

Stewardship vs. Salesmanship— Bond Mutual Funds Gone Awry

Remarks by

John C. Bogle

Founder and Former Chief Executive, The Vanguard Group

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I'm delighted and honored to be with you this evening, the third time I've addressed FIASI in the past decade. The first occasion was on March 18, 1998, when my theme was "Bond Funds: Treadmill to Oblivion." In my remarks, I made the point that "fixed income funds simply cannot provide adequate returns to investors when their sound principles of management and diversification are offset by more than compensatory cost encumbrances." (Today, it seems so obvious!)

I have no idea whether or not that speech lit the spark that led to my induction into the FIASI Hall of Fame a year and one-half later on November 10, 1999. But that surprising and wonderful event led to my second speech for FIASI. Its simple title clearly echoed the message of its progenitor: "Giving the Bond Fund Investor a Fair Shake." Yet today, that fair shake is the rare exception to the costly penalties that the mutual fund industry imposes on its clients, in bond funds and stock funds alike.

The problem, simply put, is that in the famously efficient U.S. bond markets, bond fund managers as a group are average. That is, they produce average returns. (No Lake Wobegon

* The opinions expressed in this speech do not necessarily represent the views of Vanguard's present management. Please forgive me for my focus on the Vanguard bond funds in my cost-benefit analysis. Not only do they have by far the lowest expense ratios in the field (usually about 80 percent below competitive norms), but they have few low-cost rivals. (The Vanguard long-term municipal bond funds carry expense ratios of about 16 basis points, 65 percent below the 45 basis points charged by the next-lowest-cost funds.) We are also unusual in our focus on bond index funds, which are virtually alone in having ten-year records. (The pioneering Vanguard Total Bond Market Fund was created in 1986.)

here!) Of course, that same principle applies to stock fund managers as a group, too. How could it be otherwise?

But that similarity conceals an important difference. Among stock funds, the return spreads between top-tier managers (in a given period) and bottom-tier managers are large. But among bond funds, the spread between the top tier and the bottom tier is remarkably small. For example, the spread between the annual returns earned over the past decade by the top-decile managers and the bottom-decile managers in the large cap growth fund category was fully 9.1 percentage points (+11 percent vs. +1.9 percent). (**Chart 1**) The return spread among intermediate-term municipal bond funds for the same period, on the other hand, was a slim 1.6 percentage points: top decile, 5.6 percent per year; bottom decile, 3.9 percent.

A Comparison of Ten-Year Returns ^{1.}			
Large-Cap Growth Funds			
	Avg. Ann Return	Avg. Exp. Ratio	Gross Return
Top Decile	11.0%	1.1%	12.1%
Bottom Decile	1.9%	1.5%	3.4%
Spread	(9.1%)	0.4%	(8.7%)
IT Municipal Bond Funds			
	Avg. Ann Return	Avg. Exp. Ratio	Gross Return
Top Decile	5.6%	0.6%	6.2%
Bottom Decile	3.9%	1.3%	5.3%
Spread	(1.6%)	0.7%	(0.9%)

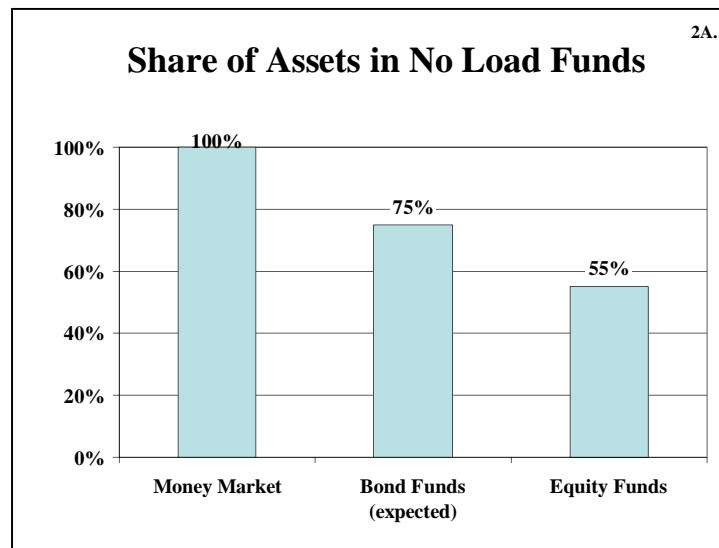
But there is another vital difference. Fund costs play only a *supporting role* in determining the spread in returns among equity funds. For example, those same top-decile growth funds produced *pre-expense-ratio* annual returns of 12.1 percent; for the bottom decile, the pre-expense-ratio return was 3.4 percent, leaving only a slightly smaller difference of 8.7 percentage points, a difference that we can attribute to some unknown combination of manager skill, luck, and randomness.

Now contrast that relationship with bond funds. Here costs play a *starring role* in determining the spread in returns. Those same top-decile intermediate-term municipal bond funds produced an average return of 6.2 percent before expense ratios were deducted, compared

to 5.3 percent for the bottom-tier funds, reducing their disadvantage by 0.9 percentage points, more than a 40 percent reduction in the spread. Clearly, before costs are deducted, remarkably small rewards—indeed, almost non-existent rewards—can be attributed to manager skill, luck, and randomness.

The Great Marketing Machine

In the great marketing machine we know as the mutual fund industry, these perhaps obvious findings are largely ignored, even as the costs of mutual fund investing are themselves largely ignored. Think with me for a moment of how mutual funds are distributed in relationship to the clarity of the impact of costs on returns. In money market funds, when the correlation between expense ratio and total return is virtually 1 to 1, even on a daily basis. Here, 100 percent of total money market fund assets of \$1.8 trillion is represented by *no-load* funds. (**Chart 2A**)



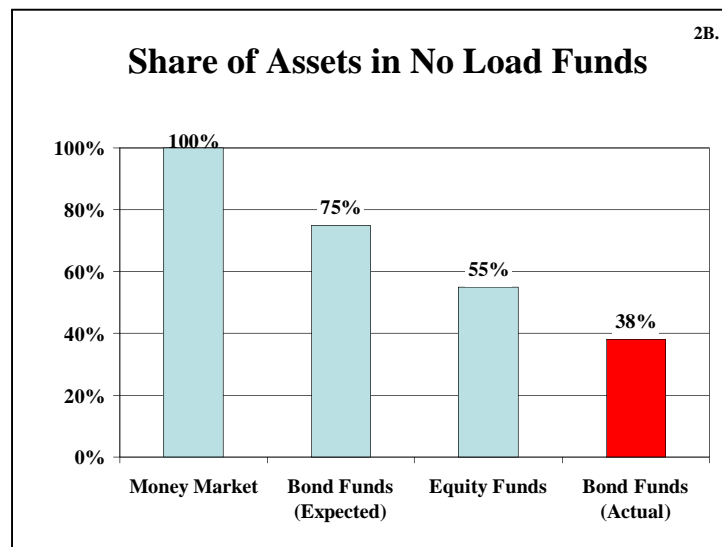
In equity funds, the correlation of costs with returns over, say, a single year is cloudy but negative, at about the minus 0.13 level. The correlation of costs with returns over three decades is much more visible, and negative at an imposing minus 0.69 level. *Yes, higher costs are associated with lower returns.* Nonetheless, investors seem far more persuaded by the record of large net returns in the past (which superficially seem independent of costs) than by the ongoing (and both devastating and certain) impact of costs. In equity funds, even though reversion to (and even below) the stock market return—and to competitive norms—is far more the rule than the exception, there appears to be a large premium on *selection*. As a result, broker-sold funds

dominate, with about 55 percent of equity fund assets of \$6 trillion residing in load funds, and about 45 percent in no-load funds, a relationship that has been remarkably steady during the years.

In its own perverse way, this contrast between the dominance of load funds in the equity field and no-load funds in the money market field makes sense. In money markets, where returns are relatively uniform, where the impact of costs is rather obvious, and where the hope of outperforming the market is non-existent, a sales commission would be regarded as an absurd drag on returns, indeed perhaps almost a fraud. On the other hand, in equity markets, where returns are highly variable, where the impact of costs is obscure, and where the hope of beating the market springs eternal, the sales agents of our brokerage firms ride in the saddle, dominating the asset base.

What does this analysis have to do with bond funds? Plenty! Consider that in terms of those three major variables—uniformity of returns, obviousness of the impact of costs, and hope of outperformance—bond funds lie somewhere *between* equity funds and money market funds. So, an analyst might reasonably conclude that the market share of load and no-load funds would also lie somewhere between that 0/100 load fund/no-load fund split in money market assets and that 55/45 load/no-load split in equity funds.

The analyst would be wrong. The assets of bond funds are not represented by, as that logic would suggest, something like 75 percent in no-load funds and 25 percent in load funds. To the contrary, the division of the \$1.5 trillion asset base of bond mutual funds is far from that division: presently 62 percent load fund assets and 38 percent no-load fund assets, only about one-half of our rational expectation of 75 percent. **(Chart 2B)** This surprising—indeed astonishing!—division of market shares suggests that something very weird is going on among the giant brokerage firms that dominate the load fund market.



Think of it this way, using the analogy I presented in my 1998 FIASI Speech:

“On the third floor of the buildings of these giant national brokerage firms (let’s call that the institutional trading floor)—their bond traders are bickering over a ‘tick’ ($1/32^{\text{nd}}$ of a point, or three one-hundredths of one percent), prepared to commit mayhem for two ticks, and to take out swords and pistols, willing to commit murder, for four ticks. Yet on the first floor of their buildings (we’ll call that the retail sales floor), bond fund marketers utterly ignore the baneful impact of the full 32 ticks (one percentage point)—or even 64 ticks (fully two percentage points)—that they lay on their customers.”

Echoing the title of my remarks this evening—“Stewardship vs. Salesmanship—Bond Mutual Funds Gone Awry”—this dichotomy reflects the triumph of salesmanship over stewardship in the management of bond funds; it reflects building a fund’s assets by *supply-push seller* incentives rather than *demand-pull buyer* incentives; and it reflects, perhaps above all, the *information asymmetry* (a nice economist’s term!) that exists when the seller knows a lot about these “relentless rules of humble arithmetic” (a favorite phrase of mine, courtesy of Justice Brandeis) that I’ve earlier described, rules of which the buyer is largely ignorant. It is this unfortunate combination that allows bond funds with substantial sales charges and high expense ratios to dominate a business segment in which investor returns, slashed by those very costs, are doomed to be inadequate.

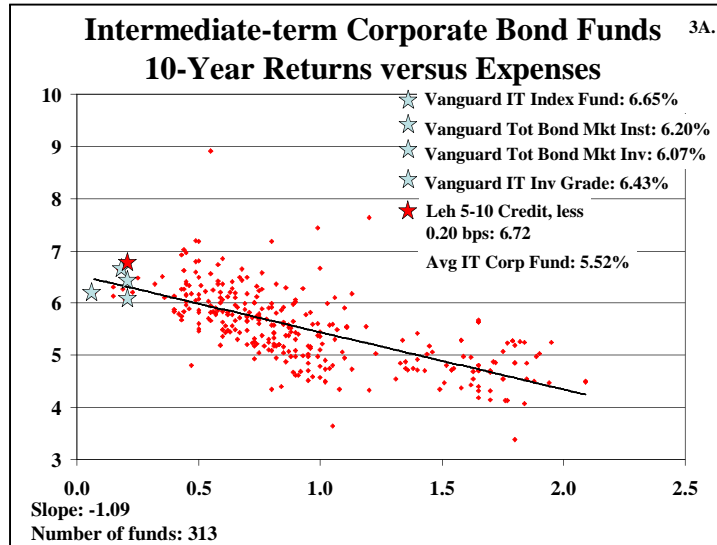
Dissecting the Impact of Costs

With that background, let's now take a careful look at the impact of costs on returns; using three charts ("scatter diagrams") that largely update those that I presented to FIASI in 1998. They differ only slightly from one another in the message that they uniformly present: *Beating the bond market is a loser's game*, largely because of the high costs—heavy sales charges and large expense ratios, and, to some degree, excessive transaction costs—incurred by the vast majority of bond mutual funds. The corollary of this message is equally obvious and equally important: *The more the managers take, the less the investors make*.

There are too many types of bond funds to try your patience by examining all of them. So let's examine the three basic maturity levels (intermediate-term, long-term, and short-term) that have become the industry standard, one in each of the three major bond segments—taxable corporate bonds, tax-exempt municipal bonds, and U.S. Government issues. We'll start with taxable intermediate-term bond funds; then turn to tax-exempt long-term bond funds; and finally evaluate funds investing in short-term U.S. Treasury notes.

Intermediate-Term Corporate Bonds

Among intermediate-term taxable corporate bond funds, the Lehman 5–10 Year Credit Bond Index (the red star) set a demanding hurdle rate. (A finding that indexing wins should not surprise you!) (**Chart 3A**) Its 10-year return (reduced by 20 basis points to account for estimated expenses) was 6.72 percent, just a hair higher than the 6.65 percent return of the comparable Vanguard Intermediate-Term Bond Index Fund, oddly enough, the only index fund of its kind in the field with a ten-year history. Vanguard Total Bond Market Index Fund—with more than 70 percent of assets in Treasury and government mortgage-backed bonds and about 30 percent corporate bonds—albeit provided a net return averaging 6.1 percent.



The adjusted annual return of 6.7 percent for the index was more than 20 percent higher than the 5.5 percent return of its average peer. Since the slope of the cost/return line is -1.09 (meaning that each percentage point reduction in cost increases return by 1.09 percentage points), actively managed bond funds as a group in fact earned a lower *gross* return than either the index fund or the adjusted index. Clearly, relative cost proved to be the principal differentiator in net return. **(Chart 3B)**

3B.

	Vanguard IT Inv Grade Fund	Vanguard IT Bond Index Fund	Average IT Inv Grade Fund
Volatility (vs index)	85%	100%	75%
Duration	5.2	5.9	4.6
Quality (A or above)	98%	100%	81%
Turnover (5 yr avg)	55%	97%	213%
Expense Ratio	0.21%	0.17%	0.93%
10-yr Annual Return	6.44%	6.65%	5.52%
Profit on \$10,000	\$8,670	\$9,040	\$7,110

Vanguard Intermediate-Term Investment Grade Bond Fund, for example, has an expense ratio of 0.21 percent, less than a quarter of the 0.93 percent expense ratio of its average peer. Similarly, the slightly-longer-duration Vanguard Intermediate-Term Bond Index Fund carries an

expense ratio of 0.17, explaining almost all of its return superiority over the actively-managed competition (6.65 percent vs. 5.62 percent). In addition, its return benefits from the absence of sales loads.

“All bond funds are *not* created equal.” And that is true of investment grade intermediate-term corporate bond funds, too. The outliers in the chart have usually departed radically from bond market norms. For example, the top performer with that terrific 8.9 percent return (and blessed with no sales loads and a relatively low 0.55 percent expense ratio), held fully 41 percent in credits rated BBB or less, compared to only 2 percent for the index.

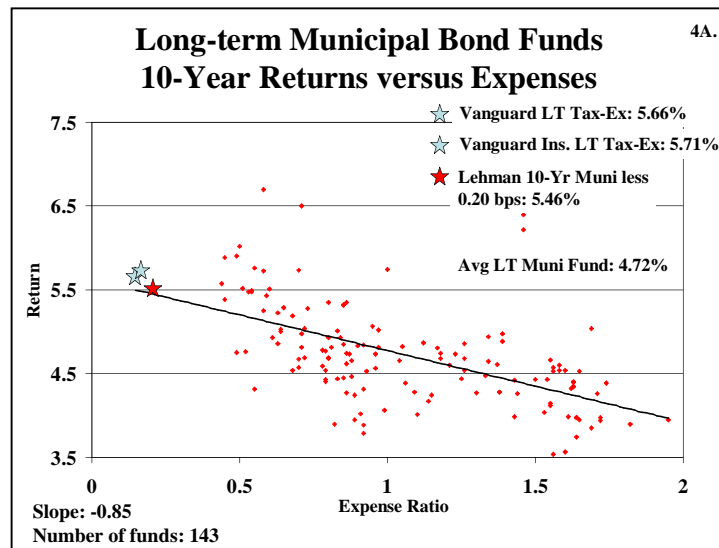
Overall, the Vanguard managed fund and the Vanguard index fund not only operated at far lower expenses, but maintained significantly higher quality (almost 100 percent A-rated, vs. 81 percent for the average managed fund). In addition, the Vanguard funds exhibited starkly lower portfolio turnover (55 percent and 97 percent, vs. a stunning 213 percent average). That said, both the Vanguard funds were slightly more volatile, carrying a slightly longer duration than the typical managed bond fund (5.2 and 5.9 years respectively, vs. 4.6 years).

And so the message echoes. Among intermediate-term taxable bond funds, in terms of maximizing investor return and minimizing quality risk, low-cost funds are superior performers. And over time that annual advantage matters even more! With a cumulative final value of an initial investment of \$10,000 over the past decade growing by \$9,040 in the Vanguard Index Fund, more than 25 percent higher than the \$7,110 earned for its average actively managed rival, the index strategy proved to be a winning strategy, outpacing an amazing 297 of its 313 peers over the past decade. Importantly, among the 50 top-performing corporate bond funds in that universe, only a single one is a load fund, whereas among the bottom 50, only 4 are no-load funds.

Long-Term Municipal Bond Funds

Now let’s consider long-term maturities, with a focus on tax-exempt municipal bond funds. Because of complexities in the construction of municipal bond indexes, there are no pure index funds in this category. But the results of the major index in the field (the Lehman Brothers Tax-Exempt 10-Year Municipal Index) confirm the power of indexing in surpassing the returns provided by the average active bond manager. (**Chart 4A**) Since the index provided a gross

return of 5.66 percent, a comparable index fund, after assumed costs of 0.20 percent, would have provided a 5.46 percent net annual return.



By way of comparison, the Vanguard Long-Term Tax-Exempt Bond Fund happened to provide an even higher return of 5.66 percent, net of its tiny expense ratio of 0.15 percent, even less than the costs assumed for the index fund. Once again, low costs lead to higher returns. Each percentage point reduction in costs increases returns by 0.85 percentage points. The 5.66 percent annual return of the long-term Vanguard fund was roughly 20 percent more than the 4.72 percent earned by the average long-term municipal fund, even though many of the actively managed funds were assuming higher risks. The top performing outliers, for example, held barely 50 percent in AAA-rated bonds, compared to 86 percent for the average fund, and 91 percent for the uninsured Vanguard fund.

Like the index itself, the Vanguard managed bond fund is broadly diversified and holds a high-quality portfolio: 100 percent rated A or better, even higher than the 86 percent figure for its actively managed peers. **(Chart 4B)** Befitting its long-term investment horizon, its portfolio turnover is just 12 percent per year—surely an indication of an index-like orientation—vastly lower than the 41 percent turnover of the average actively-managed long municipal fund. And its duration was somewhat below that of its peers.

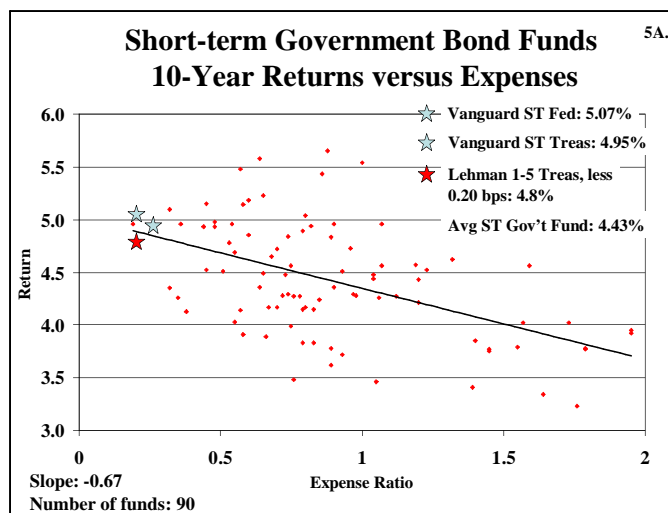
4B.

	Vanguard LT Municipal Fund	Vanguard Ins LT Muni Fund	Average LT Municipal Fund
Volatility (vs index)	91%	88%	82%
Duration	5.6	5.7	6.1
Quality (A or above)	100%	100%	86%
Turnover (5 yr avg)	12%	18%	41%
Expense Ratio	0.15%	0.16%	1.0%
10-yr Annual Return	5.66%	5.71%	4.72%
Profit on \$10,000	\$7,340	\$7,420	\$5,860

Over the past decade, \$10,000 initially invested in the Vanguard Long-Term Municipal Bond Fund provided a profit of \$7,340, 25 percent larger than the \$5,860 earned by its average rival, achieving that extra gain with a higher quality portfolio. With low costs, broad diversification, and no serious attempt to outguess the market in long-term tax-exempt bonds, once again the index-like strategy wins. Both Vanguard Long-Term Tax-Exempt Bond Fund and its close counterpart, Vanguard Insured Long-Term Tax-Exempt Bond, ranked in the top decile of the 143 funds in the category. Once again, load funds were conspicuous by their paucity among the top 20 funds (only 4 with loads) and dominated the bottom-20 fund group (18 with loads).

Short-Term U.S. Treasury Bond Funds

Our sweep of the bond fund arena concludes with an examination of short-term funds investing in U.S. Government obligations. **(Chart 5A)** There are few surprises here. The net return earned by the Lehman 1-5 Year Treasury Index itself (4.8 percent per year, net of an adjustment for an assumed expense ratio of 0.20 percent) outpaces the return of 4.4 percent for average short-term government fund.



While the Vanguard Short-Term Federal and Treasury funds are not, technically speaking, index funds, they track the index return with remarkable precision, turning in net average annual returns of 4.95 percent and 5.07 percent over the past decade, slightly higher than the index net return of 4.8 percent and outpacing 71 of the 90 short-term government funds. The low-cost, no-load option wins again.

Treasuries being Treasuries, investment quality is virtually uniform. **(Chart 5B)** Both the Vanguard funds and the index itself hold 100 percent of their portfolios in short-term U.S. Government notes, and the actively managed funds hold 99 percent. With its towering 0.88 percent average expense ratio, however, the average short-term bond fund has a lot to overcome. It doesn't succeed—it can't succeed—in overcoming that handicap, even by assuming somewhat more volatility risk than the index and the Vanguard funds. The other outliers earning above-market returns did so simply by holding longer maturities, with the highest-returning funds carrying 3.3- to 3.9-year durations, compared to the duration of 2.2 years for the Vanguard funds.

	Vanguard ST Treasury Fund	Vanguard ST Federal Fund	Average ST Gov't Fund
Volatility (vs index)	93%	90%	100%
Duration	2.2	2.2	2.4
Quality (A or above)	100%	100%	99%
Turnover (5 yr avg)	119%	81%	155%
Expense Ratio	0.26%	0.20%	0.88%
10-yr Annual Return	4.95%	5.07%	4.43%
Profit on \$10,000	\$6,200	\$6,400	\$5,400

The tracking of their benchmark, their quality parity, and their extremely low expenses mark the Vanguard Short-Term Treasury Bond Fund and the Short-Term Federal Fund—its counterpart which holds largely agency securities—as the functional equivalents of the Lehman 1–5 Year Treasury Bond Index. While there are no bond funds that track this index, those Vanguard funds are the virtual equivalent of an index fund. (Most of the actively-managed funds carry fees and sales charges (averaging 3 percent), which are incorporated into the rates of return shown.)

A \$10,000 investment in the average short-term government fund produced a profit of \$5,400, compared to \$6,400 for Vanguard's Short-Term Federal Fund and \$6,200 for Vanguard's Short-Term Treasury fund. It's simply unbelievable that, given the constraints on maturity in the short-term arena, the need for virtually no credit analysis and the inability to deliver extra value (except by extending maturities), fully 27 of the 90 short-term investment funds carry annual expense ratios of 1 percent or more.

Numbers Games

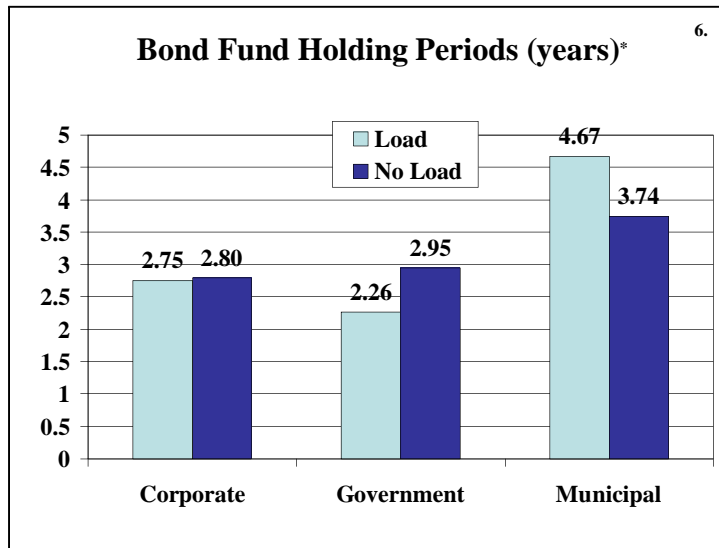
Now let's look behind the figures presented in the foregoing analysis of bond funds in the long-, short-, and intermediate-term maturity groups, and in corporates, municipals, and Treasuries, and play some numbers games. First, the data uniformly point to the compelling advantage of low cost bond funds, and, where available, low-cost bond index funds. And yet cost competition among fund managers is conspicuous by its absence.

One can only be appalled, for example, with the fact that there are only 9 long-term municipal bond funds in our list of 143 funds with annual expense ratios of 0.50 percent or less, and perhaps even flabbergasted that there are only two of them with ratios below 0.40 percent. Of course, they are the Vanguard Long-Term and Insured Long-Term Funds, with respective ratios of 0.15 percent and 0.16 percent. By contrast, there are 65 such funds with ratios of 1.00 percent or more, including the, well, champion, coming in at a truly astonishing 1.95 percent.

However, it is not only the burden of expense ratios that most bond funds must overcome. It is the burden of sales charges as well. While the earlier data showing the ten-year results of a \$10,000 initial investment in fact included the impact of sales charges on those funds charging sales commissions, it is in the nature of that data to amortize, in effect, the front-end sales charge over the full decade. But it turns out that bond funds are typically held by investors for only a relatively small fraction of a decade—actually only about three years on average. So all of those returns for the average bond fund I've shown earlier are overstated.

One might think that, because of the sunk cost represented by the front-end load, investors in such funds would hold them for an extended period, lengthening the amortization period in order to reduce the negative impact on return. Wrong! (**Chart 6**) In fact, the holding period for load and no-load funds differ only slightly in the corporate area (about 2.8 years). But

holding periods for load funds are in fact *shorter* among the government funds (2.3 vs. 3.0 years), and only slightly longer in the municipal area (4.7 vs. 3.7 years). All of these holding periods, of course, are incredibly short—a problem for load-fund investors but indifferent (in performance impact) for no-load investors.



How much is that overstatement? If the typical 4 percent front-end sales charge on bond funds were spread over ten years, the reported rate of return would be reduced by just 4/10 of 1 percent per year. But if the same charge were spread over just three years, the hit, as it were, would come to fully 1.4 percent per year. Tacked on to an expense ratio averaging about 1.1 percent for load funds, that total of 2.4 percent would now consume about 50 percent—one half!—of the 4.7 current yield on the 10-year Treasury. (Even a higher fraction—virtually expropriation—for municipal fund investors, but a slightly lower fraction for corporates.) I can't help but wonder whether (and to what extent) any of you bond professionals here tonight would invest in a bond fund with such a confiscatory handicap.

A Word about Vanguard

Of course, you may regard me as biased in my presentation this evening. After all, I founded Vanguard, created the first index mutual fund, and was responsible for the creation of almost every one of the Vanguard taxable and tax-exempt bond funds in our group, all focused either directly on index strategies, or using managed strategies that strive to preserve the best characteristics of indexing—broad diversification, high investment quality, no loads, low fees,

and low portfolio turnover. Whatever my bias, I assure you that I have no economic stake in the growth of our bond funds. I believe in them, not because their growth might enrich me (it doesn't, and it won't), but because the relentless rules of humble arithmetic on which that strategy is based will enrich investors.

Yes, of course I know that many industry participants argue that since Vanguard's Fixed Income Group manages most of our bond funds—and does so at our actual cost—we have some sort of unfair advantage over our peers. (To whom?, one might ask.) Well, yes and no. Yes, at Vanguard we now directly manage some \$300 billion in fixed-income assets, including our bond index funds. We obviously enjoy huge economies of scale, and our advisory fees come to less than 0.01 percent (one one-hundredth of one percent), representing not a fee, but the actual costs incurred in the Fixed Income Group.

On the other hand, there can be little doubt that the \$27 million in investment supervisory and research costs we incur is among the largest expenditure on professional talent, expertise, experience, and implementation of any group in our field. The secret, as it were, is that while it takes lots of *dollars* to attract and retain investment professionals, if you manage enough assets, it can cost investors only a tiny fraction of *basis points* deducted from the returns they earn. (Including the costs of administration, finance, legal, and shareholder recordkeeping, the total expense ratios on our internally managed bond funds average about 17 basis points.)

Of course that's a powerful economic advantage for our clients. But the advantage is not limited to bond assets managed at Vanguard by our internal staff. Our external bond fund adviser, Wellington Management Company, manages about \$38 billion of total assets in three of our bond funds. Of course we negotiate the best fees we can with Wellington. So, some 12 years ago, anticipating the almost inevitable growth of the bond funds they manage for us, we negotiated sharply sliding fee scales. As assets grew, fee rates would fall. For example, the fee rate on our GNMA fund begins at 2 basis points on the first \$3 billion of assets, and declines to 0.8 basis points on assets in excess of \$6 billion.

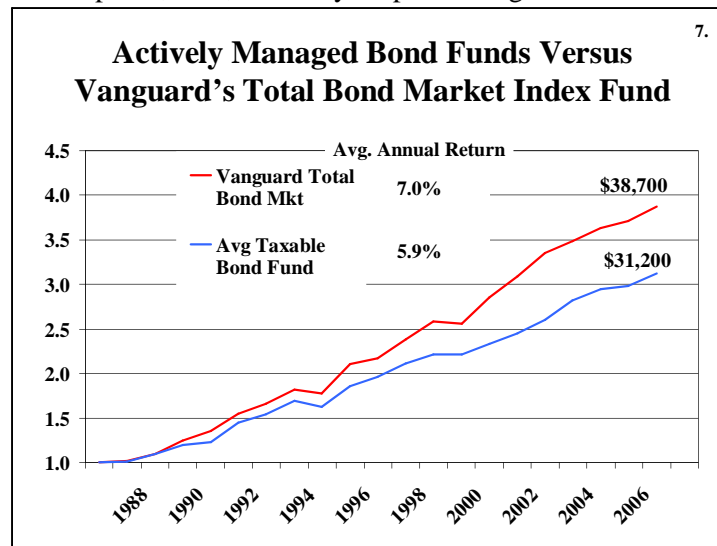
With the GNMA Fund's assets now at \$23 billion, Wellington is paid a handsome \$2.3 million per year, not bad for a fund investing in U.S. Government-guaranteed mortgage-backed certificates, providing an effective annual fee rate of just one basis point (essentially the same as our internally-managed funds). Our Wellington-managed Long-Term Investment Grade Bond

Fund operates at an effective advisory fee rate of 2 basis points, and our High Yield Bond Fund at less than 4 basis points. That is what negotiating fees for the benefit of the fund investor is all about. It's unfortunate that such negotiation is conspicuous by its total absence—or at least *near*-total absence—elsewhere in the mutual fund industry.

Owning the Bond Market

It is because of low investment expenses, low operating expenses, low marketing expenses, low portfolio turnover costs, and the absence of sales charges that Vanguard Total Bond Market Index Fund most clearly reflects the optimal approach to capturing for investors the maximum possible portion of whatever returns the bond market is generous enough to favor us in the years ahead.

At the end of 2006, VTBMF, if you will, celebrated its twentieth anniversary. Given the magic of compounding investment returns—and the tyranny of compounding large costs—the Fund's record during these two decades speaks for itself. Let's look at the record. **(Chart 7)** Based on an initial investment of \$10,000 on December 31, 1986, the total value on December 31, 2006, would have come to \$38,700, a cumulative rate of return of 7.0 percent, bringing a profit of \$28,700 on the initial stake. In stark contrast, a similar investment in the average taxable bond fund carried a return of just 5.9 percent,¹ producing a final value of \$31,200, or a profit of \$21,200. The Index fund profit, then, was fully 35 percent higher.



¹ The average return on net asset value was 6.3 percent. Adjusting for the impact of sales loads on 70 percent of the funds, and assuming a holding period of 3 years—a total added cost of 0.4 percent per year—decreased the average return to investors to 5.9 percent.

As you look at that imposing long-term record for low-cost bond indexing, you might be surprised to learn that it could have been even more imposing. In its first decade, beginning with a tiny asset base of less than \$100 million and ending at \$4 billion, the VTBMF tracking error relative to its target, the Lehman Aggregate Bond Index, was about 45 basis points per year, largely as a result of higher (if still low) expenses and implementation costs on a relatively small asset base. Then, with larger asset size and superior implementation, the annual tracking error fell to an average of 14 basis points through 2001. Then in 2002, misfortune befell the Vanguard Total Bond Market Index Fund, providing lessons that tell us as much about the need for rigorous index management and rigorous control as they do about the risks of active bond management.

After some bumps in the summer of 2001, the bond market fell into serious disarray early in 2002, largely because of a series of sharp downgrades in credit quality. The problems continued through June and July, when they reached crisis stage before at last stabilizing. In those two months alone, VTBMF lost nearly 140 basis points of tracking error, bringing the fund's total lag to its target index for 2002 to an incredible 200 basis points, even more significant since it was derived entirely from the corporate sector (not the Treasury and mortgage-backed sector) which represented only 40 percent of VTBMF's assets.

Why did it happen? I'm treading on dangerous ground here, so let me offer Vanguard management's explanation. From the Fund's semi-annual report on June 30, 2002:

Over the past six months, one of the principal differences between the funds and their indexes resulted from a decision by our portfolio managers and analysts to overweight the telecommunications sector. This decision rested on the belief that the prices of these bonds were cheap relative to those in other sectors. While our exposure to telecoms was diversified, the damage in the sector was widespread. The declines in the value of bonds issued by telephone companies and wireless providers accelerated immediately after WorldCom's implosion in June. To make matters worse, our funds also held larger stakes than their indexes did in bonds issued by several energy-trading companies, which plunged precipitously in the wake of the Enron scandal. In short, our decision to overweight these sectors hurt the returns for our shareholders. The funds also were hurt by our "corporate substitution" policy—buying corporate bonds instead of Treasury securities in the short-term end of the market.

From the Fund's annual report on December 31, 2002:

Our "sampling" approach to indexing . . . is necessary because it would be impractical and very costly to own all the bonds in the target indexes. The sampling strategy—in which we buy some, but not all, of the securities in an index—is designed to

provide our funds with characteristics that are similar to those of their targets. Our portfolio managers and analysts carefully select bonds so that the funds' weightings among sectors closely match those of the indexes. However, during June and July, the relative performance of some "subsectors"—in contrast to historical experience—diverged widely. At that time, our funds had larger stakes than their indexes in several subsectors. In particular, at a subsector level we had heavier weightings in bonds issued by telecommunications and energy-trading companies. These groups were hit extremely hard by the WorldCom bankruptcy, the Enron scandal, and accounting irregularities at a number of other companies. In recognition of the radical change in the market's reaction to credit risk, we have made some adjustments to ensure greater diversification and less exposure to lower-quality bonds.

Do those comments suggest that active management, reduced diversification, and investing for higher yield had found their way into indexing? I'll let you make the call.

I'm confident that the Vanguard Fixed-Income Group has learned much from the cascade of ill-tidings that led to such a shocking 200 basis point shortfall in the return of VTBMF to its target index, an assumption borne out by the fact that our annual tracking error has returned to its earlier excellence, and in fact looks even better. During 2003-2006, the annual returns of VTBMF have come within an average of just 8 basis points per year of its target index. Investors have recognized the improvement, and the Fund's assets have resumed their upward trend. Assets of \$21 billion at the end of 2001, which barely held their own over the two years following the implosion, now total in excess of \$40 billion, the industry's second largest bond fund.

It's worth noting that, even with that shortfall, VTBMF's return of 8.27 percent for 2002 was nearly 200 basis points in excess of the 6.59 percent return of the average taxable bond fund. What's more, as the earlier data showed, the impact of the serious problems I've described on the fund's long-term record has been miniscule, costing only about 10 basis points per year, almost trivial in the light of the Fund's 90 basis point annual cost advantage. But, to be clear, if it is trivial in financial impact, it is anything but trivial in its message about the dangers of seeking higher yields by investing in lower quality bonds. *"Index shoemaker, stick to thy last."*

Summing Up

I can't imagine that much of what I've told you bond professionals this evening offends your sense of reason. In the bond market, almost as much as in the money market and even more than in the stock market, those relentless rules of humble arithmetic make the obscure obvious and lead the intelligent investor to the intelligent conclusion: owning the bond market at very low

annual cost and without sales loads is the obvious winning strategy. Broadly-diversified, actively managed (but not *too* actively managed) bond funds on attractive terms of ownership are an excellent choice, and the index fund is the paradigm of that strategy.

That being the case, how can it be that only a single firm offers very low-cost no-load funds, and only that same firm (or now perhaps two or even three) seriously offers bond index funds? And how can that continue to be the case? Especially since we can be highly confident that bond returns in the years ahead will be far lower than that 7 percent return of the past two decades. Surely no one here tonight can be oblivious to the fact that today's entry yield of about 4.8 percent on taxable bonds (4.2 percent for municipal bonds) establishes the reasonable expectation for returns over the coming decade. So now understand the simple arithmetic: Those low *gross* returns, reduced by the excessive all-in annual costs of about 2.1 percent for the average load fund—say 1 percent per year in expense ratios plus heavy sales loads (amortized) of about 1.1 percent per year—will enviably lead to shockingly low *net* returns for investors. Costs will likely consume 45 percent or even 50 percent of the coming annual returns in the bond market, and therefore 50 or 55 percent of the market's cumulative ten-year return.

What's to be done? We need better information for investors of course, reducing that information asymmetry between fund sellers and fund buyers that I mentioned at the outset. But we have to awaken our regulators and get them involved too, at least in their oversight of the marketers of bond funds in the brokerage community. The NASD demands that “a member, in the conduct of its business, shall observe high standards of commercial honor, and just and equitable principles of trade” and shall engage in “fair dealing with investors.” Under what interpretation could selling funds in which costs consume half of a bond fund's return be considered a high standard of commercial honor? A just and equitable principle of trade? Fair dealing with clients? Isn't there a point at which the overriding interest of the mutual fund client in a fair shake is held as important—even *more* important—than the interest of the broker-dealer firm and its account executives in maximizing their own profits?

If broker-dealers and regulators refuse to face these facts, perhaps bond fund directors will awaken to the past arithmetic—and, even more importantly, to the future arithmetic—of bond fund investing. *Gross return in the bond market, minus the costs of investing, equals the net return investors will actually earn.* In its preamble, the Investment Company Act of 1940 demands that a mutual fund must be “organized, operated, and managed in the interest of its

shareholders, *rather than* in the interest of its managers and distributors.” If our independent directors—responsible to insure that the interest of shareholders is the highest priority of the funds these directors serve—will only stand up and be counted, bond funds can at last fulfill their role in serving their owners with efficiency, economy, honesty, and honor.