In Troubled Times . . .
The Arithmetic of Mutual Fund Investing is More Important Than Ever

Remarks by John C. Bogle, Founder, The Vanguard Group
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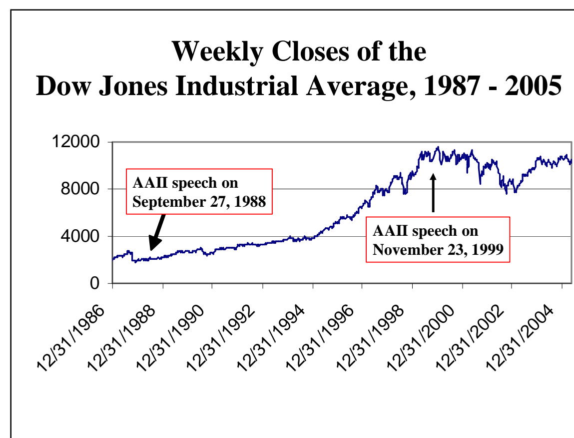
It's a delight for me to meet once again with the Philadelphia Chapter of the American Association of Individual Investors. These are clearly troubled times in our markets, in our nation, and around our globe, but their place in history is yet unknown. It is a curious coincidence that my two previous visits with you happened to come at crucial inflection points in stock prices—the first near a market low that preceded a huge upsurge; the second immediately before a market high that preceded one of the two biggest declines in the past seventy years.[1]

It was on September 27, 1988, when I first visited with you. The stock market was still suffering the aftershock of its stunning *one-day* decline of 22 percent on "Black Monday," October 19, 1987. I urged you to ignore a story that had just appeared in TIME magazine with the headline, "Buy Stocks? No Way!" that described the stock market of the day as "a dangerous game." Then, the Dow Jones Industrial Average was at a level of 2,080; stocks were selling at 12 times earnings; and it took no brilliance at all to urge you to continue to own stocks and "stay the course."

On November 23, 1999, I met with you again. Then, the stock market bubble was approaching its peak, which it reached only a few months later. The Dow was at 11,000, stocks were selling at an astonishing 32 times earnings, and again it took no brainpower to forecast that stock returns over the decade ahead would likely average no more than 7 percent per year. While in 1988 I had urged you "not to get carried away with pessimism," in 1999 I urged you "not to get carried away with optimism." In both cases, I suggested that a carefully balanced asset allocation between stocks and bonds would enable you to "stay the course" no matter what might lie ahead.



[1] The speeches I gave to AAII on those two dates are included in my 2001 book, *John Bogle on Investing, The First Fifty Years*.

What to Do Today?

Despite the "tradition" of my two prior visits, I do *not* see today's stock market as having reached an inflection point. It is neither at the bargain basement extreme we witnessed in 1988, nor at the bubble-bursting extreme it reached before the 2000 high. The Dow was to ease upward to 11,700, then drop to 7,290, and recover to today's level of 10,460. With stocks now selling at about 20 times earnings, price-earnings ratios seem high, but not alarmingly so. Importantly, based on the methodology said to be used by Federal Reserve Chairman Alan Greenspan, stocks seem quite fairly valued when compared to bonds, the principal investment alternative.

The "Fed Model" compares the relationship of the current earnings yield on stocks (the reciprocal of the p/e ratio; a p/e of 20 represents an earnings yield of 5 percent) with the interest rate on the 10-year U.S. Treasury bond. Today, the earnings yield of 5 percent is almost 20 percent above the bond yield of 4.1 percent, while in 1988 it was slightly lower. In late 1999, however, the earnings yield of 3.4 percent was only about half of the bond yield of 6.3 percent

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	Stocks		Bonds	
	P/E Ratio	Earnings Yield	Yield on 10-Year Treasury	Equity Premium
September 1988	**12x**	**8.3%**	**9.0%**	**-0.7%**
December 1999	**30**	**3.4**	**6.3**	**-2.6**
May 2005	**20**	**5.0**	**4.1**	**+0.9**

The higher apparent equity premium today might suggest that stocks today are substantially more attractive than they were in 1988. However, I simply don't believe that, for at least three reasons: One, corporate earnings may be under pressure over the next few years, raising P/Es and reducing the earnings yield. Two, bond yields may, and I believe will, rise, though when the rise may come and how much it may be is totally problematical. And three, we live in an especially uncertain world, facing threats of unbridled deficits in our federal budget and our balance of payments, national disunity, and the ever-present threats of terrorism, nuclear proliferation, and global warming. To me, these concerns do not require that you abandon your own investment policy; but I would urge you to (as I do personally) lean toward the conservative side.

1. The Simple Arithmetic of Financial Market Returns

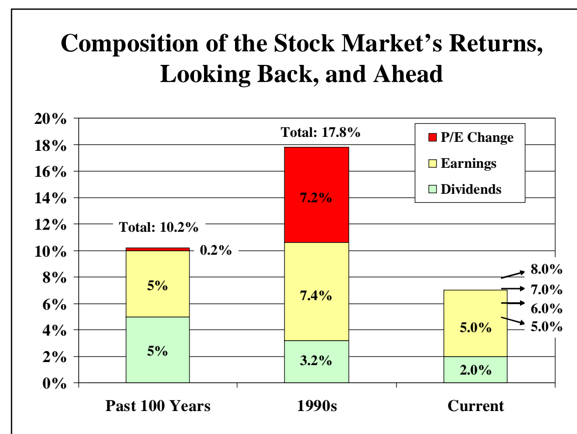
What lies ahead for stocks and bonds? As we look to the future, the most important thing to remember is that in the long run what drives the returns on financial investments are the relentless rules of humble arithmetic: For stocks, the *investment* return is driven by a simple combination of the initial dividend yield on stocks plus the rate of future earnings growth, the fundamental factors of investment that have accounted for 10 percentage points—5 percent dividends and 5 percent earnings growth—of the 10.2 percent of the long run return on stocks—nearly 100 percent.

In the short-run, however, it is not investment, but speculation that calls the tune. When the price-earnings ratio rose from 16 times to 32 times during the 1990s—a 100 percent increase—that change in investor sentiment alone added fully 7 percent per year to the investment return of 10 ½ percent in that glorious decade of speculation, bringing the total return to a robust 17.8 percent.

But with today's dividend yield of a meager 2 percent and future earnings growth assumed to be equal to the long-term average of 5 percent, we might be looking at future annual stock returns of only

about 7 percent. (If the p/e multiple rises from 20 times to, say, 22 times, add a percentage point, if the p/e declines to 18 times, subtract one point; two points if it declines to 16 times.) Yes, I realize that the long-term return on stocks has averaged much more than that, but that 10 percent annual historical return was buttressed by a 5 percent dividend. So today's dividend yield of about 2 percent results in a dead-weight loss of 3 percentage points a year in the potential return.

While the investment fundamentals of earnings and dividends drive historical stock returns over the long-run, past returns on bonds tell us *nothing* about the future. But the bond arithmetic is even easier and more reliable. The present bond yield tells us nearly all that we need to know, for the best single predictor of the future returns on bonds is today's bond yield. With the 10-year Treasury a hair over 4 percent and long-term corporates at about 6 percent, let's assume (perhaps generously) a future return on bonds of about 5 percent on a diversified corporate/government bond portfolio.



While no one can be certain, it seems reasonable, then, to expect stocks to deliver a return of 7 percent more or less over the coming decade, representing a 2 percentage point equity premium over the roughly 5 percent that bonds are likely to deliver. After a two-decade run in which (a) stocks delivered 13 percent (even including the disappointing returns of the past five years), largely because of the extra one percentage point arising from the higher dividend yield; and the 4 percentage points that came from p/e expansion; and (b) bonds delivered a return of about 8 percent (which was, after all, the bond yield at the outset), these returns may seem disappointing. Nonetheless, this simple but compelling arithmetic is what we must deal with in establishing reasonable expectations regarding future returns in the financial markets—returns that, in my judgment are almost certain to be well below the returns of the 1980s and 1990s, when we literally "never had it so good."

2. The Simple Arithmetic of the CMH

Sadly, when we describe our rational expectations for future returns in the financial markets, we are implicitly concealing the central fact of investing. As a group, investors never—*never*!—enjoy the *gross* return that the markets deliver. Investors earn the *net* return, after all of the costs of our system of financial intermediation. Thus, just as gambling in the casino is a zero-sum game before the croupiers rake in their share (I'm told that this is called "vigorish," or "the vig") and a loser's game thereafter, so beating the stock and bond markets is a zero-sum game before intermediation costs, and a loser's game thereafter.

The reality is that the mutual fund croupiers rake huge sums off the stock market table. Just consider the annual costs incurred by the investor in the average equity fund: (1) Management fee **0.9**

percent, plus other expenses **0.6**, for a total expense ratio of **1.5** percent. (2) Hidden portfolio transaction costs of at least **0.8** percent (the average fund turns its portfolio over at an astonishing 100 percent per year, meaning that a $5 billion dollar fund sells $5 billion of stocks every year and reinvests the proceeds in another $5 billion, $10 billion in all). (3) Sales commissions on load funds, about 0.7 percent (a 5 percent commission, spread out over, say, seven years). Total: 3 percent per year.[2]

Most of you are likely familiar with the EMH—the *Efficient Market Hypothesis*—that suggests that most stocks are fairly valued, most of the time. But the relentless rules of humble arithmetic remind us of something both more certain and more profound than the EMH. I call it the CMH—the *Cost Matters Hypothesis*—the iron rule that investors as a group must *always* lose to the stock market by the amount of the costs they incur.

3. The Simple Arithmetic of Fund Expenses and Taxes

When we examine the record of the past two decades, the relentless rules of humble arithmetic have clearly proven dangerous to the wealth of most families who have entrusted the responsibility for overseeing their hard-earned assets to mutual funds. That humble arithmetic—*gross return, minus cost, equals net return*—has destroyed their wealth in almost precisely the measure that our CMH suggests. Investors have learned, and learned the hard way, that in mutual funds it's not that "you get what you pay for." It's that, almost tautologically, "you get what you *don't* pay for."

Let's look at the record. Over the past 20 years, a simple, low-cost, no-load stock market index fund 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 just **10.0** percent, less than 80 percent of the market's annual return. It is no accident that this shortfall of **2.8** percentage points per year, arose largely from those estimated annual costs of about **3.0** percent presented moments ago.

Compounded over that long period, each **$1** invested in the index fund grew by **$10.12**—the *magic* of compounding *returns*—while each $1 in the average find grew by just **$5.73**, not 80 percent of the market's return, but a shriveled-up 57 percent—a victim of the *tyranny* of compounding *costs*. The magic, alas, is overwhelmed by the tyranny. (The fund industry, of course, focuses on the former and is tight-lipped about the latter.)

And that's before taxes. Because of the shocking tax inefficiency engendered by its astonishingly high (100-percent-plus) portfolio turnover, the average managed equity fund cost its taxable investors *another* **2.2** percentage points in taxes, producing not 57 percent of the market's annual return, but only 41 percent. With the index fund relinquishing only **0.9** points in taxes, the gap between the equity fund and the index fund rises from **2.8** to **4.1** percentage points per 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.)

But the arithmetic gets even worse. For the wealth accumulated in the index fund and the average equity fund should be measured not only in nominal dollars, but in real dollars. When we reduce both returns by the inflation rate of **3.0** percent, the real annual return drops to **8.9** percent for the index fund and to **4.8** percent for the equity fund. That obviously leaves the **4.1** percentage-point gap unchanged. But the *compounding* of those lower annual returns further widens the cumulative gap. Over the past twenty years, the cumulative profit of each $1 initially invested in the managed fund came to just **$1.55** in

[2] I've used the unweighted average expense ratio, higher than the asset-weighted ratio of 1.1 percent. But I've ignored out-of-pocket costs, penalties on early redemption of fund shares, and opportunity cost. (Most equity funds are about 95 percent invested in stocks, thus diluting the market's long-term return premium.)

real terms, after taxes and costs, only 34 percent of the real profit of **$4.50** on the index fund. The index fund actually increased your capital by 190 percent!

Average Fund versus 500 Index Fund, 1983 - 2003

	500 Index Fund		Avg. Fund		Fund % of Index Profit
	Rate	Profit on $1	Rate	Profit on $1	
Gross Return	13.0%	$10.52	13.0%	$10.52	100%
Fund Lag	-0.2		-3.0		
Pre-tax Return	12.8%	$10.12	10.0%*	$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%

*Lipper reported return reduced by 0.3% for estimated survivor bias and 0.3% for sales charges.

4. The Simple Arithmetic of Income Expropriation

The impact of costs and taxes on mutual fund total returns, however, substantially understates their profound impact on investors. While funds are inordinately tax-*inefficient* when it comes to capital gains, they are remarkably—and perversely—tax-*efficient* when it comes to dividend income. Why? Because about 85 percent of the yield of the average equity fund is "taxed," as it were, by mutual fund fees and expenses, leaving only 15 percent of the dividend income to be distributed to equity fund investors and taxed by our federal and local governments. Shocking as that may sound, the mathematical reality is that when we deduct equity fund expense ratio of 1.5 percent from today's 1.8 percent dividend yield on stocks, all that remains is a puny net dividend yield of 0.3 percent for the fund owner.

Expenses and Dividends

Equity Funds

	Gross Yield	Avg. Exp. Ratio	Net Yield	ER as % of Gross Yield
Avg. Fund	1.80%	1.50%	0.30%	83%
Low Cost Decile	2.00	0.40	1.60	20
High Cost Decile	1.14	2.56	-1.42	225
Low Cost Index Fund	1.78%	0.12%	1.66%	7%

There are two simple ways to avoid this confiscation of your income. One way is to do your equity fishing in the low-cost pond. The ten percent of funds with the lowest expense ratios (averaging 0.3 percent) consume "only" 20 percent of income. (Conversely, the highest-cost ten percent, with expense ratios averaging 2.5 percent, actually consumes 225 percent of those funds' income.) The other way is to own a low-cost stock market index fund, whose costs of as little as 0.1 percent consume a mere 7 percent of its income, leaving 93 percent for you.

Expenses and Dividends

Intermediate-Term Bond Funds

	Gross Yield	Avg. Exp. Ratio	Net Yield	ER as % of Gross Yield
Avg. Fund	4.55%	0.80%	3.75%	18%
Low Cost Decile	4.31	0.31	4.00	7
High Cost Decile	4.79	1.45	3.34	30
Low Cost Index Fund	4.69%	0.14%	4.55%	3%

In the case of bond funds, of course, income is a much more significant factor. A bond fund's net yield typically accounts for about 100 percent of its long-run return. Yet the expense ratio of the average bond fund (0.8 percent) consumes almost 20 percent of its gross yield of 4.5 percent, reducing it to a net yield of 3.8 percent. Further, these numbers substantially *understate* the confiscatory nature of costs, for most bond funds carry hefty sales commissions. If you pay a 4 ½ percent front-end load to acquire a bond fund, it eats up more than 100 percent of your first year's net income.

The way to maximize your income in bond funds is to rely on the same simple arithmetic as in stock funds: either own only low-cost bond funds, where 7 percent of the yield is consumed by expenses, leaving 93 percent for you (and buy no-load funds rather than paying that hefty 4 ½ percent load for the privilege of having your income depleted); or, better yet, own a no-load *bond* index fund, where, after the deduction of only about 1/10 of 1 percent for expenses, 97 percent of the income goes to you.

While today we don't read much about money market funds, the same simple arithmetic applies. The high cost funds eat up 38 percent of your income, and the low cost funds consume just 8 percent. (While there are no indexed money market funds, it's fair to say that almost *all* money market funds are *virtual* index funds. Commodity-like, they almost uniformly *earn* the average returns in the money markets, and *deliver* returns to investors that are largely differentiated by their costs.) Yet investors in high cost money market funds seem perfectly happy to accept a 1.6 percent yield when a 2.4 percent yield—fully 50% higher—lies there for the taking. But only for those who are willing to do the simple arithmetic.

Expenses and Dividends

Money Market Funds

	Gross Yield	Avg. Exp. Ratio	Net Yield	ER as % of Gross Yield
Avg. Fund	2.65%	0.59%	2.06%	22%
Low Cost Decile	2.60	0.20	2.40	8
High Cost Decile	2.68	1.03	1.65	38
Low Cost MM Fund	2.65%	0.20%	2.45%	7%

5. The Simple Arithmetic of Hedge Funds

When the outlook for returns on stocks and bonds is as subdued as I have suggested today, it's especially tempting to reach for higher returns by seeking out other kinds of investments. Yet looking for "something better" than stocks and bonds implies that there *is* something better. Is there? Today's "big new idea" for gaining extra returns is "alternative investments," although, in fact these alternatives are just stocks and bonds of a different character and mix, boxed in a different and more expensive package. But I wonder if their popularity isn't simply the inevitable reaction of investors (and brokers) who, after one of history's great bear markets, want to buy (or sell!) something new.

Hedge funds, of course, are the talk of the town. But please don't forget that many individual hedge funds are taking risks, often hidden, that would send chills up and down one's spine. (Think of the failure of Long-Term Capital Management; think of the 700 hedge funds that reportedly folded last year.) Further, when hundreds of billions of dollars flow into hedge funds, their managers chase an increasingly limited supply of market inefficiencies, and the value to be added by hedging strategies is apt to get arbitraged away. As yesterday's successful managers are flooded with money, their growth virtually precludes their repeating past achievements in the future. What is more, those past achievements of hedge funds have been overrated. A recent study showed that the average hedge fund earned a return of about **9.3** percent per year in 1995-2003, slightly less than the stock market return of **9.4** percent, and more relevantly, less than the **10.1** percent return on a conservative stock/bond balanced fund (which happened to be slightly less volatile).

As to the future, simple arithmetic again can help us in evaluating potential hedge fund returns. If the stock market were to deliver a **7** percent return in the future, the investor, in a low-expense, tax-efficient index fund, would likely realize a net after-tax return of about **6.2** percent. Even if we grudgingly assume that a hedge fund were to earn 10 percent—no mean task in the tough environment ahead—it would deliver only **4.8** percent, only two-thirds of the net return on the simple index fund. Why? Because the managers would take **2.8** percent (1 percent plus 20 percent of the total return), and taxes (for an investor in the 33 percent tax bracket) could come to an additional **2.4** percentage points, a total reduction of **5.2** percentage points in the 10 percent gross return.

Comparing Potential
Hedge Fund and Index Fund Returns

	Index Fund	Hedge Fund
Market Return	**7.0%**	**7.0%**
Return Enhancement	**-**	**3.0**
Gross Return	**7.0%**	**10.0%**
Less Expenses	**-0.2**	**-2.8**
Less Taxes	**-0.6**	**-2.4**
Investor Net Return	**6.2%**	**4.8%**

The risk of selecting the right hedge fund is huge, and while the popular hedge-fund-of-hedge-funds diversify that risk, they are even more costly. The simple arithmetic of hedge funds—even if you are lucky enough to pick a winner—suggest that their high costs and high taxes will result in inadequate

net returns to their investors. My conclusion: nearly all individual investors should join me in resisting succumbing to the siren song of these over-rated hedge fund temptresses.

6. The Simple Arithmetic of Exchange-Traded Funds

There's another investment product that has recently caught the eye of the fanciful investing public: the exchange-traded fund, or ETF. These funds are generally low-cost index funds that can be traded in the stock market just like regular stocks. As one advertisement for the Standard and Poor's 500 ETF (the "Spider", in the lingo of the financial community) says, "Now you can trade the S & P 500 all day long, in real time." Leaving totally aside for the moment the question of why anyone in his right mind would want to do that, the simple arithmetic of investing suggests that most investors should ignore this so-called opportunity.

As you must know, I love index funds that track the S&P 500 and total stock market. But not as trading vehicles; as vehicles for owning the stock market at low cost and high tax efficiency and holding it, well, forever. But most investors in ETFs seem to be following, not my advice, but the advice in the Spider ad. The share turnover of Spiders during the past year came to a cool 4,536 percent, meaning that the average share was apparently held for a period of less than one *day*! But as suitable as ETFs may be for long-term investors, they are totally unsuitable for rapid fire traders. Why? Because of costs.

Let's take a look at the simple arithmetic of ETFs, and make a few highly conservative assumptions: 1) an investor buys, and later sells 100 shares of the Spider (approximately $12,000; with its bargain basement expense ratio of 0.11 percent (other ETFs can be three or four times as costly to operate). 2) he pays a minimum commission of $35 for each transaction (lower if done electronically, higher if done over the phone); 3) he goes in and out of the Spider (a) twice a year (turnover 200 percent), (b) five times a year (500 percent), or (c) once a month (1200 percent, but still a far cry from the 4,000-plus percent average turnover). The investor's total annual costs, respectively, would then take 1.3 percent, 3.0 percent, and 7.1 percent from his annual return—repeated over time, a large dent!

Low Cost (?) ETFs

Estimated Brokerage Fees on 100 Shares

	Commissions*	Total Costs
Two Round Trips per Year	$140	1.28%
Five Round Trips per Year	$350	3.03%
Twelve Round Trips per Year	$840	7.11%

*Assumes a commission of $35 per trade

If the investor can successfully time these trades, he *may* be able to make up these deficits; if not, which is much more likely, he will lose even more than those costs. Only long-term holders are certain to benefit from the glitteringly low expenses of most ETFs. The traders that ETF sponsors appeal to in their ads are destined to be playing a loser's game, all because of the relentless rules of the humble arithmetic of the markets.

Simple Arithmetic—Wrapping Up

Whether we look at future market returns in the financial markets, or the Cost Matters Hypothesis, or the real world of fund expenses and taxes, or maximizing income, or the superficial appeal of hedge funds and the foolishness of trading ETFs, we are left with one certain conclusion: investors who ignore costs are courting failure; investors who control costs are maximizing their chances of success. The long-term differences in the wealth they accumulate will be truly staggering. Why? Because for the former group, the magic of compounding returns is overwhelmed by the tyranny of compounding costs; for the latter group, the magic of compounding returns stands almost on its own.

When the arithmetic of investing suggests lower returns in the financial markets in the years ahead, the ability to capture the fair share (up to almost 100 percent) that you deserve will be more important than ever. Low cost funds—and of course index funds—are the best way to get your fair share. But don't take *my* word for it. Ask Warren Buffett. Ask his mentor, Benjamin Graham. Ask Jack Meyer, the remarkably successful wizard who tripled the Harvard Endowment Fund from $8 billion to $27 billion. Here's what Mr. Meyer had to say:

"Most people think they can find managers who can outperform, but most people are wrong. 85 percent to 90 percent of managers fail to match their benchmarks. Because managers have fees and incur transaction costs, you know that in the aggregate they are deleting value. The investment business is a giant scam."

When asked, "can private investors draw any lessons from what Harvard does?" Mr. Meyer answered: "Yes." He then recounted the lessons. "First, get diversified. Come up with a portfolio that covers a lot of asset classes. Second, you want to keep your fees low.' That means avoiding the most hyped but expensive funds, in favor of low-cost index funds. *No doubt about it*. And finally, invest for the long term."

In a sense, Mr. Meyer is simply stating the obvious: the all-market index fund and the Standard & Poor's 500 Index fund are far better ways to invest than searching through a seemingly-endless list of the products of the marketing-driven, asset-gathering machine that today's mutual fund industry has become. A small minority of managed equity funds may approach that simple ideal, and certainly some few will surpass it. But the odds in favor of success, as I've shown you this evening, are terrible. If that's not enough, ask any economist who's won the Nobel Prize. And if *that's* not enough, just use your common sense to think through what I've just said.

Successful investing is pretty simple. Just do a few simple things right, and avoid making stupid mistakes. Such as thinking that you know more than the market does; investing on impulse, buying on tips, believing that past success repeats itself in the future; and letting your emotions overwhelm your reason.

Four Essential Rules

Let me close with four essential rules that wise investors, whatever strategy they pursue, should follow:

First, pare costs to the bone. Realize that in investing you get what you *don't* pay for. Whatever future returns the stock and bond markets are generous enough to deliver, few investors will succeed in capturing 100% of those returns, simply because of the high costs of investing—all those commissions, management fees, investment expenses, yes, even taxes.

Second, diversify. Own American business and hold on to it. Not one company or industry, but a broadly diversified portfolio of lots of companies and industries. Buy such a portfolio, never sell, and hold it forever. No one knows what stocks will do tomorrow, or even what they'll do over the next decade, but over the long pull the dividends and earnings growth of American business will be reflected in rising stock prices.

Third, don't forget to allocate your assets prudently between stocks and bonds. As the years roll on, we have more wealth at stake, less time to recoup losses, and begin to rely on our investments to provide income. Each of these critical factors suggests that, as investors age, we should own even larger bond portions. (A rule of thumb: begin with the idea that your bond percentage should roughly be equal to your age.)

Fourth, *don't do something, just stand there. Stay the course*. Once you get your costs down, your stocks and bonds diversified, and your stock/bond balance right. Not only expenses, but emotions, are the investor's greatest enemy. It may take courage and wisdom, but "Stay the Course" remains the name of the game.

Thank you.

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