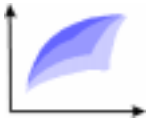
Efficient Frontier



An Online Journal of Practical Asset Allocation

Edited by William J. Bernstein
and Susan F. Sharin

Fall 2002

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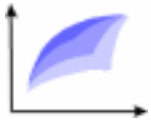


William J. Bernstein

Of God, Mammon, and Mars

(In the Winter edition, "How Much Pie Can You Buy," I discussed the relationship between GDP growth and security returns. We discovered that in the long run, without economic growth, security prices do not rise. In the Summer edition, "The Two-Percent Dilution," we encountered the unexpectedly large slippage between the growth of the economy and share prices. In this final piece, we look at the surprising history of economic growth over the centuries, its origins, and what it portends for the future.--WB)

I'll admit it. I was unlucky. Just eleven days after we released the ***Efficient Frontier*** Fall 2001 edition, in which I speculated on the under-appreciated possibility of social, economic, and military disaster for both personal and national finance, history once again demonstrated her talent as a cruel mistress. My friends will tell you that I'm normally as clairvoyant as I am good looking. (On an EBITDA basis, I'm often mistaken for Brad Pitt. But the GAAP reality is a good deal less impressive.) The one time in my life I demonstrate random prescience, it's not something any rational person would want to draw notice for.

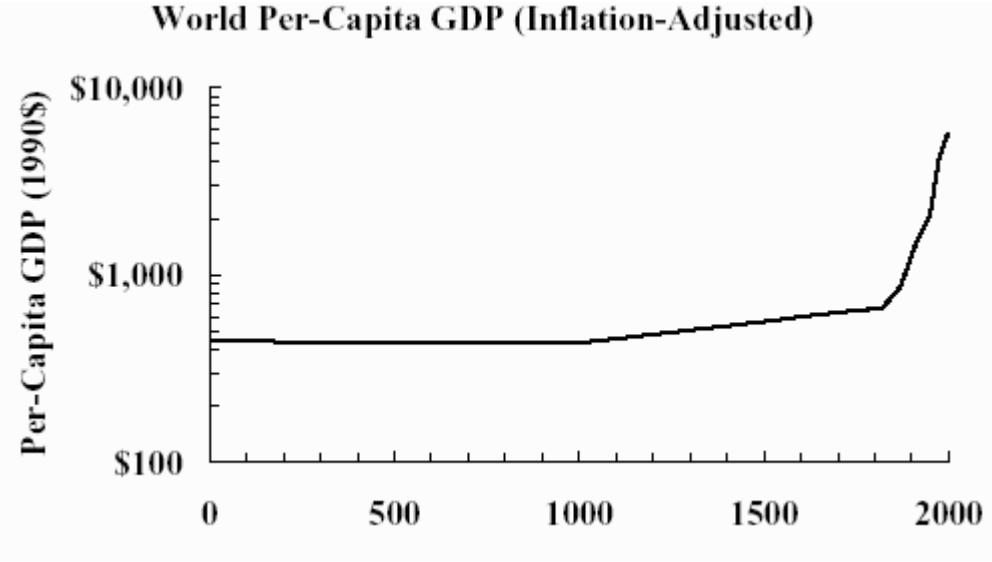
But for my nickel, the Seer of the Century Award goes to Yale soccer coach (and history professor) Paul Kennedy for his prognostications in *The Rise and Fall of the Great Powers*. The book's 1987 publication created a firestorm of neocon criticism due to its prediction of the ultimate decay of U.S. power. Those tossing the brickbats might as well have proclaimed in neon lights, "I haven't read this book." Yes, Kennedy did predict that the U.S. would stumble and fall, but he freely admitted he hadn't the foggiest notion *when*.

He was more certain about another great power—the Soviet Union. It would implode, and soon. The reason? The proximate cause of the decay of all great powers is falling GDP, almost always the result of excessive military spending. Kennedy figured that the game was up when the amount spent on arms exceeded 15% of a nation's GDP for more than a few decades, since the remaining 85% would not be enough to sustain the rest of the national economy. He estimated that

the Soviet Union was spending over 25% of its national income attempting to keep up with the U.S. and NATO, and detected signs of imminent economic decay. (It actually turned out to be more like *half* of GDP.) In fact, had the political right taken the time to examine Professor Kennedy's thesis, they'd likely have canonized him, even if they privately thought he was a dreamer. (Two scant years after *The Rise and Fall of the Great Powers* was published, Mark Helprin, writing in the op-ed section of the *Wall Street Journal*, opined that the devolution of the Warsaw Pact was a clever Soviet trick to lull us into complacency in preparation for the occupation of Paris. Guess who continues to grace the *Journal*'s op-ed section and who has to make do with the odd letter to the editor.)

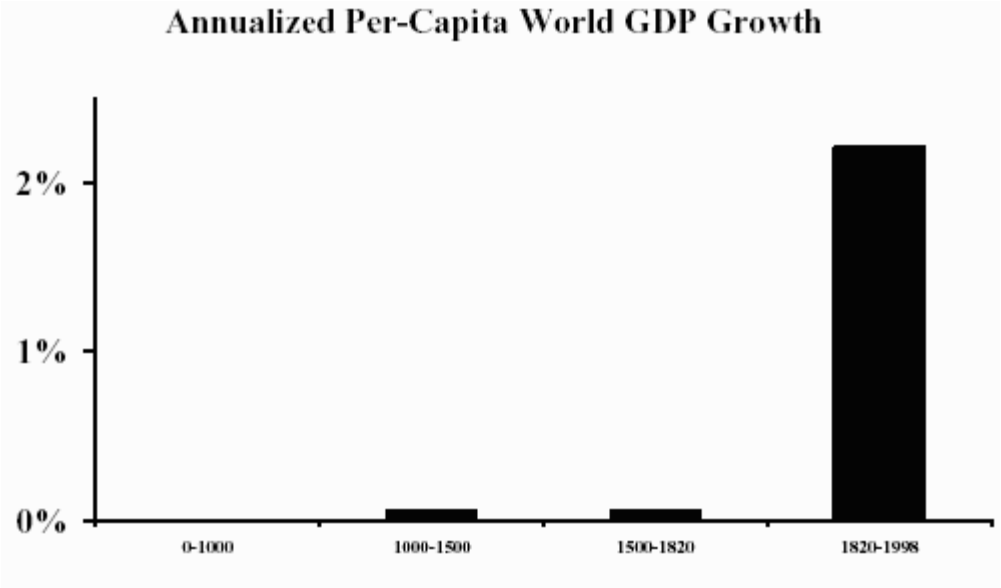
The Kennedy paradigm is powerful—it posits a one-to-one correlation between power and economic health. In the words of one Spanish diplomat, victory goes to he who "possesses the last escudo." Only rarely, as in the case of Vietnam or Persian-Greek wars, does the poorer side win. But in the end, such victories by economic underdogs always prove temporary. Vietnamese communism will shortly be consigned to history's dustbin, and Athenian power did not long outlive Salamis and Plataea.

Now let's look at world prosperity through a very wide lens. Per-capita GDP is probably the best way to measure the well-being of the average inhabitant of the planet. Courtesy of Scottish economic historian Angus Maddison, I've plotted this parameter since the birth of Christ:

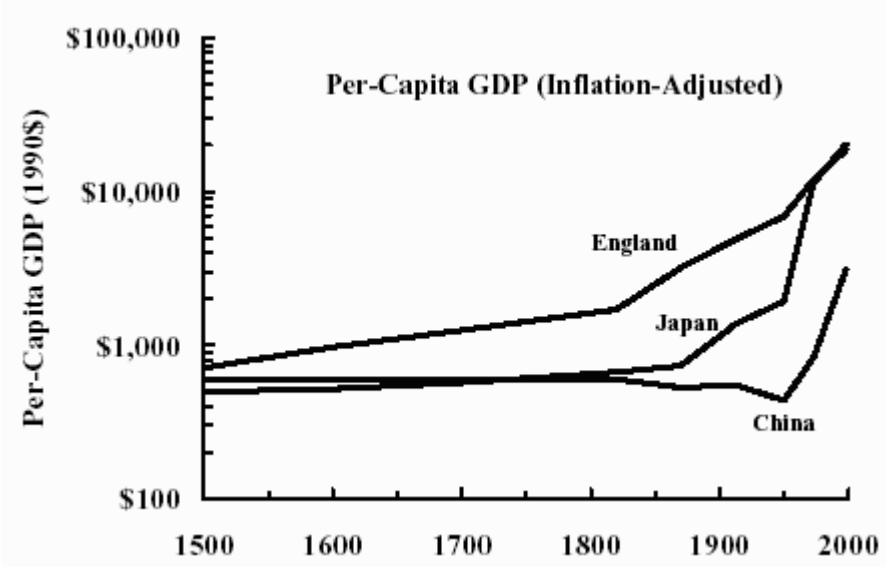


The graph is deceptively simple since the y-axis is plotted on a semilog scale; using this technique, the slope of the curve represents the true

rate of wealth growth at the personal level. What we see is that for a millennium after 1 A.D., there was absolutely no net economic progress in the world. Zilch. Yes, during this period Chinese civilization advanced, but we in the West actually regressed, losing most of the advances of Roman civilization, such as cement and road construction. With the invention of the windmill and waterwheel, there was some economic progress after 1000 A.D., but it was anemic. Only after 1820 did growth pick up. This is demonstrated even more dramatically when annualized real world per-capita GDP growth is calculated by era:

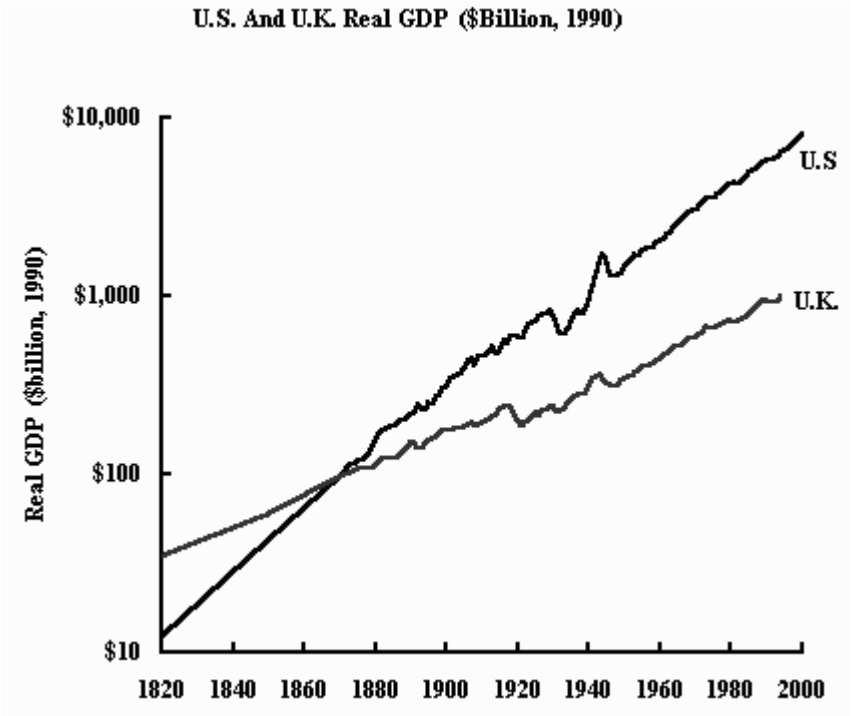


Sometime around 1820, the world shifted on its axis and became a progressively more prosperous place. Two percent annualized growth of per-capita GDP implies that the lot of the average world citizen nearly doubles each generation. Unfortunately, this progress was not at all even:



(I've not plotted African per-capita GDP because it's too depressing; in most sub-Saharan nations, there has been almost no real economic growth during the past century.)

Now the reasons behind the modern balance of power become clear. While prosperity is best gauged with per-capita GDP, using the Kennedy paradigm, *gross* national GDP is the best measure of geopolitical power. Consider, for example, this plot of the gross GDP of the U.S. and U.K. over the past two centuries:



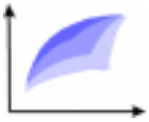
During most of the 19th century, the sun never set on the British

History, describes yet another advantage of liberal democracy. In totalitarian states, the brightest and most aggressive are attracted to politics and the military, where they can cause great mischief, whereas in liberal Western states, they are attracted to more productive and peaceful pursuits. Try to imagine Larry Ellison in control of a squadron of ICBMs or Bill Gates in command of a carrier group.)

If the Western and Moslem worlds are said to be in conflict, then rarely have two opposing ideologies been so unevenly matched. At the present time, the GDP of the five largest liberal democracies—the U.S., Japan, Britain, France, and Germany ($14 trillion, in 1990 dollars)—is more than ten times that of the five largest Moslem nations—Pakistan, Egypt, Malaysia, Indonesia, and Iran ($1.4 trillion, in 1990 dollars). It is likely that the root of Western-Moslem friction is precisely this gross economic disparity. The reasons for the gap are obvious: capital markets and scientific rationalism get short shrift in the Koran, and property rights are not particularly well developed in most Moslem nations. If you want an Islamic republic, do not complain when you also get an Islamic economy and military.

I've ventured far afield in this piece, but there's a method to my madness. In the preceding two pieces, we discussed the interplay between the growth of the economy and share prices. We discovered that, yes, productivity growth (as reflected in per-capita GDP) drives corporate profits, but there's a Catch-22: This occurs as a consequence of technological progress, which dilutes common shares and depresses stock returns. In this final piece of the series, we lay bare the blessed sources of economic growth and find that low expected stock returns are a necessary consequence of our society's good fortune.

Efficient Frontier



William J. Bernstein

The Fiduciary's Six Commandments

In a recent issue of *Financial Analysts Journal*, Robert Shiller comments on the recent deflation of the U.S. stock market bubble. It is understandable, he implies, that many foolish people were taken in. What puzzles, he notes, is that college endowments, presumably run by the best and brightest in academia, were joyous participants in the orgy, maintaining a mean portfolio exposure of 54.7% to U.S. equity and an additional 10.5% exposure to foreign equity.

Certainly, Shiller posits, these people were not fools, at least in the conventional sense. Rather, what occurred was an " . . . error that afflicts some of Shakespeare's tragic figures—in the sense of having subtle weaknesses of a partial blindness to reality."

Taking the analogy one step further, I suggest that even Shakespearean proportions have been exceeded: we are in the midst of a catastrophe of Biblical magnitude. It is likely that investors will be forced to wander in a desert of low asset-class returns for many years, until a new generation is born . . . who will joyfully commit the same sins as their parents.

But don't despair. Coming down off the mountain I see Charlton Heston. Since he's been moonlighting for the National Rifle Association, he has only had time to copy six commandments. But if you have fiduciary responsibilities, ignore them at peril of your immortal soul:

Thy investment policy statement is thy God; thou shalt not have other policies before thee. First and foremost, you should clearly record the goals, allocation policy, and portfolio mechanics of your operation. Aside from the legal benefits of an airtight investment policy statement (IPS), it will force you to think clearly about the above issues. If you're confused about how to go about this, I cannot recommend highly enough the bible of investment management fiduciary responsibility: Trone, Allbright, and Taylor's *The Management of Investment Decisions*. Your IPS should be detailed yet clear. It should be simple enough to understand so that a monkey could implement it, because someday, one will.

Thou shalt not covet thy neighbor's conventional wisdom, thy neighbor's

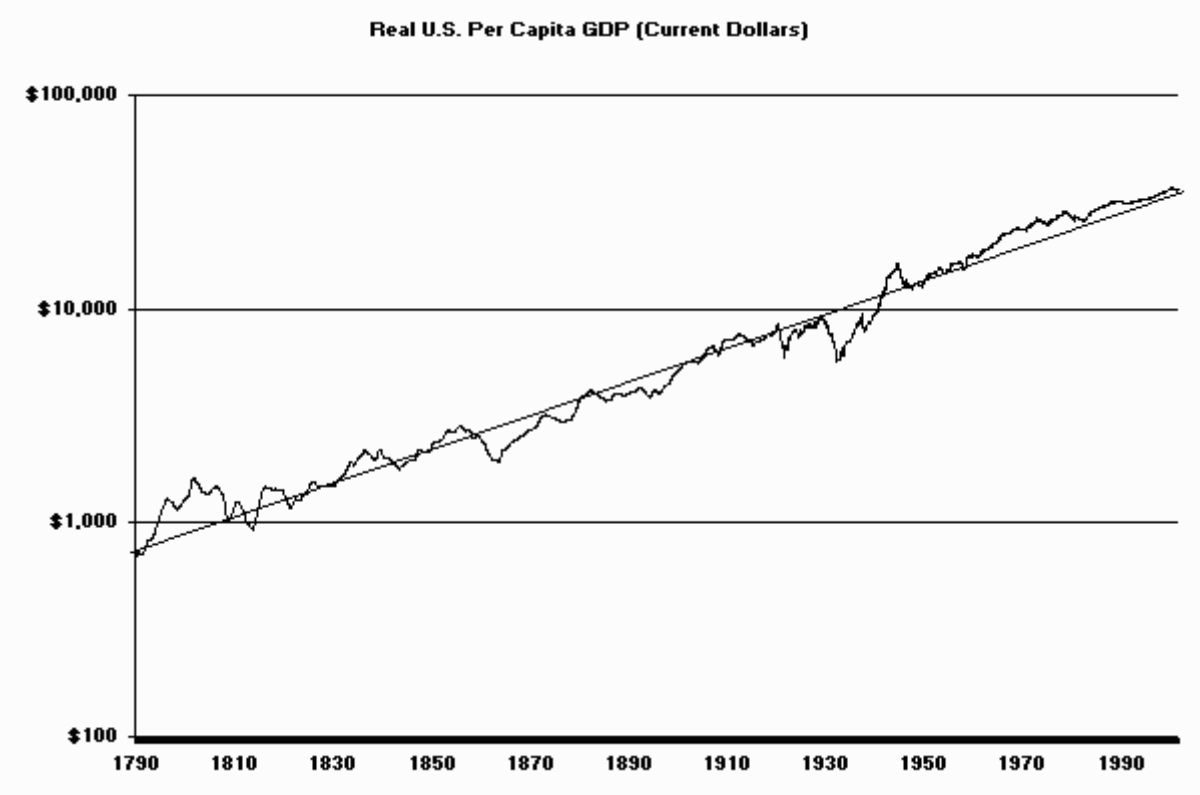
investment return, nor thy neighbor's muse. As Charles Kindleberger famously said, there is nothing so corrosive to good judgment as watching your neighbor become rich.

Thou shalt estimate asset-class returns by objective criteria, not historical fairy tales. One of the prime movers of the late bubble was the uncritical acceptance of historical returns data. There's no need to name names here; most of us know the cast of characters. At the height of the madness in early 2000, who did not know that equity returns since 1926 compounded out to 11.3%—that a dollar invested during the prior 74 years had now grown to $2,192? Or that in the past century, there were no 30-year periods when stocks did not beat bills and bonds?

How many said, "Hey, wait a cotton pickin' minute! Half of that return came from non-recurring factors like an average 4.5% dividend yield and a tripling of multiples"? How many took the next step and noted that the "low risk" of long-term stock investing in fact rested on those self-same high *historical* returns? In other words, if stocks beat bonds by an average of 6% per year, and if the annual standard deviation of those returns is in the 15%-20% range, then the "low risk" is merely a function of the high returns. If returns going forward are low, then hello risk.

Finally, how many noted what a felicitous date 1926 was—what Dimson, Marsh, and Staunton call the "visibility" problem: the benefits of stock investing did not become visible to the public before 1926. Begin the analysis at a more neutral date, say 1900, and the picture of stock returns, particularly in inflation-adjusted returns is not quite as pretty. In their wonderful book, *The Triumph of the Optimists*, this trio examines the tepid nature of stock returns in 16 developed nations over the entire 20th century, and the even more uninspiring record of real dividend growth, which was *negative* in a majority of nations.

One series worth studying is that of real GDP in the United States over the past two centuries:



Since 1789, real U.S. GDP has grown at 3.85% per year; but with slowing population growth, this rate fell to 3.31% over the past century, and to 3.11% over the past 50 years. Those of you who see a technology-driven acceleration of economic activity at the right margin of this graph better stop buying your eyeglasses from the Glassman-Hassett-Dent-Gilder optician shop and change the lens tint from rose to clear.

Worse, as we've already seen, about 2% of this GDP leaks out the new-issues drain before it reaches the per-share framework of investors. So figure 1% of real earnings and dividend growth. If we're lucky.

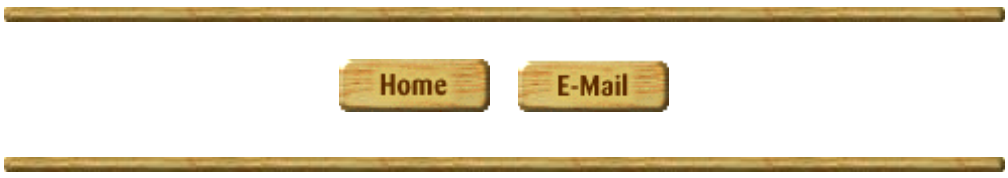
Are there other asset classes with higher returns? Probably. But you're going to have to think for yourself and do your own math. No one ever said this was going to be easy.

Thou shalt abjure expenses. Now that you've been whacked upside the head by the Old Testament Expected Returns God (and his good buddy, the Recent Realized Returns Avenging Angel), consider your expenses. While you were worshiping the false idols of double-digit returns, a percent per year to your pension consultant's favorite hot manager seemed like a pretty good bargain. But remove the scales from your eyes and behold: *you are paying one-third of your expected real return to these sinners*. Is it worth it? Repent, be saved, and save, all at the same time.

Thou shalt relieve thy participant's burden. It is likely that your participants are up the 401(k) creek, or one of its tributaries, without a paddle. Yes, you have saved a few dollars, but the cost to your participants is beyond calculation: they have been left to deal with expensive, poorly diversified fund choices without any tools or preparation. You may think that in switching from the defined-benefit to defined-contribution format, you have shed liability. If so, think again. It will not escape notice that you were asleep at the switch in establishing your plan, avoiding record-keeping responsibility so that you might send the fund salesman's children to private school. Meanwhile, it is slowly dawning upon a new generation of trial lawyers that the 401(k) quagmire may make tobacco litigation look like an evening stroll. Repent, I say: be a *mensch* and provide your employees with a default choice of a low-cost, passively managed fixed allocation. Better yet, switch back to your old defined-benefit plan.

Thou shalt do constant battle with thy board. Now for the hard part. Once per quarter, you will have to sit down with about a dozen silverbacks who do not know the first thing about finance. They will believe in The Returns Fairy (that there are superior managers and it is your job to find them), they will berate you for not foreseeing market downturns, and they will religiously believe in the wisdom of investing in the last decade's hottest asset class. When you enter the boardroom, you are not only an administrator; you are also an educator. You must spend five or ten minutes each meeting teaching them the basics of modern finance. Since new committee members will constantly be rotating through, this is a never-ending chore.

Keep your chin up, always do the right thing for the participants, and remember: a good deed never goes unpunished.



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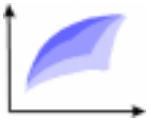

William J. Bernstein

The Stakeholder Effect

The American economy is the most prodigious wealth machine in the history of the planet. Real U.S. per capita GDP—the best historical measure of the financial health of the average citizen—has risen by 1.89% per year since the founding of the Republic. Thus, the material well-being of the average U.S. citizen has doubled every 37 years. Remarkably, over the long run this miracle has proven nearly impervious to foreign invasion (1812-14), civil war, global catastrophe and, yes, even a dramatic increase in the portion of GDP consumed by the state.

Economic libertarians will be distressed to note that this trend was not disturbed after 1930, when government began getting its greedy hands on an ever-increasing slice of the national economic pie. In that year, government expenditure (federal, state, and local) consumed 9% of GDP, compared to 29% last year. The paradox of steadily increasing prosperity in the face of burgeoning statism raises issues that are profoundly relevant to the current uproar over alleged corporate malfeasance. Hint: It’s not good news if your name happens to be Lay, Fastow, or Grubman.

Let’s start by examining that great engine of modern Western prosperity: property rights guaranteed by rule of law. I define "property" in the broadest possible sense: financial property, real property, intellectual property, and business assets of all kinds. And by "rights" I mean two things: the presence of legally unassailable title and "alienability"—the right to transfer ownership to someone else at will.

At first glance, the institution of property rights seems to be an unalloyed blessing. Alas, it is not. Property rights are expensive to maintain. In the unlovely jargon of economics, there are "enforcement costs": an extensive judicial system, police and, at times, even the military and national security apparatus. Not infrequently, these costs exceed the economic benefits gained from securing alienable property. For example, in primitive hunter-gatherer societies, it is prohibitively expensive to protect ownership of huge tracts of land used by small populations. An oft-quoted example is that of the beaver-hunting Montagnais tribe in colonial Canada. For millennia, the cost of establishing individual property rights over vast swaths of beaver habitat greatly outweighed the modest economic benefits of these animals.

By default, the tribe considered the beavers communal property, to be hunted by all. The arrival of the Hudson Bay Company, which offered astronomical prices for the pelts, changed all that; establishing private property rights for hunting grounds suddenly became a paying proposition. In modern society as well, some property rights may simply be too expensive to maintain: downloadable music comes most easily to mind.

More importantly, the costs of enforcing property rights vary greatly among societies. In relative terms, it is far cheaper to protect property in the United States than in Afghanistan; in Kansas City, all that is required is local police, while Kabul requires Special Forces commandos. The difference between Kabul and Kansas City is that in the latter, most people perceive themselves as *stakeholders*—law-abiding citizens with a real interest in ensuring the safety of everyone's possessions, not simply their own. Where there are many stakeholders, few steal and it is easy to secure property. On the other hand, where the populace is disaffected and highly distrustful of the economic system, it becomes prohibitively expensive to secure property rights, and the economy suffers accordingly.

I submit that the stakeholder effect is the core reason why the United States economy has proven impervious to seven decades of increasing government involvement. Yes, inefficiencies have resulted from the dead hand of the state claiming an ever-larger portion of the economy. But most of that activity pertains to middle-class entitlements. Assuring citizens that they will not starve or lack shelter goes a long way towards insuring that they will maintain their "stakeholder mentality."

The stakeholder mentality is far more fragile than we imagine. As Harvard Law School professor Mark Roe points out in his upcoming book, *Political Determinants of Corporate Governance*, at the turn of the last century, Argentina had the world's eighth highest per-capita GDP. Its debt obligations ranked among the most secure in the world, and commentators opined that its political stability was as high as Britain's. Europeans immigrated there in droves. At the time, it was not immediately obvious that Argentina's land ownership was highly unbalanced. When the Depression hit, millions of landless tenant farmers streamed into the cities in search of work and became sitting ducks for Juan Perón, who pandered to them shamelessly, derailing a once flourishing economy.

Which gets us to the current political and legal detritus from the collapse of the tech bubble. The mere perception—never mind the reality—that a small number of wealthy, well-connected scoundrels can ruin the lives of tens of thousands and financially savage millions, threatens the stakeholder mentality in a way that few calamities can. Pursuing these alleged miscreants in the most vigorous and humiliating form possible is a cheap and easy method of preserving the

stakeholder effect and, thus, our priceless heritage of property rights. Is this not also class-warfare and scapegoating of the worst sort? Perhaps. Is it necessary to the survival of our market economy? Absolutely.

Plus ça change, plus c'est la même chose. After the collapse of the South Sea Bubble, dozens were sent to the Tower, including four MPs. Many saw their profits confiscated, in clear violation of common law. Worst of all, Parliament passed legislation that inhibited capital formation and degraded market efficiency for generations thereafter.

The 1929-1932 bear market produced a similar spasm of Old Testament justice: The president of the New York Stock Exchange went to Sing Sing and many other high rollers met even more ignominious ends. In contradistinction to the earlier British experience, the legislative fallout—the Securities Acts of 1933 and 1934 and the Investment Company Act of 1940—helped make the U.S. capital markets the envy of the world. Recent events have led some to propose mandatory instruction in business ethics for MBA students; it would be far more effective to offer them courses in financial history.

Professor Roe suggests that while certain "temporary" legislation, like Glass-Steagall and branch-banking restrictions, might not make Milton Friedman leap with joy, the economic and ideological losses can be considered a noble and necessary sacrifice in the name of a far higher cause: the preservation of the stakeholder effect and, thus, private property and the free market system itself.

The fact remains that the survival of our market economy requires, on occasion, a brutal and heavy-handed response to even the *perception* of financial misbehavior. Support for this notion abounds. For example, researchers from Harvard, Yale, and the University of Chicago have recently found that in 27 developed nations, the mere presence of laws against insider trading did not reduce the cost of corporate capital; *enforcing* those laws did.

The maintenance of property rights can be both a cornucopia and a curse to those who benefit most. On a per-capita basis, corporate executives profit more from property rights and the rule of law than almost any other segment of our society. It is critical that they understand this is a two-edged sword and behave accordingly.

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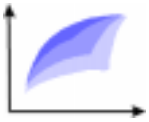


William J. Bernstein

Are Value Stocks Riskier than Growth Stocks?

One of the cornerstones of modern finance is the nexus between return and risk. These two characteristics are joined at the hip—you simply don't get one without the other. It's also well accepted that value stocks have higher returns than growth stocks. Not only is this empirically so (decades of work on the stock markets of dozens of nations, including the U.S. back to 1927, demonstrate that doggy companies have higher returns than glamorous ones), but value stocks *must* have higher returns because they are riskier companies.

And so, without mangling syllogistic logic, must it not follow that because they have higher returns, a *portfolio* of value stocks must indeed have higher risk?

The problem is that this risk is not readily apparent. Let's start with the most widely used measure of risk, standard deviation (SD). Utilizing the Fama-French (FF) and S&P indexes, here are the annualized returns and SDs for monthly data from July 1963 through April 2002:

	Return	**SD**
S&P 500	11.04%	14.88%
CRSP Universe	11.00%	15.42%
FF Large Growth	10.25%	16.65%
FF Large Value	13.71%	15.39%
FF Small Growth	9.68%	24.60%
FF Small Value	17.59%	19.20%

If anything, value seems to have lower risk than growth, especially for small stocks, where small growth stocks have by far the highest risks and lowest returns of any cross section. In the words of Ben Graham, "Why do folks buy this junk?"

Aha, say the academics: There are dimensions of risk not measured by simple standard deviation. They correctly point out that value stocks are "poor earners"; they are "distressed," with low profitability and tenuous financial strength. "Just look at these companies—some of them will fall over in a strong breeze." True.

But the key question is how *systematic* is this risk? Take the example of Kmart: Suppose there were a 75% chance that it would be bankrupt within one year. In order to repay its investors, it would need a greater than 300% payoff if it survives. Let us assume, for the sake of argument, that its payoff were 400%. Its expected one-year return would then be 25%. [0.75 x -100% + 0.25 x +400%.] Thus, in a portfolio of 100 such stocks, in order to lose money, 81 or more companies would have to fail; binomial probability tells us that the odds of this happening are only 10%. (Purists will argue that bankruptcy is not a necessary dimension of risk. Agreed, but bankruptcy is a handy paradigm—switch to negative earnings surprises or persisting poor growth and the math changes, but the basic concept does not.)

The above paradigm also grossly overstates value risk; most value companies, although distressed, are not bankruptcy risks, and most in fact have earnings. However, the above example made one strong assumption—that the risk of each company is *independent*, that the odds of one company failing tells us nothing about the odds of another company failing. Thus, in our example, the risk is almost completely diversifiable and, therefore, not a real risk to the holder of a large number of securities.

In actuality, of course this is not so: Adverse economic conditions can affect all companies, particularly value companies. It follows, then, that the risk of value stocks is "business-cycle risk"—the possibility that value companies *as a group* will be disproportionately affected by an economic downturn. Thus, one would predict that during economic downturns, growth should beat value.

The record in this regard is mixed. During the Great Depression, it was indeed the case: from September 1929 until June 1932, Ken French’s data show that large growth stocks lost "only" 82% of total return versus a loss of 89% for large value. Similarly, for the 12 months from October 1989 to September 1990, large growth and value lost 7% and 19%, respectively.

On the other hand, from 1973 until 1974, the reverse occurred, with large growth stocks losing 45%, versus only 26% for value. Similarly, from April 2000 to July 2002, large growth lost 44% versus only 27% for large value.

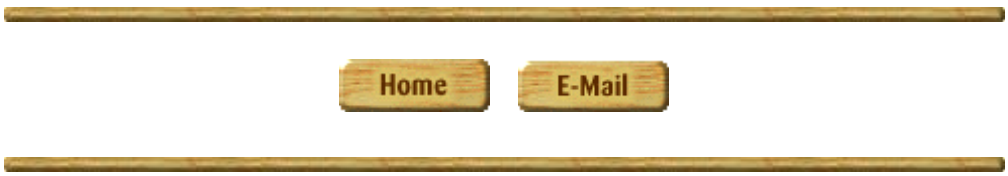
Not only are the real-world data ambiguous about the nature of value risk, but recent events suggest that growth stocks possess a risk all their own—bubble collapse. Bubbliness, of course, is in the eye of the beholder. Devout efficient marketeers sneer at the very concept: bubbles don’t exist, they are evident in retrospect, and failing all else, if they do exist, they are "rational," whatever that means.

But no matter what your financial religion, if the Internet/tech scene of the late

1990s *wasn't* a bubble, then nothing ever was. And almost by definition, growth stocks are the heart and soul of a bubble—it is difficult indeed to spin a convincing story around a distressed company in an out-of-favor industry. Bubbles, by their very nature, revolve around the supposedly unlimited growth possibilities of the transformative technologies of the age—the Internet in the late 1990s, mainframe computers and airlines in the 1960s, radio and electrical utilities in the 1920s, and British railroads in the 1840s. Although the technologies prospered, investors lost their shirts by hideously overpaying for their growth.

Finally, there are behavioral issues involved. Even efficient marketeers will admit that because of the lack of persistence of earnings growth, growth stocks are priced higher than the present value of their future earnings and dividends. Further, it is well established that negative earnings surprises hit growth stocks harder than value stocks and, in the same vein, positive surprises benefit value stocks more than growth stocks.

I submit, then, that although value and growth stocks have their own unique risks, those of growth stocks are more regular and pervasive. During a depression, growth companies may hold up better than value companies, though history has shown this to be an unreliable phenomenon. But when bubbles burst, you can take to the bank that growth will get whacked more than value. And, as long as there are human beings, there will be bubbles.



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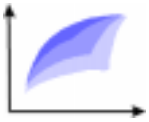

William J. Bernstein

Link of the Month: The Level and Persistence of Growth Rates

For those of you with friends and family who believe in the Easter Bunny and the ability to pick stocks with persistent earnings growth; Chan, Karceski, and Lakonishok present a wonderful working paper confirming what informed participants already know—that although it is possible to identify superior growers, the market got there long before you did and grossly inflated the price. Sales growth persists better than earnings growth, which is not surprising in a market economy, where profitability attracts competition.

As usual, you'll need the Acrobat Reader plugin to access this piece.

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