002 Increase in Expense Ratio	1951 to 2002 Increase in Fund Size	1951 to 2002 Increase in Fund Costs
1	Mass. Investors Trust	$ 438	0.29 %	$ 1.27	$ 6,611	1.19 %	$ 78.9	312 %	15 x	62 x
2	AXP Mutual*	323	0.58	1.88	1,608	0.91	14.6	57	5	8
3	Wellington Fund	194	0.55	1.07	22,390	0.35	78.3	(36)	115	73
4	Lord Abbett Affiliated*	170	0.66	1.12	10,944	0.90	98.3	36	65	88
5	American Fundamental*	115	0.73	0.84	16,287	0.70	113.2	(5)	141	134
6	Putnam Investors*	112	0.55	0.62	5,549	1.16	64.4	111	50	105
7	State Street Investment	107	0.59	0.63	1,400	1.20	16.8	104	13	27
8	Alliance Growth & Income*	102	0.76	0.77	6,552	1.45	94.7	90	64	122
9	Eaton & Howard Balanced	78	0.59	0.46	n/a			-	-	-
10	Eaton Vance Balanced*	75	0.64	0.48	165	1.37	2.3	114	2	5
11	Fidelity Fund	64	0.63	0.40	8,696	0.53	46.1	(16)	135	114
12	Waddell & Reed Adv Core*	53	0.80	0.43	4,589	1.06	48.6	33	86	114
13	George Putnam Fund	52	0.66	0.34	5,911	1.11	65.6	68	114	192
14	Allliance Mid Cap Growth*	51	0.63	0.32	462	1.30	6.0	106	9	19
15	Commonwealth Investment	42	0.64	0.27	n/a			-	-	-
16	Scudder Income*	36	0.69	0.25	566	0.95	5.4	38	16	21
17	American Business Shares	36	0.83	0.30	n/a			-	-	-
18	Mass. Investors Growth*	34	0.54	0.18	9,468	1.17	110.8	117	278	602
19	Keystone S2	34	0.71	0.24	n/a			-	-	-
20	Phoenix-Oakhurst G&I*	32	0.86	0.28	421	1.33	5.6	55	13	20
21	AMEX Stock*	32	0.61	0.19	2,277	0.91	20.7	49	72	108
22	Century Shares Trust	29	0.42	0.12	273	1.05	2.9	150	9	23
23	Seligman Growth*	27	0.50	0.14	459	1.35	6.2	170	17	46
24	Diversified Investment Fund	25	0.96	0.24	n/a			-	-	-
25	Seligman Common Stock*	24	0.48	0.12	298	1.28	3.8	167	12	33
	Average	**$ 91**	**0.64 %**	**$ 0.52**	**$ 5,246**	**1.06 %**	**$ 44.16**	**67 %**	**57 x**	**85 x**

*Fund name has changed

Exhibit VII

Memo Re: Investment Company Institute Releases on "Total Shareholder Costs of Mutual Funds"

A recent ICI Study (Total Shareholder Costs of Mutual Funds: An Update; September 2002) updates other studies it has provided over the past four years, purporting to show the costs of mutual fund ownership. Once again, the study relies on the sales-weighted costs of funds, rather than the more relevant asset-weighted data. Once again, it fails to report the continuing rise in fund expense ratios, or even present those expense ratios for analysis. Once again, it ignores the impact of low-cost index and institutional funds. Once again, it relies on sales charge calculations that appear to significantly understate this component of annual costs. And once again, it ignores three extremely large components of fund shareholder costs (financial adviser fees, portfolio turnover costs, and out-of-pocket fees).

Here is another way of looking at the ICI equity fund cost figure of 1.28%:

	Basis Points
ICI Figure	128
Corrected for sales charge calculation	+15E
Corrected for Index and Institutional funds	+12
Total	155
Financial adviser fees[1]	10E
Portfolio transaction costs	70E
Out-of-pocket costs	5E
Opportunity Cost (cash drag[2])	30
Total	270

Conclusion: The actual costs of mutual fund ownership appear to be more than 100% higher than reported by the ICI.

Discussion:

1. Many Costs Ignored. The ICI study simply excludes many of the costs of fund ownership. Equity fund transaction costs—an obvious cost of fund ownership—can be estimated at about 70 basis points a year. (Most independent experts would place it at a substantially higher amount.) Out of pocket fees are simply ignored; account maintenance fees, redemption fees, and penalty fees (deducted from the accounts of investors who redeem their "deferred load" funds before having paid the requisite annual total sales charge) would add further costs.

2. Operating Expense Ratios Rise—Dollar Expenses Soar 86-Fold. The 98 basis point decline in the ICI's version of total shareholder costs—from 226 basis points in 1980 to 128 basis points in 2001—came about *entirely* from lower distribution costs, which fell 109 basis points, from 149 to 40. Operating expenses actually rose—from 77 basis points to 88 basis points, despite the fact that equity fund assets rose 7,600%(!) during that period—from some $45 billion to $3.4 trillion . . . meaning that total fees (excluding 12b-1 fees) rose from $350 million in 1980 to $30 *billion* in 2001.

[1] Assumes 1% average fee paid on estimated $300 billion of equity fund assets.

[2] If stock returns average 9% and Treasury bills average 3%, the 6% spread on an average 5% cash position would be 30 basis points.

3. Sales Charge Costs Substantially Understated Much of the alleged decline in distribution costs appears spurious, the result of amortizing front-end sales loads over a longer holding period than the facts justify (i.e., if a 6% sales charge were amortized over 10 years, it would average about 0.6% per year; over five years it would average about 1.3% per year). For their holding period data, the ICI relied on a 1990 study of redemption rates by the Wyatt Company, which in turn calculated redemption rates on a share purchase made in 1974. But in 1974 the equity fund redemption rate was 8% of assets (an average 12-year holding period); in 1990 it had risen to 38% and in 1998-2002 it averaged 39% (a 2.6 year holding period). Thus, if calculated using current redemption rates instead of data that are nearly 30 years old, the reported ICI front-end sales charge cost of 47 basis points could easily reach 90 basis points.

4. Expenses of Low-Cost Funds Rise Sharply. The ICI's original 1998 shareholder cost study reported that the *lowest* cost decile of funds had a 27% *increase* in costs from 1980-1997 (from 71 basis points to 90). Excluding Vanguard (which operates on an at-cost basis) from that group would suggest an increase of *at least* 33% for the lowest cost group of funds. (The ICI has eliminated this information from subsequent updates of the study.)

5. The Flaws of Sales Weighted Data. The long-term decline in fund costs reported in the studies is profoundly flawed by calculating cost on a sales-weighted rather than an asset-weighted basis. It also ignored the fact that the expenses of the *average* fund are about 30% *higher* than the asset-weighted expenses. The 1999 study shows (in basis points):

	Sales-Weighted Average Cost		**% Change**	**Asset-Weighted Average Cost**		**% Change**	**Simple Average Fund Cost**		**% Change**
	1980	**1998**		**1980**	**1998**		**1980**	**1998**	
Money Market	55	42	-24	55	51	-7	67	62	-7
Bond	154	109	-29	210	124	-41	216	151	-30
Equity	226	135	-40	231	132	-43	241	193	-20

The use of sales-weighted data reflects not a fall in fund costs, but a change in consumer preferences toward lower-cost and index fund and away from higher-cost funds. Price competition is properly defined, however, not by the actions of consumers, but by the actions of producers.

6. Indexed and Institutional Funds are Responsible for Much of the Reported Decline. Since 1980, index funds and institutional funds (for very large investments) have come to the fore, seriously distorting the equity fund cost analysis. ICI figures show that the reported 1998 equity fund sales-weighted cost of 135 basis points would rise to 153 basis points if they were excluded. If further adjustment is made by also excluding the three largest fund complexes, the cost rises to 165 basis points.

7. Operating Costs Continue to Rise. The most recent ICI Study (September 2002) calculates total shareholder cost for equity funds of 128 basis points on a sales-weighted basis; a further reduction of seven basis points from the 135 total for 1998. However, sales costs declined by 12 basis points, meaning that operating expenses continued their long-term rise, moving up by five basis points from 83 to 88, another 6% increase.

Exhibit VIII

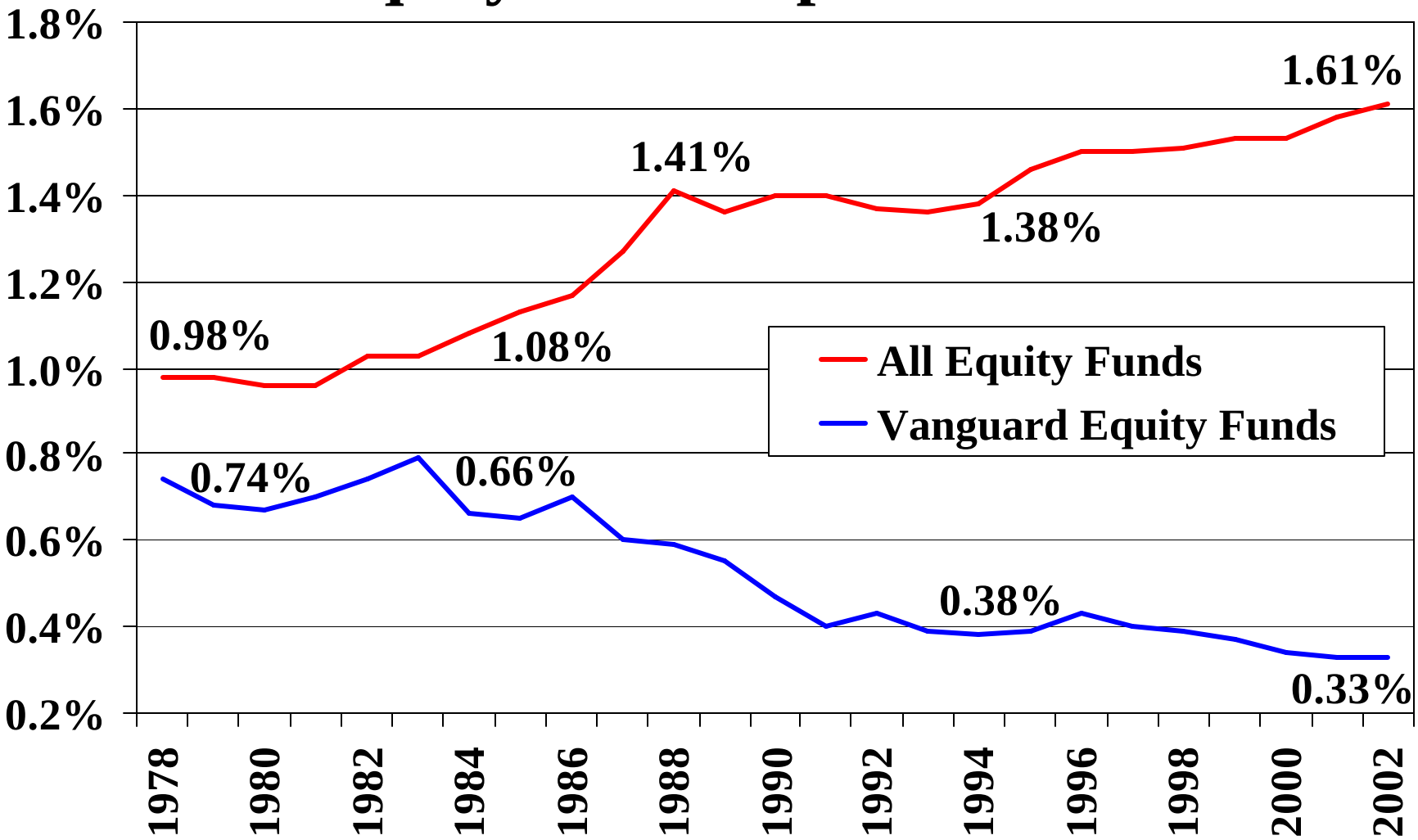
Money Market Comparison

	Smith Barney Funds		Vanguard Funds	
	Fiscal Year 2000		Fiscal Year 2000	
Fees	Total Expenses	Expense Ratio	Total Expenses*	Expense Ratio
Investment Management	$ 257,036,799	0.40%	$ 15,394,000	0.02%
Distribution	$ 65,374,726	0.10%	$ 11,798,000	0.02%
Shareholder Services	$ 48,500,618	0.07%	$ 169,412,000	0.25%
Other	$ 8,791,460	0.01%	$ 4,527,000	0.01%
Total Expenses	$ 379,703,603	0.59%	$ 201,131,000	0.30%
Total Assets:	$ 64,865,192,337		$ 67,460,548,000	

*Vanguard's actual investment management expenses totaled $7,697; this figure was doubled to account for other general management expenses, with the "Service" expenses commensurately reduced.

Exhibit IX

Equity Fund Expense Ratios



Source: Lipper Inc.

Exhibit X

Fee Schedule for Advisory Services Provided to Two Vanguard Funds

Red text indicates a change in the fee schedule from the previous year.

	Wellington Fund				GNMA Fund			
Year	Fund Assets (millions)	Advisory Fee Schedule			Fund Assets (millions)	Advisory Fee Schedule		
1975	$ 776	0.445% on the first	$	250				
		0.375% on the next	$	200				
		0.225% on the next	$	150				
		0.150% on the next	$	100				
		0.100% over	$	700				
		Adv. Fee Exp. Ratio:		**0.313%**				
		Change From Prior Year:		**n/a**				
1976	$ 847	0.320% on the first	$	250				
		0.250% on the next	$	200				
		0.150% on the next	$	150				
		0.100% over	$	600				
		Adv. Fee Exp. Ratio:		**0.209%**				
		Change From Prior Year:		**-33%**				
		Saved Under New Schedule:	**$**	**0.7**				
1977	$ 706	0.320% on the first	$	250				
		0.250% on the next	$	200				
		0.150% on the next	$	150				
		0.100% over	$	600				
		Adv. Fee Exp. Ratio:		**0.231%**				
		Change From Prior Year:		**10%**				
1978	$ 640	0.200% on the first	$	100				
		0.175% on the next	$	100				
		0.150% on the next	$	500				
		0.100% over	$	700				
		Adv. Fee Exp. Ratio:		**0.162%**				
		Change From Prior Year:		**-30%**				
		Saved Under New Schedule:	**$**	**0.5**				
1979	$ 606	0.200% on the first	$	100				
		0.175% on the next	$	100				
		0.150% on the next	$	500				
		0.100% over	$	700				
		Adv. Fee Exp. Ratio:		**0.162%**				
		Change From Prior Year:		**0%**				
1980	$ 612	0.200% on the first	$	100	$ 25	0.125% on the first	$	25
		0.175% on the next	$	100		0.100% on the next	$	25
		0.150% on the next	$	500		0.075% over	$	50
		0.100% over	$	700				
		Adv. Fee Exp. Ratio:		**0.162%**		**Adv. Fee Exp. Ratio:**		**0.150%**
		Change From Prior Year:		**0%**		**Change From Prior Year:**		**n/a**
1981	$ 521	0.200% on the first	$	100	$ 25	0.125% on the first	$	25
		0.175% on the next	$	100		0.100% on the next	$	25
		0.150% on the next	$	500		0.075% over	$	50
		0.100% over	$	700				
		Adv. Fee Exp. Ratio:		**0.164%**		**Adv. Fee Exp. Ratio:**		**0.150%**
		Change From Prior Year:		**1%**		**Change From Prior Year:**		**0%**

GNMA Fund not in existence.

Year	Wellington Fund Fund Assets (millions)	Advisory Fee Schedule			GNMA Fund Fund Assets (millions)	Advisory Fee Schedule		
1982	$ 558	0.200% on the first	$	100	$ 79	0.125% on the first	$	25
		0.175% on the next	$	100		0.100% on the next	$	25
		0.150% on the next	$	500		0.075% over	$	50
		0.100% over	$	700				
		Adv. Fee Exp. Ratio:		**0.163%**		**Adv. Fee Exp. Ratio:**		**0.099%**
		Change From Prior Year:		**-1%**		**Change From Prior Year:**		**-34%**
1983	$ 614	0.175% on the first	$	100	$ 157	0.063% on the first	$	25
		0.150% over	$	100		0.050% on the next	$	25
						0.038% over	$	50
		Adv. Fee Exp. Ratio:		**0.154%**		**Adv. Fee Exp. Ratio:**		**0.043%**
		Change From Prior Year:		**-6%**		**Change From Prior Year:**		**-56%**
		Saved Under New Schedule:	**$**	**0.1**		**Saved Under New Schedule:**	**$**	**0.1**
1984	$ 614	0.175% on the first	$	100	$ 277	0.063% on the first	$	25
		0.150% over	$	100		0.050% on the next	$	25
						0.038% over	$	50
		Adv. Fee Exp. Ratio:		**0.154%**		**Adv. Fee Exp. Ratio:**		**0.041%**
		Change From Prior Year:		**0%**		**Change From Prior Year:**		**-6%**
1985	$ 813	0.175% on the first	$	100	$ 1,115	0.063% on the first	$	25
		0.150% over	$	100		0.050% on the next	$	25
						0.038% over	$	50
		Adv. Fee Exp. Ratio:		**0.153%**		**Adv. Fee Exp. Ratio:**		**0.038%**
		Change From Prior Year:		**-1%**		**Change From Prior Year:**		**-6%**
1986	$ 1,135	0.150% on the first	$	500	$ 2,100	0.038% on the first	$	1,000
		0.125% on the next	$	500		0.031% on the next	$	1,000
		0.075% on the next	$	1,000		0.025% on the next	$	3,000
		0.005% over	$	2,000		0.019% over	$	5,000
		Adv. Fee Exp. Ratio:		**0.130%**		**Adv. Fee Exp. Ratio:**		**0.034%**
		Change From Prior Year:		**-15%**		**Change From Prior Year:**		**-12%**
		Saved Under New Schedule:	**$**	**0.3**		**Saved Under New Schedule:**	**$**	**0.1**
1987	$ 1,331	0.150% on the first	$	500	$ 1,757	0.038% on the first	$	1,000
		0.125% on the next	$	500		0.031% on the next	$	1,000
		0.075% on the next	$	1,000		0.025% on the next	$	3,000
		0.005% over	$	2,000		0.019% over	$	5,000
		Adv. Fee Exp. Ratio:		**0.122%**		**Adv. Fee Exp. Ratio:**		**0.035%**
		Change From Prior Year:		**-6%**		**Change From Prior Year:**		**3%**
1988	$ 1,527	0.150% on the first	$	500	$ 1,797	0.038% on the first	$	1,000
		0.125% on the next	$	500		0.031% on the next	$	1,000
		0.075% on the next	$	1,000		0.025% on the next	$	3,000
		0.005% over	$	2,000		0.019% over	$	5,000
		Adv. Fee Exp. Ratio:		**0.116%**		**Adv. Fee Exp. Ratio:**		**0.035%**
		Change From Prior Year:		**-5%**		**Change From Prior Year:**		**0%**
1989	$ 2,099	0.150% on the first	$	500	$ 2,032	0.038% on the first	$	1,000
		0.125% on the next	$	500		0.031% on the next	$	1,000
		0.075% on the next	$	1,000		0.025% on the next	$	3,000
		0.050% over	$	2,000		0.019% over	$	5,000
		Adv. Fee Exp. Ratio:		**0.104%**		**Adv. Fee Exp. Ratio:**		**0.034%**
		Change From Prior Year:		**-11%**		**Change From Prior Year:**		**-1%**

Exhibit X

Year	Wellington Fund Fund Assets (millions)	Advisory Fee Schedule			GNMA Fund Fund Assets (millions)	Advisory Fee Schedule		
1990	$ 2,449	0.150% on the first	$	500	$ 2,469	0.038% on the first	$	1,000
		0.125% on the next	$	500		0.031% on the next	$	1,000
		0.075% on the next	$	1,000		0.025% on the next	$	3,000
		0.050% over	$	2,000		0.019% over	$	5,000
		Adv. Fee Exp. Ratio:		**0.096%**		**Adv. Fee Exp. Ratio:**		**0.033%**
		Change From Prior Year:		**-7%**		**Change From Prior Year:**		**-5%**
1991	$ 3,818	0.125% on the first	$	500	$ 5,103	0.031% on the first	$	2,500
		0.100% on the next	$	500		0.025% on the next	$	2,500
		0.075% on the next	$	1,000		0.019% on the next	$	2,500
		0.050% on the first	$	1,000		0.013% over	$	7,500
		0.040% over	$	3,000				
		Adv. Fee Exp. Ratio:		**0.071%**		**Adv. Fee Exp. Ratio:**		**0.028%**
		Change From Prior Year:		**-26%**		**Change From Prior Year:**		**-14%**
		Saved Under New Schedule:	**$**	**0.3**		**Saved Under New Schedule:**	**$**	**0.03**
1992	$ 5,570	0.125% on the first	$	500	$ 6,958	0.031% on the first	$	2,500
		0.100% on the next	$	500		0.025% on the next	$	2,500
		0.075% on the next	$	1,000		0.019% on the next	$	2,500
		0.050% on the first	$	1,000		0.013% over	$	7,500
		0.040% over	$	3,000				
		Adv. Fee Exp. Ratio:		**0.061%**		**Adv. Fee Exp. Ratio:**		**0.025%**
		Change From Prior Year:		**-14%**		**Change From Prior Year:**		**-9%**
1993	$ 8,076	0.125% on the first	$	500	$ 7,073	0.031% on the first	$	2,500
		0.100% on the next	$	500		0.025% on the next	$	2,500
		0.075% on the next	$	1,000		0.019% on the next	$	2,500
		0.050% on the first	$	1,000		0.013% over	$	7,500
		0.040% over	$	3,000				
		Adv. Fee Exp. Ratio:		**0.055%**		**Adv. Fee Exp. Ratio:**		**0.025%**
		Change From Prior Year:		**-11%**		**Change From Prior Year:**		**0%**
1994	$ 8,809	0.125% on the first	$	500	$ 5,778	0.031% on the first	$	2,500
		0.100% on the next	$	500		0.025% on the next	$	2,500
		0.075% on the next	$	1,000		0.019% on the next	$	2,500
		0.050% on the first	$	1,000		0.013% over	$	7,500
		0.040% over	$	3,000				
		Adv. Fee Exp. Ratio:		**0.053%**		**Adv. Fee Exp. Ratio:**		**0.027%**
		Change From Prior Year:		**-2%**		**Change From Prior Year:**		**6%**
1995	$ 12,656	0.100% on the first	$	1,000	$ 6,908	0.020% on the first		3000
		0.050% on the next	$	2,000		0.010% on the next		3000
		0.040% on the next	$	7,000		0.008% over		6000
		0.030% over	$	10,000				
		Adv. Fee Exp. Ratio:		**0.044%**		**Adv. Fee Exp. Ratio:**		**0.014%**
		Change From Prior Year:		**-17%**		**Change From Prior Year:**		**-48%**
		Saved Under New Schedule:	**$**	**0.6**		**Saved Under New Schedule:**	**$**	**0.8**
1996	$ 16,192	0.100% on the first	$	1,000	$ 7,441	0.020% on the first	$	3,000
		0.050% on the next	$	2,000		0.010% on the next	$	3,000
		0.040% on the next	$	7,000		0.008% over	$	6,000
		0.030% over	$	10,000				
		Adv. Fee Exp. Ratio:		**0.041%**		**Adv. Fee Exp. Ratio:**		**0.014%**
		Change From Prior Year:		**-7%**		**Change From Prior Year:**		**-3%**

Exhibit X

Year	Wellington Fund Fund Assets (millions)	Advisory Fee Schedule			GNMA Fund Fund Assets (millions)	Advisory Fee Schedule		
1997	$ 21,812	0.100% on the first		1,000	$ 8,725	0.020% on the first	$	3,000
		0.050% on the next		2,000		0.010% on the next	$	3,000
		0.040% on the next		7,000		0.008% over	$	6,000
		0.030% over		10,000				
		Adv. Fee Exp. Ratio:		**0.038%**		**Adv. Fee Exp. Ratio:**		**0.013%**
		Change From Prior Year:		**-7%**		**Change From Prior Year:**		**-6%**
1998	$ 25,761	0.100% on the first	$	1,000	$ 10,993	0.020% on the first	$	3,000
		0.050% on the next	$	2,000		0.010% on the next	$	3,000
		0.040% on the next	$	7,000		0.008% over	$	6,000
		0.030% over	$	10,000				
		Adv. Fee Exp. Ratio:		**0.037%**		**Adv. Fee Exp. Ratio:**		**0.012%**
		Change From Prior Year:		**-3%**		**Change From Prior Year:**		**-8%**
1999	$ 25,529	0.100% on the first		1,000	$ 12,548	0.020% on the first	$	3,000
		0.050% on the next		2,000		0.010% on the next	$	3,000
		0.040% on the next		7,000		0.008% over	$	6,000
		0.030% over		10,000				
		Adv. Fee Exp. Ratio:		**0.037%**		**Adv. Fee Exp. Ratio:**		**0.011%**
		Change From Prior Year:		**0%**		**Change From Prior Year:**		**-4%**
2000	$ 22,799	0.100% on the first	$	1,000	$ 13,911	0.020% on the first	$	3,000
		0.050% on the next	$	2,000		0.010% on the next	$	3,000
		0.040% on the next	$	7,000		0.008% over	$	6,000
		0.030% over	$	10,000				
		Adv. Fee Exp. Ratio:		**0.038%**		**Adv. Fee Exp. Ratio:**		**0.011%**
		Change From Prior Year:		**2%**		**Change From Prior Year:**		**-3%**
2001	$ 24,293	0.100% on the first	$	1,000	$ 18,981	0.020% on the first	$	3,000
		0.050% on the next	$	2,000		0.010% on the next	$	3,000
		0.040% on the next	$	7,000		0.008% over	$	6,000
		0.030% over	$	10,000				
		Adv. Fee Exp. Ratio:		**0.037%**		**Adv. Fee Exp. Ratio:**		**0.010%**
		Change From Prior Year:		**-9%**		**Change From Prior Year:**		**-7%**
2002	$ 22,389	0.100% on the first	$	1,000	$ 27,657	0.020% on the first	$	3,000
		0.050% on the next	$	2,000		0.010% on the next	$	3,000
		0.040% on the next	$	7,000		0.008% over	$	6,000
		0.030% over	$	10,000				
		Adv. Fee Exp. Ratio:		**0.038%**		**Adv. Fee Exp. Ratio:**		**0.009%**
		Change From Prior Year:		**2%**		**Change From Prior Year:**		**-7%**
		Advisory fees paid in 2002:	**$**	**8.5**		**Advisory fees paid in 2002:**	**$**	**2.6**
		2002 Adv. fees if 1973 schedule were still in effect:	**$**	**92.2**		**2002 Adv. fees if 1980 schedule were still in effect:**	**$**	**20.8**
		Savings realized by shareholders:	**$**	**83.7**		**Savings realized by shareholders:**	**$**	**18.2**

Exhibit X