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Reflections

The Relentless Rules of Humble Arithmetic

John C. Bogle

During the glorious financial excesses of the recent era, we in the investment community basked in the sunlight of prosperity that is almost unimaginable. But in this environment, our community developed a vested interest in ignoring the obvious realities of financial market returns. It's been said—I think by my detractors—that all I have going for me is "an uncanny ability to recognize the obvious." But as we look ahead to a far less forgiving investment environment, we all must face these truths.

This problem is not new. Two and a half millennia ago, Demosthenes warned, "What each man wishes, he also believes to be true." More recently, and certainly more pungently, Upton Sinclair marveled, "It's amazing how difficult it is for a man to understand something if he's paid a small fortune not to understand it."

The investment community is ignoring the reality that the costs of financial intermediation are devastating the net return actually delivered to investors.

But we all must understand the realities of our investment system, for they are central to the operation of the system of financial intermediation that underlies the collective wealth of our citizenry and the accumulation of assets in our retirement systems. While the Bush administration defines our system as the "ownership society," I call it the "investment society." But whatever words we use, the future of capitalism depends importantly on our understanding the realities of our system.

The Cost Matters Hypothesis

The overarching reality is simple: *Gross returns in the financial markets minus the costs of financial intermediation equal the net returns actually delivered to investors*. Although truly staggering amounts of investment literature have been devoted to the widely understood EMH (the efficient market hypothesis), precious little has been devoted to what I call the CMH (the cost matters hypothesis). To explain the dire odds that investors face in their quest to beat the market, however, we don't need the EMH; we need only the CMH. No matter how efficient or inefficient markets may be, the returns earned by investors as a group must fall short of the market returns by precisely the amount of the aggregate costs they incur. It is the central fact of investing.

Efficient Market Hypothesis	Cost Matters Hypothesis
• Strong evidence	• Overwhelming evidence
• Sound explanation	• Obvious explanation
• Mostly true	• Tautologically true

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Nonetheless, the pages of our financial journals are filled with statistical studies of rates of market returns that are neither achievable nor achieved. How can we talk about "creating positive alpha" without realizing that after intermediation costs are deducted, the system as a whole has negative alpha? Of what use is speculation about the amount of the equity risk premium when 100 percent of the return on the 10-year U.S. Treasury note (or T-bill, if that's what you prefer) is there for the taking while as much as 50 percent or more of the real return on stocks can be consumed by the costs of our financial system? How can we ignore the fact that, unlike those children in Garrison Keillor's fictional Lake Wobegon, we investors are, as a group, average before costs but below average after our costs are deducted?

The idea that investors as a group must be average goes back more than a century, expressed by Louis Bachelier in his PhD thesis at the Sorbonne in 1900: "Past, present, and even discounted future events are [all] reflected in market price." That's essentially what the EMH says. Nearly half a century later, when Nobel Laureate Paul Samuelson discovered Bachelier's long-forgotten thesis, he confessed that he oscillated between regarding it as trivially obvious and regarding it as remarkably sweeping. Of course, Bachelier was right. However, when he went on to conclude that "the mathematical expectation of the speculator is zero," Bachelier was *wrong.* He didn't go far enough. For the fact is that the mathematical expectation of the speculator and the long-term investor alike is not zero. It is zero minus the cost of playing the game, a shortfall to the stock market's return that is precisely equal to the sum total of all those advisory fees, marketing expenditures, sales loads, brokerage commissions, legal and transaction costs, custody fees, and security-processing expenses. And that is the essential message of the CMH.

Relentless Rules That Are Eternal

With that background, let me now turn to the quotation that inspired the title of this essay. In *Other People's Money* (1914), Louis D. Brandeis, who later became one of the most influential jurists on the U.S. Supreme Court, railed against the oligarchs who a century ago controlled both investment America and corporate America. He described their self-serving financial management and interlocking interests as "trampling with impunity on laws human and divine, obsessed with the delusion that two plus two make five." He predicted (accurately, as it turned out) that the widespread speculation of that era would collapse—"a victim of the relentless rules of humble arithmetic." He then added this unattributed warning (perhaps from Sophocles): "Remember, O Stranger, arithmetic is the first of the sciences, and the mother of safety."

As it is said, the more things change, the more they remain the same. The history of the era that Brandeis described may not be repeating itself exactly today, but (paraphrasing Mark Twain) it rhymes. America's investment system—our government retirement programs, private retirement programs, and indeed all of the securities owned by stockowners as a group—is plagued by the relentless rules of humble arithmetic. Because the returns investors receive come only *after* the deduction of the costs of our system of financial intermediation—as a gambler's winnings come only from what remains after the croupier's rake descends—those relentless rules devastate the long-term returns of investors. Applying Brandeis's formulation to these contemporary issues, we seem obsessed with the delusion that a 7 percent market return, minus 2.5 percentage points for costs, still equals a 7 percent investor return.

No one knows the precise amount of the intermediation costs of our financial system.[1] However, we do have data for some of the major cost centers. During 2004, revenues of investment bankers and brokers came to an estimated $220 billion; direct mutual fund costs came to about $70 billion; pension management fees, $15 billion; annuity commissions, some $15 billion; hedge fund fees, about $25 billion; fees paid to personal financial advisors, maybe another $5 billion. These financial intermediation costs alone—even without including the investment services provided by banks and insurance companies—came to approximately $350 billion, directly deducted from the returns that the financial markets generated for investors.

Moreover, the price of intermediation has soared. In 1985, the annual revenues of these cost centers were in the $50 billion range. In the bubble and postbubble era (since 1996) alone, the aggregate costs of financial intermediation may well have exceeded $2.5 trillion, all dutifully paid by our stockowners and stock traders. Of course, some of these costs create value (for example, liquidity). But, by definition, those costs cannot create *above*-market returns. To the contrary, they are the direct

cause of *below*-market returns, a dead weight on the amount earned by investors as a group. In investing, all investors together get precisely what they *don't* pay for. So, it is up to all of us in the financial community to develop a more efficient way to provide investment services to our clients.

The Mutual Fund Industry

The largest of all U.S. financial intermediaries is the mutual fund industry. In my article (Bogle 2005) about the fund industry, in which I've now spent 56 years, I examined the changes that have taken place during this long period and asked whether these changes are for better or for worse. I regret to report that the answer to the question is "for worse."

Consider this summary:[2]

- We have created a mind-boggling number of new and often speculative funds that demand unnecessarily complex choices by investors.
- We've moved from investment committees focused on the wisdom of long-term investing to portfolio manager "stars" engaged in the folly of short-term speculation.
- We've enjoyed an enormous growth in our ownership position in corporate America along with a paradoxical and discouraging diminution of our willingness to exercise that ownership position responsibly, if at all.
- We've imposed soaring costs on our investors that belie the enormous economies of scale in money management.
- Our reputation for integrity, sadly, has been tarred by the brush of a broad-ranging series of scandals.
- Among the larger management companies that dominate the field, we've moved away from private ownership in favor of public ownership, and then to ownership by financial conglomerates.
- We've changed from a profession with aspects of a business to a business with aspects of a profession

The evidence clearly supports the conclusion that the mutual fund industry has moved from stewardship to salesmanship. To this dispiriting analysis of the past, I would add a warning about the future: Unless we return to our traditional role as trustees of other people's money, the mutual fund industry will falter and finally fail—a victim of, yes, the relentless rules of humble arithmetic. I love this industry too much to remain silent and let that happen without putting up a fight.

The Record. The record of the past two decades indicates that the humble arithmetic I have described—Gross Return minus Cost equals Net Return—has proven dangerous to the wealth of the families who have entrusted their hard-earned wealth to mutual funds. In fact, it has destroyed their wealth in almost precisely the measure that the CMH suggests. Investors have learned, and learned the hard way, that in mutual funds, it's not that "you get what you pay for" but that "you get what you *don't* pay for."

Table 1 shows that over the past 20 years, a simple low-cost, no-load stock market index fund that replicated the Standard & Poor's 500 Index delivered an annual return of 12.8 percent—just a hair short of the 13.0 percent return of the market itself. During the same period, the average equity mutual fund delivered a return of 10.0 percent, a shortfall to the index fund of 2.8 percentage points a year and less than 80 percent of the market's annual return. Compounded over that period, each $1 invested in the index fund grew by $10.12—the beneficiary of the magic of compounding returns—whereas each $1 in the average fund grew by just

Table 1. Average Equity Fund vs. S&P 500 Index Fund, 1983–2003

	S&P 500 Index Fund		Average Equity Fund		
Measure	Rate	Profit on $1.00	Rate	Profit on $1.00	Fund Percent of Index Profit
Gross return	13.0%	$10.52	13.0%	$10.52	100%
Fund lag	–0.2		–3.0		
Pretax return	12.8%	10.12	10.0%[a]	5.73	57%
Taxes	–0.9		–2.2		
After-tax return	11.9%	8.47	7.8%	3.49	41%
Inflation	–3.0		–3.0		
Real return	8.9%	$ 4.50	4.8%	$ 1.55	34%

[a]Lipper reported return reduced by 0.3 pp for estimated survivor bias and 0.3 pp for sales charges.

$5.73, a shriveled-up 57 percent of the index fund's cumulative return—the victim of the tyranny of compounding costs.

These data are before taxes. When after-tax data are used, the annual gap between the equity fund and the index fund soars far higher, rising from 2.8 percentage points to 4.1 percentage points a year. The average fund deferred almost no gains during this period; the index fund deferred nearly all. (Deferred taxes may be the ultimate example of how you get what you don't pay for.) Cumulatively, the average equity fund produced, not 57 percent of the market's after-tax return, but only 41 percent.

In fairness, however, the wealth accumulated in the index fund and the average equity fund should be measured not only in nominal dollars but also in real dollars. As Table 1 shows, the real annual return for the index fund drops to 8.9 percent and for the equity fund, to 4.8 percent, obviously the same gap of 4.1 percentage points. But when we reduce both returns by the identical 3.0 percentage points a year for inflation, it will hardly surprise those who know their humble arithmetic that the compounding of those lower annual returns further widens the cumulative gap. Over the past 20 years, the cumulative profit on each $1 initially invested in the equity fund after costs, taxes, and inflation comes to just $1.55 in real terms—only 34 percent of the index fund real profit of $4.50.

A casual look at the stock market over the past two decades, then, reflects a 13 percent annual return that produced a profit of $10.52 on each dollar initially invested. But the underlying reality reflects an outcome almost light years away. After investment costs and taxes are deducted each year in nominal dollars, and after the erosion of inflation, the annual return for the average equity fund tumbles to 4.8 percent, with an accumulated real profit of just $1.55, only one-seventh the amount of the apparent profit on the market portfolio.

Fund Returns vs. Investor Returns. To make matters worse, the stark reality is that the return of the average equity *fund* greatly overstates the return earned by the average equity fund *investor*. When we consider what fund investors actually earn, as shown in **Table 2**, the shortfall to the market return worsens dramatically.

As this industry came to focus more and more on marketing and less and less on management, we deluged investors with a plethora of enticing new funds, at ever-rising costs. Our marketing experts responded with alacrity to the waxing and waning of market fads and fashions, most obviously with the "new economy" funds of the late market bubble. Aided and abetted by the fund industry, investors not only poured hundreds of billions of dollars into equity funds as the stock market soared to its high but also characteristically selected the wrong funds. In addition to the wealth-depleting penalty of fund costs, then, fund investors paid one substantial penalty for the counterproductive *timing* of their investments and another large penalty for the unfortunate *selection* of the mutual funds they chose to own.

Intuition suggests that these costs were large, and the data we have, although not precise, confirm that hypothesis. The asset-weighted returns of mutual funds—which are easy to estimate by examining each fund's quarterly cash flows—lag the standard time-weighted returns by fully 3.7 percentage points a year. Adding that shortfall to the 2.8 percentage point annual lag of time-weighted returns of the average equity fund relative to the S&P 500 Index fund over the past two decades, we see that the asset-weighted returns of the average equity fund stockholder fell behind the index fund by a total of 6.5 percentage points a year. Average annual pretax nominal returns for the period: index fund, 12.8 percent; equity fund investor, 6.3 percent—less than one-half of the stock market's annual return.

Table 2. Average Equity Fund Investor vs. S&P 500 Index Fund, 1983–2003

	S&P 500 Index Fund		Equity Fund Investor		
Measure	Rate	Profit on $1.00	Rate	Profit on $1.00	Investor Percent of Index Profit
Gross return	13.0%	$10.52	13.0%	$10.52	100%
Fund lag	–0.2		–3.0		
Net fund return	12.8%	$10.12	10.0%	$ 5.73	57%
Timing/selection	0.0		–3.7		
Net return	12.8%	$10.12	6.3%	$ 2.39	24%

Applying the tyranny of compounding not only to the actual costs of fund operations but also to the even larger costs of, well, fund ownership, we find that each $1 invested at the outset by the average fund investor, before taxes and inflation, grew by only $2.39 over the full period, compared with the growth of $10.12 that came from simply owning the low-cost index fund. That is, investors received only 24 percent of the wealth that might easily have been accumulated simply by holding a low-cost, unmanaged stock market portfolio.

Much of this extra lag came from the specialized (usually speculative) funds that the industry created and promoted. For example, as **Table 3** shows, during the bull and bear markets we experienced in 1998–2003, the asset-weighted returns of the industry's six largest broadly diversified funds lagged their time-weighted annual returns by an average of less than a single percentage point. The asset-weighted returns of the six largest specialized funds, in contrast, lagged their time-weighted returns by an average of more than 11 percentage points.

Compounded during the six-year period that included the bubble and its aftermath, the gap in returns was astonishing. The specialized funds produced a positive time-weighted annual return of 6.6 percent but lost a cumulative 25 percent of client wealth. Despite a slightly lower time-weighted annual return of 5.4 percent in the broadly diversified large funds, client wealth was enhanced by 30 percent during the period—an additional 55 percentage points in wealth accumulation.

The "Marketingization" of the Fund Industry. The stark arithmetic that illustrates the huge sacrifices of wealth incurred by fund investors has been driven by two costly and counterproductive trends. One is the marketingization of the mutual fund industry, in which most major firms have come to create and market whatever funds will sell.

One reasonable proxy—obviously an imperfect one—for differentiating a marketing firm from a management firm is the number of funds it offers. The data, which come from a Fidelity Investments study of the 54 largest firms managing about 85 percent of the industry's long-term assets, clearly support the proposition that fund firms that have avoided being dominated by a marketing ethic have provided distinctly superior performance.

Table 3. Performance of 2000's Six Largest Diversified and Sector Funds

	Time Weighted			Asset-Weighted Return	Asset Weighted minus Time Weighted
Fund	1998–2000	2001–2003	1998–2003	1998–2003	
Diversified funds					
Fidelity Magellan	14.4%	–5.6%	3.9%	3.7%	–0.2%
Vanguard 500 Index	12.3	–4.2	3.7	2.4	–1.3
Investment Company of America	14.2	1.0	7.4	6.7	–0.7
Janus Fund	20.2	–11.0	3.4	0.9	–2.5
Fidelity Contrafund	15.2	0.4	7.5	7.9	0.4
Washington Mutual	9.6	2.8	6.2	5.5	–0.7
Average annual return	14.3	–2.7	5.4	4.5	–0.9
Cumulative return	49.0%	–7.9%	37.0%	30.0%	–7.0%
Sector funds					
TRP Science & Technology	23.5%	–19.1%	–0.1%	–8.8%	–8.7%
Seligman Communication and Information	13.5	–2.4	5.3	2.0	–3.3
AB Global Technology	28.0	–15.7	3.9	–9.5	–13.4
Vanguard Health Care	34.2	1.4	16.7	13.7	–3.0
Fidelity Select Electronics	37.0	–10.2	10.9	0.0	–10.9
Munder NetNet	35.7	–21.6	3.1	–25.7	–28.8
Average annual return	28.6	–11.3	6.6	–4.7	–11.4
Cumulative return	113.0%	–30.0%	47.0%	–25.0%	–22.0%

On the one hand, as shown in **Table 4**, the 9 firms that each operate fewer than 15 mutual funds clearly dominate the upper reaches of the rankings, holding six of the seven top spots. The firms focused on few funds outpaced almost 80 percent of all their common rivals (i.e., their large-cap growth fund versus other large-cap growth funds, their balanced fund versus other balanced funds, etc.) during the 10-year period studied (1994–2003). On the other hand, the 45 firms with more than 15 funds (averaging 52 funds each) focused on offering a broad line of fund "products" to the public, outpaced only about 48 percent of their peers and hold 36 of the 37 lowest ranks. Marketing focus, apparently, comes at the expense of management success.

"Conglomeratization" of the Fund Industry. The other trend that has ill served investor interest is the conglomeratization of the fund industry, in which giant international financial institutions, eager to get a piece of the action for themselves—a share of the huge profits made in money management—have gone on a buying binge. (The trend toward conglomerated public ownership, while little noted, has been dramatic. Until 1958, all fund management firms were privately held.)

Again, a powerful pattern prevails, with funds operated by privately held management companies holding an impressive edge in investors' returns over funds owned and operated by financial conglomerates. **Table 5** compares the relative returns of the funds managed by the 13 private companies that remain today and the funds managed by the 41 public companies—those that are held either directly by public investors (7 firms) or indirectly by publicly owned financial conglomerates (34 firms).

The funds managed by the 13 firms under private ownership (averaging 34 funds and totaling $1.3 trillion in assets) outpaced 71 percent of their peers and held eight of the top nine spots.[3] The 34 fund managers under the aegis of conglomerates (averaging 47 funds and totaling $1.6 trillion in assets) outperformed only 45 percent. The other 7 publicly held firms (averaging 55 funds each and with $0.6 trillion in assets) outperformed 60 percent. In all, public firms held 32 of the 34 bottom spots on the list.

From these compelling data, it seems reasonable to assume that publicly held firms run by far-removed managers who may well have never looked a fund independent director in the eye are in the fund business primarily to gather assets, build revenues, and enhance their brand names. Such a firm is, with some logic, likely to be far more concerned about the return on *its* capital than the return on the capital entrusted to it by its mutual fund owners. (We saw something of that syndrome in the recent scandals, in which the largest offenders were owned by conglomerates.)

Of course, the conglomerate's managers have a clear fiduciary duty to the conglomerate's owners as well as to the owners of its funds. But the record suggests that when fund fee schedules are considered and new fund "products" created, the conglomerate resolves these dilemmas in favor of its own public owners, ignoring the invocation in the Investment Company Act of 1940 that funds must be organized, operated, and managed in the interests of their shareholders.

Looking Ahead. Despite the problems I have described, fund investors (at least those investors who didn't jump on the bull market bandwagon late in the game) seem satisfied with earning the decidedly modest positive returns achieved by their funds during the bull market of the past two decades. They seem willing to ignore the generally hidden costs of fund investing, oblivious to the tax inefficiency, happy to think in terms of their returns in nominal rather than real dollars, and comfortable in assuming that the responsibility for the mistakes made in fund timing and fund selection are theirs alone.

But suppose we are entering an era of lower returns. What are the implications of these findings for long-term wealth accumulation? Let's measure what might be the typical experience in terms of the investment horizon of a young investor of today. Assume the investor has just joined the workforce and is looking forward to 45 years of employment until retirement and then to enjoying the next 20 years in retirement that the actuaries promise—a total time horizon of 65 years.

If the stock market is kind enough to favor investors with a total return of 8 percent a year over that period and if annual mutual fund costs are held to 2.5 percentage points, the return of the fund investor will average 5.5 percent. By the end of the long period, a cost-free investment at 8 percent will carry an initial $1,000 investment to a final value of $148,800, a profit of $147,800. However, as **Figure 1** shows, the 5.5 percent net return will increase the investor's cumulative wealth by only $31,500, bringing the final value of the investor's investment to $32,500. In effect, the amount paid over to the financial system, also compounded, will come to $116,300.

Table 4. Number of Funds vs. Relative Returns, 1994–2003
(firms offering 15 or fewer funds are shaded)

Firm	Equal-Weighted Outperformance	No. of Funds	Firm	Equal-Weighted Outperformance	No. of Funds	Firm	Equal-Weighted Outperformance	No. of Funds
Dodge & Cox	98%	4	Waddell & Reed	61%	45	Eaton Vance	49%	73
First Eagle	97	5	USAA	61	31	Morgan Stanley Adv.	49	50
Calamos	91	8	Oppenheimer	60	48	Goldman Sachs	49	34
So. Eastern/Longleaf	90	3	MFS	59	61	The Hartford	48	33
American Funds	79	26	Prudential	59	49	Putnam	47	54
Royce	79	14	New York Life	58	22	John Hancock	47	35
Harris Associates	77	7	US Bancorp	57	37	Dreyfus	45	126
Vanguard	76	75	Columbia Mgmt.	56	72	Delaware	44	56
PIMCO	76	51	AllianceBernstein	55	57	Strong	44	42
Franklin Templeton	71	100	Banc One	54	36	Thrivent Financial	44	25
T. Rowe Price	71	72	Neuberger Berman	54	14	Trusco Cap	43	24
Janus	70	21	Lord Abbett	53	27	Merrill Lynch	40	58
ING	69	60	Scudder	52	65	Aim	39	62
Nuveen	65	36	Van Kampen	52	43	Nations Funds	38	42
American Century	64	54	Federated	52	37	American Express	37	60
WM Advisors	64	15	Evergreen	51	57	BlackRock	36	32
Davis	62	7	Citigroup	50	57	Pioneer	33	24
Fidelity	62	207	Wells Fargo	50	39	JP Morgan	32	38

Note: Performance rankings ignore the impact of sales charges and include only A-class shares.
Source: Fidelity Investments.

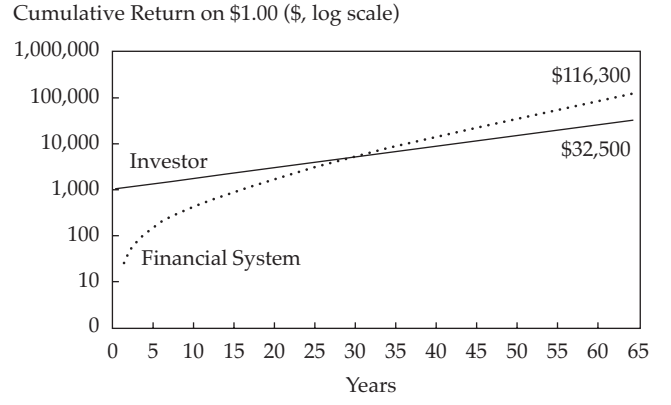
Table 5. Relative Returns and Organizational Structure
(private firms are shaded; publicly held, nonconglomerate firms are in boldface)

Firm	Equal-Weighted % Outperformance	Firm	Equal-Weighted % Outperformance	Firm	Equal-Weighted % Outperformance
Dodge & Cox	98	**Waddell & Reed**	**61**	Goldman Sachs	49
First Eagle	97	USAA	61	Morgan Stanley Adv.	49
Calamos	91	Oppenheimer	60	**Eaton Vance**	**49**
So. Eastern/Longleaf	90	Prudential	59	The Hartford	48
Royce	79	MFS	59	John Hancock	47
American Funds	79	New York Life	58	Putnam	47
Harris Associates	77	US Bancorp	57	Dreyfus	45
PIMCO	76	Columbia Mgmt.	56	Strong	44
Vanguard	76	AllianceBernstein	55	Delaware	44
T. Rowe Price	**71**	Banc One	54	Thrivent Financial	44
Franklin Templeton	**71**	Neuberger Berman	54	Trusco Cap	43
Janus	**70**	Lord Abbett	53	Merrill Lynch	40
ING	69	Van Kampen	52	Aim	39
Nuveen	**65**	Scudder	52	Nations Funds	38
American Century	64	**Federated**	**52**	American Express	37
WM Advisors	64	Evergreen	51	BlackRock	36
Davis	62	Wells Fargo	50	Pioneer	33
Fidelity	62	Citigroup	50	JP Morgan	32

Note: Performance rankings ignore the impact of sales charges and include only A-class shares.
Source: Fidelity Investments.

In other words, the investor who put up 100 percent of the capital and assumed 100 percent of the risk would receive only 21 percent of the return. The financial intermediaries, who put up 0 percent of the capital and assumed 0 percent of the risk, would enjoy a truly remarkable 79 percent of the return. Indeed, the cumulative return of our young capitalist saving for retirement would fall behind the cumulative return taken by the financial croupiers after the 29th year, less than halfway through the 65-year period. Devastating as is this diversion of the spoils of investing, apparently few investors today have either the awareness of the relentless rules of humble arithmetic that almost guarantee such a shortfall in their retirement savings or the wisdom to understand the tyranny of compounding costs over the long term.

Figure 1. The Cumulative Lag Caused by 2.5 Percent Costs in an 8 Percent Market



The Wealth of the Nation

If our system of retirement savings were not the backbone of the wealth of the nation and our economic strength, perhaps this wealth-depleting arithmetic would not matter. But retirement savings *are* the backbone, and the arithmetic *does* matter. Our corporate pension plans hold $1.8 trillion in stocks and bonds; our state and local pension plans, another $2.0 trillion. Private noninsured pension reserves total $4.2 trillion; insured pension reserves, $1.9 trillion; government pension reserves, $3.1 trillion; life insurance reserves, $1.0 trillion—for a total of $10.2 trillion, or nearly one-half of total family assets (other than cash and savings deposits).

Since 1970, U.S. national policy has been to increase private savings for retirement by providing tax-sheltered accounts, such as IRAs and defined-contribution pension, thrift, and savings programs [usually 401(k) plans]. The present administration seems determined to extend the reach of these tax-advantaged vehicles, together with the amount that each family may invest in them each year. So, how do the relentless rules of arithmetic affect our investment society or, if you prefer, our ownership society?

Certainly, the earlier data on relative returns show that the retirement savings of U.S. families are too important to the wealth of the nation to be entrusted to the mutual fund industry. Moreover, the system of tax incentives provided to investors clearly hasn't resulted in adequate wealth accumulation. Only about 22 percent of our workers are using 401(k) savings plans, only about 10 percent have IRAs, and about 9 percent have both. Even after three decades of experience with these tax-advantaged plans, the average 401(k) balance is now a modest $33,600, and the average IRA $26,900—hardly the kind of capital with the potential to provide a comfortable retirement.

In addition, the massive shift that has taken place from defined-benefit plans to defined-contribution plans does not seem to be working well from an investment standpoint. Not only have DB plans produced higher returns than DC plans during the period 1990–2002 (144 percent versus 125 percent), they have done so with far less volatility; in the recent down-market years, DB plans fell only about half as much (–12 percent versus –22 percent). Part of the cumulative shortfall over the 12-year period, of course, can be traced to the higher costs imposed on investors in DC plans, dominated by mutual fund holdings.

The Humble Arithmetic of Pension Plans

Clearly, the nation's foray into DC plans is not doing the job it should in producing a solid base for retirement savings. But our DB plans have done far worse, not because of the returns they have earned, but because of the excessive returns they have projected. The financial statements of U.S. corporations are rife with aggressive assumptions about future returns that have fostered substantial underfunding of their pension plans. Even as interest rates tumbled and earnings yields steadily declined during the past two decades, projections of future returns soared.

In 2000, for example, General Motors Corporation was projecting a 10 percent annual return on its pension plan, compared with the 6 percent assumption it was using in 1975. Why? It based the projection largely on "long-term historical returns." The higher the stock market rose and the more interest rates tumbled, the higher the pension plan's expected returns rose, and not only in the GM model. Amazingly, General Motors was essentially saying, "The more stocks have gone up in the past, the more they'll rise in the future."

Corporate America's projections of pension fund returns are both a national scandal and an accident waiting to happen. Consider from the standpoint of the relentless rules of humble arithmetic what might today be reasonable in projecting future returns of pension plans. **Table 6** provides the data for a conventional pension portfolio of 60 percent U.S. equities and 40 percent U.S. bonds. The projected return of 7.5 percent for the stock portfolio is based on realistic expectations—today's 2 percent dividend yield and historical earnings growth of about 5.5 percent—and assumes no change in the current P/E multiple of 21 times reported earnings.

Table 6. Realistic Return Assumptions: Corporate Pension Plan

	1	2	3	4 (2 – 3)
Asset Class	Allocation	Projected Return	Expenses	Net Return
Equities	60%	7.5%	1.5%	6.0%
Bonds	40	4.5	0.5	4.0
Weighted total	100%	6.3%	1.1%	5.2%

The present yield on a conservative portfolio of U.S. Treasury and corporate bonds suggests a projected bond return of about 4.5 percent, bringing the gross portfolio return to 6.3 percent. Deducting estimated annual plan expenses (fees, turnover costs, etc.) of 1.1 percent from the gross return, the arithmetic takes us to a net return of 5.2 percent, less than two-thirds of the 8.5 percent total projected by the average large U.S. corporation. A company making that kind of projection for its pension plan is either looking for trouble or trying to engineer upward the earnings it reports to its shareholders.

General Motors currently uses that 8.5 percent assumption, which seems outlandish on the face of it. When I pursued this issue with GM, I was told that the traditional policy portfolio of 60 percent stocks and 40 percent bonds is history; GM has added alternative investments, such as venture capital, and "absolute return" investments, such as hedge funds. It's easy enough to understand that change, so let's make some reasonable assumptions about what this new policy portfolio might hold:[4]

- 30 percent in U.S. equities,
- 40 percent in U.S. bonds,
- 10 percent in venture capital, and
- 20 percent in hedge funds.

Table 7 shows one example of the returns that would be required from each of these four asset classes to reach that 8.5 percent target. The market returns for equities and bonds are unchanged, so the equity managers would have to beat the stock market by 3.0 percentage points a year and the bond managers would have to beat the bond market by 0.25 percentage point. Then, let's generously assume that the venture capital market will return 12 percent, with smart managers who earn almost 18 percent, and that hedge funds will earn an average 10 percent return, with smart managers who earn 17 percent. Then, let's deduct investment costs, as we must. Voila! The pension fund reaches its goal of 8.5 percent a year!

But now consider the possibility that these returns actually will be achieved. Equity managers who can beat the market by 3 percentage points a year are conspicuous by their absence. (And the quest for such outperformance presumes the assumption of considerable risk.) Consider too that the assumed venture capital returns are far above even the historical norms that were inflated by the speculative boom in IPOs during the market madness of the late 1990s. And consider not only the high (10 percent) assumed average hedge fund return but the obviously staggering odds against finding a group of so-called absolute-return managers who can consistently exceed that return by 6–7 percentage points a year over a decade. Surely most investment professionals would consider these Herculean assumptions absurd.

Of course, no one can really know what lies ahead. Assumptions are, after all, only assumptions. But that is not my point. My point is that each corporation's annual report should present to shareholders a simple table like Table 7 so that its shareowners can make a fair determination of the reasonableness of the arithmetic on which the pension plan is relying to calculate its pension fund return assumptions. Such a report should be placed high on the list of financial statement disclosure priorities, and I would hope that serious analysts will take this issue directly to corporate managers and challenge the reasonableness of any assumptions deemed excessive. Corporate boards rarely touch this issue, but shareholders ought to force it to the fore.

Table 7. Getting to an 8.5 Percent Return: A Template for Corporate Annual Reports

	1	2	3	4	5 (2 + 3 – 4)
Asset Class	Allocation	Projected Return	Value Added[a]	Expenses	Net Return
Equities	30%	7.5%	3.00%	1.5%	9.0%
Bonds	40	4.5	0.25	0.5	4.2
Venture capital	10	12.0	5.50	3.0	14.5
Hedge funds	20	10.0	6.50	3.0	13.5
Weighted total	100%	7.2%	2.80%	1.5%	8.5%

[a]Required to produce expected rate of return.

The seemingly outlandish returns being assumed by corporations for their pension plans have been a major factor in the growing negative gap between the assets and the liabilities of corporate pension plans. The future of DB plans is fraught with challenges that can only be described as awesome. A recent report by Morgan Stanley's respected accounting expert Trevor Harris (with Richard Berner, 2005) put it well:

> Years of mispriced pension costs, underfunding, and overly optimistic assumptions about mortality and retirement have created economic mismatches between promises made and the resources required to keep them. Corporate defined-benefit plans as a whole are as much as $400 billion underfunded. State and local plans, moreover, may be underfunded by three times that amount. Those gaps will drain many plan sponsors' operating performance and threaten the defined-benefit system itself, especially if markets fail to deliver high returns, or if interest rates remain low.

Excessive return assumptions, insufficient contributions, and the almost universal failure to consider the profound long-term erosion of market returns engendered by investment costs have combined to create this serious savings shortfall that pervades our nation's private pension system, our government pension systems, our individual retirement plans, and our defined contribution plans. Much of the responsibility for that failure can be laid to the unwillingness of the financial community to recognize the relentless rules of humble arithmetic.[5]

Comparative Advantage or Community Advantage?

If we are to create greater wealth accumulation for investors, we in the investment profession must focus on these broad issues. Yet we continue to focus nearly all of our attention on the search for the Holy Grail of achieving superior performance for our own clients, seemingly ignoring the fact that all market participants as a group earn average returns. Put another way, in terms of the returns we earn for our clients, we in the investment community are, and must be, average.

Here, I want to make a point about the difference between "comparative advantage" and "community advantage." Much—sometimes I think almost all—of what I read in the learned journals of finance has to do with comparative advantage, such as picking winning stocks or capitalizing on a market inefficiency that improves performance relative to the total market or gaining an edge in return over professional rivals. Yet we ply our trade in what is essentially a closed market system, and we can't change whatever returns the markets are generous enough to bestow on us. So, each dollar of advantage one investor gains in the market comes only at the direct disadvantage of other market participants as a group.

Of course, each of us believes that we ourselves are not average, that we can gain a sustained edge over the market. But we can't all be right. A recent article in the *New Yorker* (Gawande 2004) noted the great fear: "What if I turn out to be average? Yet, if the bell curve is a fact, then so is the reality that most [investors] are going to be average." The article continued:

> There's no shame in being one of them, right? Except, of course, there is. Somehow, what troubles people isn't so much being average as settling for it. Averageness is, for most of us, our fate.

Alas, in the world of money management, the picture is even darker. For we are average only before investment costs are deducted. After costs, we are losers to the market—that relentless rule of humble arithmetic that we want to deny but cannot. Put another way, costs shift the entire bell curve of variations in our individual performance to the left.

But it is a rule of life that none of us want to be average, and competition to be the best is, up to a point at least, healthy. Our efforts to win, however fruitless in the aggregate, provide the transaction volumes that are required for liquidity and market efficiency. Yet, paradoxically, the closer we move to market efficiency, the closer we come to a world in which the EMH becomes a tautology.

Of course, management fees and transaction costs also fatten the wallets of fund managers and Wall Street's financial intermediaries. If the successful strategy of a given fund manager remains undiscovered and sustained, that firm will attract more dollars under management, diverting fees into its pockets from the pockets of its rivals. Such success may even allow the firm to charge higher fees, thereby increasing (albeit only modestly, at least at first) its advisory fee revenues. Yet, again paradoxically, when that happens, by definition, the net returns earned by all investors as a group are commensurately reduced.

Realizing that the upshot of all our feverish investment activity is to advantage Peter at the expense of Paul is doubtless vaguely painful to investment professionals. The dream that we can all achieve success defies Immanuel Kant's categorical imperative that you must "act so that the consequences of your actions can be generalized without self-contradiction." Yet our best and brightest souls continue to compete—arguably, ever more vigorously—in this game of comparative advantage that is inevitably a zero-sum game before costs and a loser's game after costs.

Warren Buffett's crusty but wise partner, Charlie Munger, shares my concern that in the field of money management, as far as the interests of clients are concerned, there can be no net value added, only value subtracted. Here's what he had to say about the commitment of so many exceptional people to the field of investment management:

> Most money-making activity contains profoundly antisocial effects . . . As high-cost modalities become ever more popular . . . the activity exacerbates the current harmful trend in which ever more of the nation's ethical young brain-power is attracted into lucrative money-management and its attendant modern frictions, as distinguished from work providing much more value to others.[6]

Adam Smith's invisible hand may give a minority of money managers a competitive edge, but it cannot improve the lot of investors as a group.

Yet we do have it within our power to do exactly that—to create a community advantage that provides value to all investors. And that can be achieved only by slashing the costs of financial intermediation and reducing the overcapacity present in our investment business today in the form of, for example, the grossly excessive number of mutual funds and the staggering levels of stock-trading activity.

If capitalism is to flourish, enriching the returns of all investors as a group must be a vital goal for our investment society. Yet the triumph of managers' capitalism over owners' capitalism in corporate America has been paralleled by an even greater triumph of managers' capitalism over owners' capitalism in investment America—the field of money management. So long as money-making activity simply shifts returns from the pedestrian to the brilliant or from the unlucky to the lucky or from those who naively trust the system to those who work at its margins, then of course, it has "profoundly antisocial effects." If we vigorously work to reduce system costs, thereby increasing investor returns while holding risk constant, wouldn't we be making capitalism work better for all stockowners? And wouldn't that create, well, profoundly *social* effects that are the diametrical opposite of the antisocial effects that so concern Munger?

Our Intermediation Society. Two powerful forces stand in the way of realizing the idealistic goal of "beginning the world anew" in investment America. One of those forces is money. The field of financial intermediation has become so awesomely profitable to its participants that the vast sums of money we earn has become a narcotic. We have become addicted to enormous profits. The second force may be even more powerful: the reliance of investors on financial intermediaries to protect their interests. We may *think* we live in an ownership society—albeit one that has miles to go before it achieves its promises—but each passing day brings fewer actual direct owners of our wealth-generating corporations.

The fact is that we now live in an intermediation society, in which the last-line owners—essentially, our mutual fund shareholders and the beneficiaries of our public and private pension plans—have to rely on their trustees to act as their faithful fiduciaries. Yet largely because of the dollar-for-dollar trade-off in the money management business (in which the more managers take, the less investors make), there is far too little evidence of such stewardship today. But if our 100-million-plus last-line stockowners and beneficiaries rise up, however, and demand that their stewards provide them with, well, stewardship, then all will be well in investment America—or at least far better for our clients than it is today.

We need to change not only the costs and the structure of our system of financial intermediation but also the philosophy of its trustees. Way back in 1928, New York's Chief Justice Benjamin N. Cardozo put it well:

> Many forms of conduct permissible in a workaday world for those acting at arm's length are forbidden to those bound by fiduciary ties. A trustee is held to something stricter than the morals of the marketplace. . . . As to this there has developed a tradition that is unbending and inveterate. . . . Not honesty alone, but the punctilio of an honor the most sensitive, is then the standard of behavior. . . . Only thus has the level of conduct for fiduciaries been kept at a level higher than that trodden by the crowd.[7]

Yet somehow, in today's world of caveat emptor, of the marketplace as the ultimate arbiter of what's right, and of "get while the getting's good," too large a portion of our financial community seems to have lost sight of that standard.

The Next Frontier. In early 2005, as I approached the completion of my new book on today's counterproductive form of capitalism (forthcoming 2005), I was reading the January/February 2005 issue of the *Financial Analysts Journal*, which included my history of how the mutual fund industry has changed over the past 60 years. I was drawn to Keith Ambachtsheer's insightful essay "Beyond Portfolio Theory: The Next Frontier."

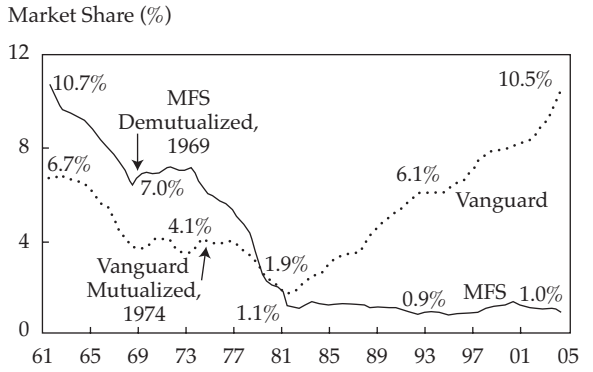
His perceptive thesis questioned the conventional wisdom that the next frontier in investing is about "engineering systems to create better financial outcomes for investors." He suggested that we ought to be thinking more about information theory—knowledge about the costs of investing, for example—and agency theory—the conflicting economic interests that manager/agents confront when they make decisions on behalf of their investor/principals. He wrote of seeking "better outcomes" for investors by virtue of a material reduction in intermediation costs and a "value for money" philosophy in which the driving force is service to clients and beneficiaries. I can only express my deep appreciation for his willingness, without any prior consultation with me, to stand up and be counted on these issues that are at the core of the reflections I present here.

I have been fortunate to play a role in articulating these issues for a full half century, culminating in the creation of The Vanguard Group as a truly *mutual* mutual fund complex all those many (30-plus) years ago. "The Vanguard Experiment," as we called it in its early years, was an effort to set the standard for a new kind of financial intermediation designed to give investors their fair share of whatever returns our markets are kind enough to deliver. Had I not "walked the walk" of truly mutual investing ever since, I would hardly be in a position to "talk the talk" of this essay.

Walking the Walk

It has been a singular and wonderful walk, one that has enabled us to keep investor costs low and investor performance commensurately high. As a result, Vanguard has arguably achieved not only an artistic success but also a remarkable commercial success. Our share of mutual fund assets has now risen for 23 consecutive years—going from 1.8 percent in 1981 to 11.0 percent in mid-2005, as shown in **Figure 2**. It is a revelation to compare that trend with the market share of Massachusetts Financial Services (MFS), our longtime rival of the 1950s and 1960s.

Figure 2. Market Share of Vanguard and MFS, 1961–2004



Note: As of January. The percentage changes after conversion were +156 percent for Vanguard and –86 percent for MFS.

Ironically, MFS converted from its own original mutual structure to a typical public (and later conglomerate) ownership in 1969, just before we did exactly the reverse five years later. Although their conversion was hardly the sole cause of the sharp tumble in market share MFS experienced (also shown in Figure 2) from 9 percent to 1 percent, it surely could not have helped. To the limited extent exemplified in these two contrasting patterns, investors are speaking, and their voice is loud and clear: They want their interests placed front and center.

I hope you will forgive the vested nature of this conclusion. It merely brings me full circle to the early words in this essay about the importance of "recognizing the obvious." Surely Vanguard's turning creed into deed is a validation of the words of famed entrepreneurial economist Joseph A. Schumpeter, who asserted that "successful innovation is not an act of intellect, but of will." The fund industry has yet to emulate the innovation that is Vanguard, but I guarantee you that our pioneering outpost will not stand alone at the frontier forever. "The relentless rules of humble arithmetic" that I've pounded home in this message and the attendant CMH and related fiduciary concepts will, sooner or later, resonate with the investing public. That public will accept nothing less than that we in the financial community live up to the responsibilities we are duty bound to honor. Forewarned is forearmed.

Notes

1. It's high time for someone (perhaps for CFA Institute) to conduct a careful study of the system and find out.
2. I recognize that there are fund organizations that are exceptions to these generalizations. The number, however, is surprisingly small.
3. Group averages have been adjusted for sales charges and B-class shares.
4. Possible variations on the new policy portfolio and its potential returns are myriad.
5. The rules of arithmetic apply also to Social Security and the issues surrounding privatization, but these are topics for another day.
6. Munger was speaking at a meeting of the Foundation Financial Officers Group in Santa Monica, California, 14 October 1998.
7. From the decision in *Meinhard v. Salmon* (1928).

References

Ambachtsheer, Keith. 2005. "Beyond Portfolio Theory: The Next Frontier." *Financial Analysts Journal*, vol. 61, no. 1 (January/February):29–33.

Berner, Richard, and Trevor Harris. 2005. "Financial Market Implications of Pension Reform." Morgan Stanley Research, Global Economic Forum (18 January): www.morganstanley.com/GEFdata/digests/20050118-tue.html.

Bogle, John C. 2005. "The Mutual Fund Industry 60 Years Later: For Better or Worse?" *Financial Analysts Journal*, vol. 61, no. 1 (January/February):15–24.

———. Forthcoming 2005. *The Battle for the Soul of Capitalism*. New Haven, CT: Yale University Press.

Brandeis, Louis D. 1914. *Other People's Money*. New York: F.A. Stokes.

Gawande, Atul. 2004. "The Bell Curve." *New Yorker* (6 December):82–91. Available online at www.newyorker.com/fact/content/?041206fa_fact.