Efficient Frontier
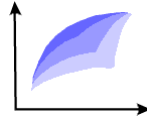
An Online Journal of Practical Asset Allocation

Edited by William J. Bernstein
and Susan F. Sharin

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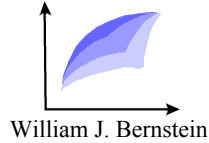### Table of Contents

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Efficient Frontier

William J. Bernstein

A Message to Our Readers

First, the bad news. Along with the markets it covers, **Efficient Frontier** is about to get downgraded. Turning out several fresh pieces each quarter on asset-class behavior, manager performance, portfolio theory, and the world in general is no small task. Truth be told, after six-and-a-half years, I'm starting to repeat myself. It's time to cut back. This issue contains only two feature pieces and no link of the month. I expect to maintain this stripped-down output quarterly, but make no promises.

Now, the good news. One of the reasons I'm cutting back is to make space for a large project, the nature of which will be announced here in the fall. It will be appearing on bookshelves next year, is economic, and is much bigger than a breadbox.

But for now, a measure of delayed gratification is required of readers.
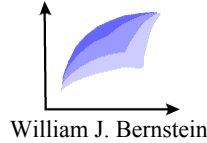
'Til then,

William Bernstein

Efficient Frontier

William J. Bernstein

The Retirement Calculator From Hell, Part V:
### The Unhappy Implications of the Easterlin Hypothesis

"Anyone who says that money doesn't buy happiness doesn't know where to shop."—Anonymous

Finance and economics types—overly focused on the bottom line and congenitally unable to think about what makes humans really tick—are very easy targets. There are almost as many economist jokes as lawyer jokes. Of what use is the single-minded economic focus on increasing wealth if we are at the same time growing steadily more harried, insecure, and unhappy?

Over the past generation, a small group of sociologists, psychologists and, yes, economists has begun to examine the determinants of human happiness. Prime among them is Richard Easterlin, who has made a distinguished career out of the money-happiness nexus.

To those who doubt it, happiness (or "well-being," as it is known in the trade) *can* be measured with a wide variety of objective tools. The data are reproducible and correlate with other more easily identified characteristics. What makes people happy? In almost every culture where happiness has been studied, it comes down to four things: employment, family, health, and money. Unemployment, independent of financial status, seems to be the most powerful misery generator known to man. Divorce comes in a close second, and ill health is also a strong predictor of unhappiness.

Money, too, buys happiness. Within a society, the rich are happier than the poor. Below, I've plotted some representative summary data from many different nations:
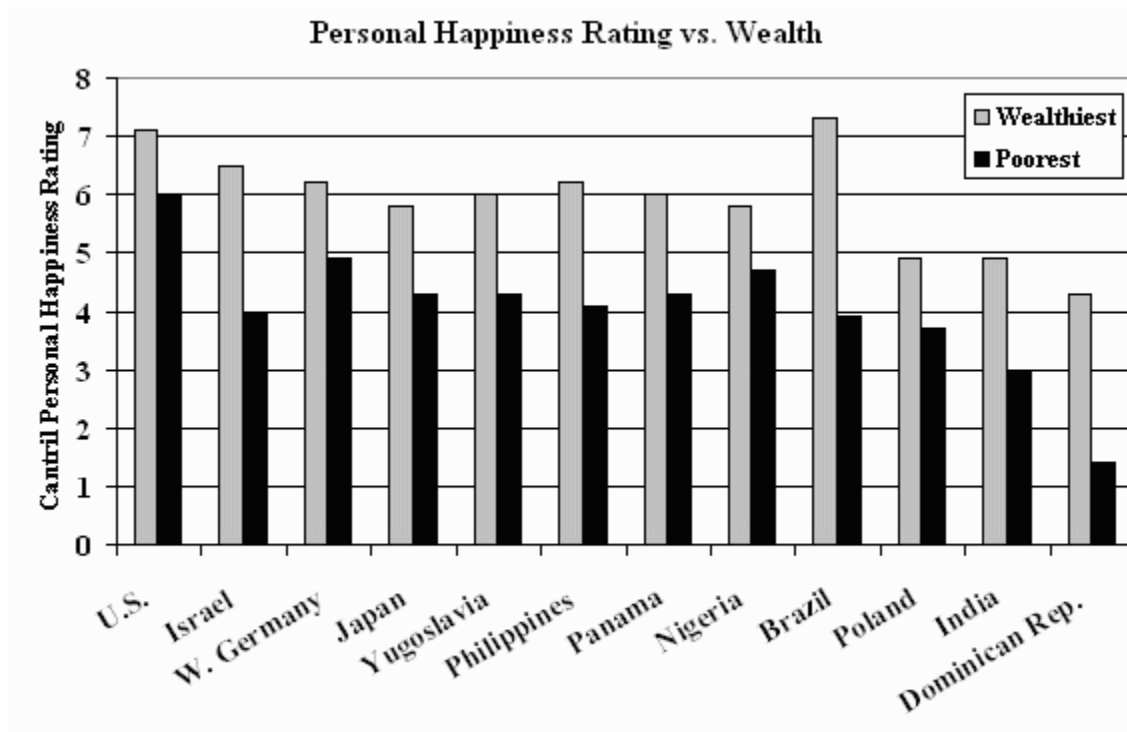
In every nation, the wealthy are significantly happier than the poor. This relationship is progressive: the richer, the happier. And just as predicted by generations of economists, the relationship is logarithmic; increasing increments of wealth are required to move up the hedonic scale. Great happiness is obtained by increasing one's income from $10,000 to $100,000 per year. To

obtain yet another same-sized aliquot of joy requires a jump to $1,000,000 per year.

The stratification of happiness by wealth within a society is only one dimension of the issue. The second is the effect of *national* wealth on aggregate *national* happiness. Here, too, wealth exhibits a positive effect, but it is much weaker than might be expected on the basis of the data for individuals. Below, I've plotted the correlation of happiness and wealth among nations by income. There is clearly a relationship, but it is much weaker than predicted by the individual data.
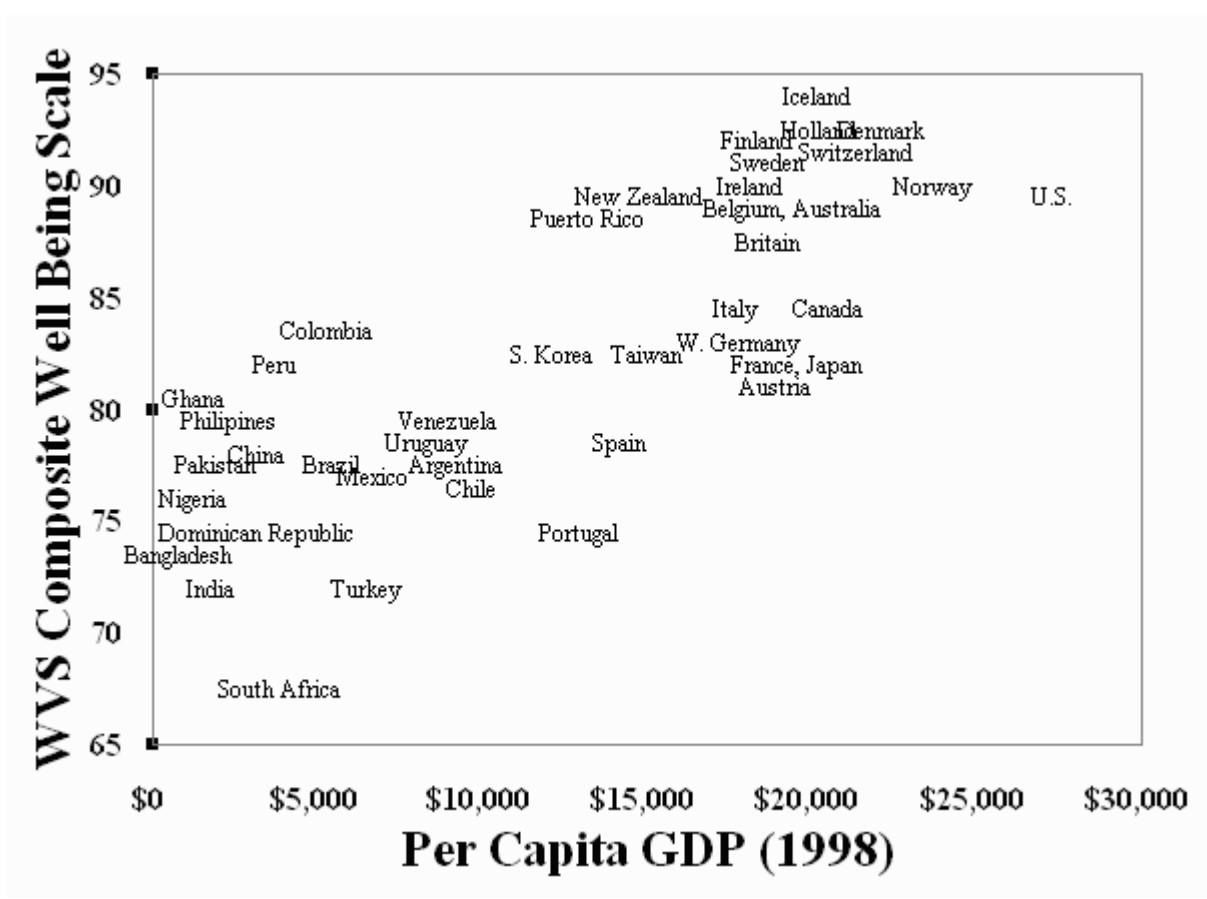
The third dimension of the happiness puzzle is time. The real per capita GDP of the world's most developed nations has been increasing at about 2% per year for more than a century. Surely, as we are growing ever more wealthy, we must be growing happier.

Alas, we are not. The below plot shows the percent of those describing themselves as "very satisfied" (as opposed to "fairly satisfied," "not very satisfied," or "not at all satisfied") in four representative European nations over a quarter century.
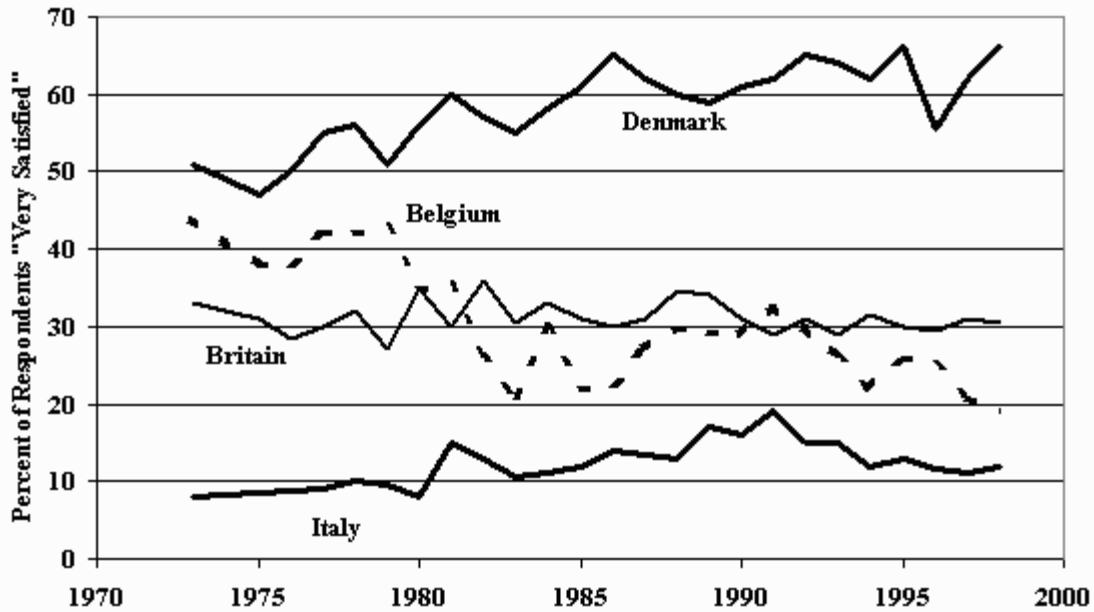
Europeans have not, as a group, gotten much happier during a period when real per capita GDP increased by about 60%. Even more puzzling are the extreme differences between the Danes, with an average of 60% of their population very satisfied, and the Italians, averaging only about 11%, with Britons falling about halfway between the two. Just why did the Belgians become more depressed during that quarter century? The answer is controversial, but likely has to do with that nation's cultural and linguistic fissures erupting in the past few decades, resulting in a more fragmented political apparatus. (This is similar to a temporary drop in happiness in the U.S. during the Cold War and in the ex-communist world.)

The measurement of the sub-population describing itself as "very satisfied" does introduce a bit of distortion. For example, in a preliminary study done in 1965, only 12% of French subjects described themselves as "very satisfied," but 64% described themselves as "fairly satisfied." In the U.K., these numbers were 53% and 42%. Thus, 76% of French and 95% of English described themselves as at least "fairly satisfied," not nearly as impressive a difference as between the 12% and 53% figures for "very satisfied" in the two nations.

These differences among nations cannot be explained by economics alone—the gaps in per capita wealth among the four nations were relatively small throughout the period. Clearly, there must be cultural factors involved. Stereotypes—the good-humored Dane and the dour Belgian—only take us so far; the low scores of the outwardly ebullient Italians come as a bit of a surprise.

The stagnation in personal satisfaction with increasing wealth over time is even more strikingly demonstrated in Japan, where a somewhat different happiness scale shows almost no change between 1958 and 1987, a period when per capita GDP increased fivefold.

Money, then, does buy happiness, but only in a relative sense. What matters is not how much absolute wealth you have, but how much you possess relative to your neighbors. In the words of Marx:

> A house may be large or small; as long as the surrounding houses are equally small it satisfies
> all social demands for a dwelling. If a palace rises beside the little house, the little house
> shrinks into a hut.

Or, as more succinctly put by Mencken, a wealthy man is one who earns more than his wife's brother-in-law.

An important subtlety is just how we define our peer group. We gauge our wealth primarily against our friends and neighbors. The person earning $100,000 per year in an economically depressed rural community is likely to be far happier than someone earning the same amount—even adjusted upward for purchasing power—on Manhattan's Upper East Side. This "neighbor effect," one of the bedrocks of human nature, applies in many other areas as well. Economist Paul Krugman describes his unhappiness as a well-paid, highly-respected academic with a secure position in one of the world's great universities:

> I had a very pleasant job that paid quite well and received lots of invitations to conferences
> around the world. Compared with 99.9 percent of humanity, I had nothing to complain about.

But of course that isn't the way the human animal is constructed. My emotional reference group consisted of the most successful economists of my generation, and I was not generally counted among their number.

This gets to the heart of the meaning of inflation-adjusted security returns. You may think that a real dollar—one that has been adjusted for inflation—may buy you just as much satisfaction in the future as it does today. But you'd be wrong; in a world where the real wealth of you and your neighbors increases by 2% per year, you have to make a real 2% return each and every year *just to keep your hedonic accounting even*. Given the low expected returns of both stocks and bonds—about 4% and 2% real, respectively—and the effects of taxes, the average investor cannot reasonably expect to obtain from any investment policy more than a hedonically adjusted dollar at any point in the future from a dollar invested now.

A while back, Robert Arnott pointed out to me that this likely equivalency of present and future hedonic dollars suggests a strikingly simple, and frightening, calculus. For every hedonic dollar you want to spend in retirement, you must save at least one now. Say you plan to work from age twenty to age sixty, then live in retirement until age eighty. That's two working years for every retirement year. In order to do so, you must save one-third of your salary. You say you want to retire at age fifty? Hey, no problem. All you have to do is save *half* your salary.

There is only one way out of this bind, and that's to get off the "hedonic treadmill"—the constant upward ratcheting of our material expectations as we and our society grow ever wealthier. Downshifting can be a powerful way of regaining lost time and freedom, but not many are capable of voluntarily lowering their standard of living below that of their friends, family, and neighbors. How many would be happy with a real 1963 standard of living in 2003?

Of late, I've been accused of no small amount of pessimism. Actually, with a bit of rationality returning to the capital markets, my spirits have brightened. Falling stock prices have increased the expected return to the patient investor, and John and Jane Q's headlong rush into bonds has lowered their returns to the point where there is now a reasonable equity risk premium. The rational and hedonically calibrated investor knows the difference between pessimism and realism and behaves accordingly.

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William J. Bernstein
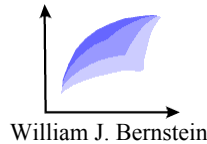
## The Returns Fairy. . . Explained

Around here we have an unfortunate tendency to slip into jargon and shorthand. While helping to establish credibility with the professional-finance secret-handshake set, it does not do much to disseminate our message to the folks we'd really like to reach—the rank and file of small investors, portfolio managers, financial planners, bank trust officers and, yes, even stockbrokers. With this in mind, I'm going to discuss the single most important issue in finance—future stock market returns—in the clearest, most descriptive, least mathematical terms possible.

For starters, let's be clear what we're talking about. Nobody knows what the market is going to do tomorrow, next month, or even in the next five years. And in the final analysis, what the market does over such relatively short periods is irrelevant to the average investor. What *is* important is return over the next few decades, and we *do* have a pretty good idea of what's going to happen over such long time periods. We don't want to tip our hand too early, but we'll warn you, you'd better be in a good mood before you read this because you won't be by the time you're done.

The biggest area of confusion among the investing public concerns just where stock returns come from. The most popular misconception is that future stock returns somehow derive from past stock returns—that is, from the Stock-Returns Fairy. In the past few decades, the packaging of historical financial returns has become an industry bigger than the GDP of some South American nations. The silliness of this approach is obvious: if you pay twice as much for an asset as you should have, that increases the return of the guy who sold it to you, just as surely as it reduces your future return. This is easily understandable to the investor who bought Japanese stocks in 1989 because of their high prior returns. Or, as Warren Buffett put it, if stock returns came from history books, then the richest folks would be librarians.

Happily, the opposite also occurs. A good example of how misleading past returns can be comes from the history of long Treasury bonds before and after 1981. For the 50 years from 1932 to 1981, their return was only 2.95%, almost a full percent less than the inflation rate of 3.80%. Certainly, the historical record of this asset was not encouraging. Yet common sense dictated in 1981 that the bond yield of 15% was more predictive of its future return than the historical data. And, over the next 15 years, the return of the long Treasury was in fact 13.42%—slightly lower than the predicted return because the coupons had to be reinvested at an ever-falling rate.

So just where do stock returns come from? In order to answer this question, first ask yourself this: how much would you be willing to pay for a business that distributes $10,000 each and every year? Let's say you arrive at a figure of $200,000. You've just determined that the return of your investment will be 5% ($10,000 / $200,000). This is the same as saying you're valuing the income stream of that business at 20 times its annual amount. This is its *market multiple* and what determines the market value of your business on a day-to-day basis. If one day the market decides that the business, which on that day is still earning $10,000 per year, is now worth only 15 times income, you have lost 25% of your investment value. Thus, in the very long term, stock price increases come from only one source: increases in dividend income. To show this relationship, we've plotted the per-share dividends, earnings, and price of the S&P 500 since 1871.

Nominal Price, Earnings and Dividends, S&P 500
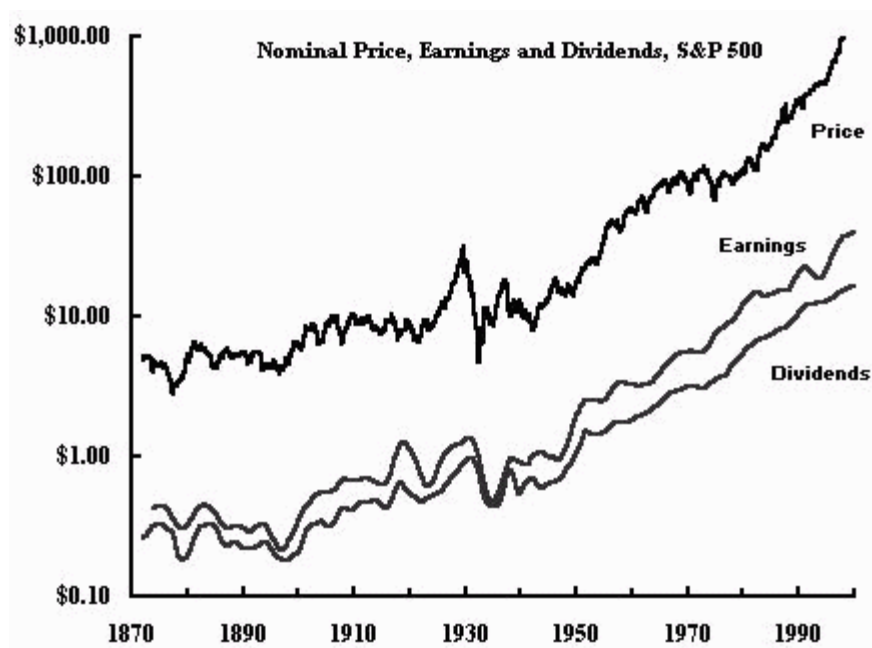
As you can see, the value of the stock market almost exactly tracks the dividends and earnings it produces; in short, it behaves just like any other business.

So far, so good. Now, assume that the earnings of your business are growing at a rate of 5% per year. If the market multiple remains at 20 times the income of the business, then so too will the market value of your business also increase by 5% per year. In other words, since next year your business will be earning $10,500, it will be worth 20 times that, or $210,000. *If the market multiple remains the same, then your return will be the sum of the income rate (5%) and the growth rate (5%), or 10% per year.*

Thus we see that the return on your investment is simply the sum of three terms:

- The income rate

- The growth rate

- The change in market multiple

The first two terms are easy to understand. A company that yields no income but grows at 10% per year and one that yields a 10% dividend but does not grow are equivalent. It is also the same as a company with a 2% dividend and 8% growth, or an 8% dividend and 2% growth, and so on.

Unfortunately, the last term—the change in market multiple—is the source of a great deal of mischief. Take a typical day in the market for a company with a 5% dividend and 5% dividend growth, with an expected return of 10% per year. Assuming 250 trading days in the year, each day you can then expect a return of about 0.04%. However, it fairly common to see stock prices change by 2% on a given day. *Thus, on any given day, the change in market price is caused almost entirely by the change in multiple.* This is true both at the level of individual stocks and the market as a whole. And over one-year periods, market-multiple swings of 25% in either direction are not at all unusual, swamping the 10% expected return.

Only in the very long run do the first two terms—the hypothetical 10% return discussed above—dominate. At an expected return of 10% compounded over thirty years, $1.00 grows to $17.45. If the market multiple halved during those thirty years, the compounded return would fall only to 7.5%, and if the market multiple doubled, the return would increase only to 12.6%, both of which are still tolerably close to the expected return of 10%. Put another way, a halving or doubling of multiple over thirty years changes the long-term annualized return by about 2.5% in either direction. A generation (say, twenty years) is finally long enough for the first two terms—the sum of earnings and dividends—to overwhelm the change in multiple. Jack Bogle of the Vanguard Group calls the former the "fundamental return" of stocks, while the last term is the "speculative return." Only over long periods of time does the former dominate the latter in importance.

Now that we've laid the groundwork, let's see where our model takes us. From 1926 to 2002, stock dividends averaged 4.3% and dividend growth averaged 4.5%. Thus, the "fundamental return" of stocks for the period was 8.8%. But during that same period the dividend yield of the market decreased from about 5% to 1.5%. Over the 77-year period, this compounds out to a

1.6% per-year increase in the "dividend multiple" of the market. Add the 8.8% fundamental return to this 1.6% speculative return and you get 10.4%. The actual return of the market? 10.2%. Not too shabby.

Finally, we are able to estimate stock returns. Recall, the dividend yield of the market is currently only 1.5%. And, as we've already seen, the annualized growth of dividends is about 4.5%, for a nominal expected stock return of 6%. Ah, you say, dividends don't matter any more; share prices will soar as companies grow their revenues and earnings to the sky using dramatic technology-driven productivity increases. There's only one problem: it ain't happening. Take a close look at the right edge of the above graph. Do you see any acceleration in earnings growth? If you do, then clip the title of this article for 10% off your next optometry visit. (The sharp-eyed among you may detect that the slope of all three plots is slightly higher during the second half of the period. Alas, it is entirely due to inflation; in real terms, the growth rate of corporate dividends and earnings did not increase during the twentieth century.)

There's an even more serious problem with the rapid-growth theory—it's incompatible with fundamental macroeconomics. Over the past century, the per-capita growth of GDP in the U.S., the world's most successful economy, has been about 2% after inflation and shows no sign of acceleration in the past quarter century. *It is impossible for long-term corporate growth to be higher than GDP growth for this would entail corporate profits eventually growing larger than the economy itself.* And even before this came close to happening, an ever-increasing portion of national income that flowed away from individuals and towards corporations would prove politically untenable. Goodbye Adam Smith and Jude Wanniski. Hello Karl Marx and Warren Beatty.

The other way out of the low future-expected-return trap is for multiples to increase even further: Add 4% of multiple expansion every year to the above 6% fundamental return and you're back to double digits. This might work for a brief period (which is why the prediction of short-term market movements is a task reserved for fools, small children, and institutional strategists). But at a 4% expansion rate, dividend and earnings ratios double every 18 years; our grandkids would find themselves in a world of quadruple-digit multiples.

Three years ago, this dour message fell on mostly deaf ears. Six percent nominal returns? Heck, you could make that in thirty seconds of day trading. Now, with bond yields in Truman-Eisenhower territory, a six-percent annual return from stocks doesn't look that bad. And, as always, it will come prepackaged with a lifetime supply of stomach acid.

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