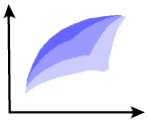
Efficient Frontier



An Online Journal of Practical Asset Allocation

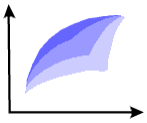
Edited by William Bernstein
and Susan Sharin

Spring 2005

Table of Contents

Home

Efficient Frontier



William J. Bernstein

A Note to Our Readers

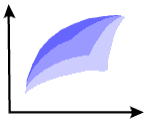
For the past eight and a half years, we've maintained a quarterly output of finance and economic related pieces—not much to complain about in the way of deadline pressure. But still, a deadline.

This will be our last quarterly issue. From now on, we'll publish pieces on an *ad hoc* basis when the spirit moves; each new piece will be announced on the Web site's main page. We're also dropping the *Link of the Month* feature. There are now plenty of excellent sites which scour the finance literature—one such superb site is John P. Scordo's research-finance.com.

Many thanks to all who've read and helped with our site over the years. We're still around, just not on a schedule.

Home

Efficient Frontier



William J. Bernstein

The Nature of Risk

A simple question: Just what is the risk of a security? Forget balance-sheet ratios, statistical price behavior, or any other abstract measure. Put your feet up on the fireplace, lean back, take a swig of something nice, and contemplate, "What are the bad things that can happen to my corporate securities?" At base, there are four:

- The company will go under—bankruptcy risk.
- You won't be able to trade the security—liquidity risk.
- The company does not go under, but earnings disappoint—earnings risk.
- Nothing at all befalls the company or its profits, except that its stock is savaged by animal market spirits—speculative risk.

The first two pertain to both stocks and bonds; with the low recovery rates inherent in modern corporate bankruptcies, the only difference is that you are out of pocket sooner with stocks than with bonds. The last two pertain mainly to stocks.

In terms of equity selection, liquidity risk can be dismissed for all but the smallest stocks, so we are left to consider the question: Just how well does the market price the other three risks?

Bankruptcy Risk

In a rational world, distressed companies should have higher returns to compensate for their obviously greater risk. And the classical three-factor model, which uses price/book ratio (P/B) as a measure of distress, seems to bear this out. However, as even Fama and French will admit, P/B is not a particularly intuitive measure of distress. What happens when we look at more direct measures of distress? In a wonderful working paper, Professor John Campbell and his coauthors at Harvard/NBER used several sophisticated measures of company distress which correlated well with future bankruptcy. Not unexpectedly, companies with high distress had high size and value loadings.

It would be reasonable to assume then, since these companies were highly distressed and had high betas for known risk factors, that a portfolio of their stocks would also have high returns. Alas, no: High distress correlated negatively with return, with the spread between the highest- and lowest-risk

portfolios being on the order of about 20% per year. To repeat, *the companies at highest risk of bankruptcy had the lowest returns*. In a typical bit of academic underspeak, the authors concluded "[the data suggest that] the equity market has not properly priced distress risk."

Earnings Risk

Outright bankruptcy is bad enough and frequent enough: Over the lifetime of the average investor, most companies will go under. The only hope of profit is to get one's dividends out before it happens. Worse, however, is that all companies eventually stop growing, and when they do, their stock prices usually get hurt. What is breathtaking is just how quickly this usually occurs. In a famous study by Fuller, Huberts, and Levinson (*Journal of Portfolio Management*, Winter 1993), stocks were sorted by price-to-earnings ratio (PE). The most expensive quintile, as expected, demonstrated spectacular prior earnings growth. How long did this last after they achieved their lofty valuations? As a rule, above average earnings growth persisted for only six years before it reverted to the earnings growth of the rest of the market—about 5% per year. How much extra growth did these stocks demonstrate during this period? About 20%, *total*, over the whole period. In other words, if a company was selling at a PE of 60 in year zero, and its price did not change, at the end of six years it would still be selling at a PE of 50. But, of course, by that time, its price would have changed, and not for the better.

A most peculiar situation, this: the most expensive stocks are also the ones most likely to disappoint.

Speculative Risk

Are some stocks more susceptible to Keynes' animal spirits? By now, you should be moving your lips. Berry and Dreman, in "Overreaction, Underreaction, and the Low P/E Effect," (*Financial Analysts Journal*, July/August 1995), demonstrated something that even the most casual market observers are aware of: when glamour stocks have negative earnings surprises, they are taken out and shot, but when value stocks disappoint, the damage is much less. And conversely, when glamour stocks have positive surprises, they do tolerably well, but when a dog surprises, it generally skyrockets. Can you spell Kmart? So once again, the equity markets do not seem to price a very real risk—speculative damage—terribly well.

Disturbing, to say the least. *None* of the biggest common-sense risks of owning equity are particularly well priced by the market —I'm not talking about artsy-fartsy balance-sheet ratios mind you, but real, definable risks, like the company going kerplunk, decimating its earnings, or simply finding itself at the wrong end of a lynching rope.

This fits all too well with what one sees in the financial media: an overriding obsession with earnings, but little concern about balance-sheet strength until

just before *rigor mortis* sets in. No wonder growth is overpriced and company safety underpriced.

Why, then, aren't money managers able to take advantage of these obvious inefficiencies? Several reasons:

- "The Limits of Arbitrage." (Schleifer and Vishny, *Journal of Finance*, 1997). When realized returns are the highest, so are fund flows; unfortunately, this is also when expected returns are the lowest.

- Tracking error. Even the most successful strategies have rough patches (think about the misery of thoughtful investors in the late 1990s) and, to paraphrase an apocryphal Keynes' quote, the markets can remain irrational far, far, longer than you can keep your cushy fund manager billet.

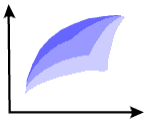
- Most fund managers cannot transact their way out of a paper bag. A strong balance sheet and/or value strategy entails turnover, and unless it's done with a light touch, fees, spreads, and market impact will wind up swallowing any excess return and then some.

More attention probably needs to be paid to balance-sheet quality but, as the past decade has shown us, a cheap and simple price-to-book sort provides a pretty good way of capturing most of the above inefficiencies.

We've come a long way these seven decades since Ben Graham first emphasized the margin of safety in *Security Analysis*. Unfortunately, the wrong direction.

Home

Efficient Frontier



William J. Bernstein

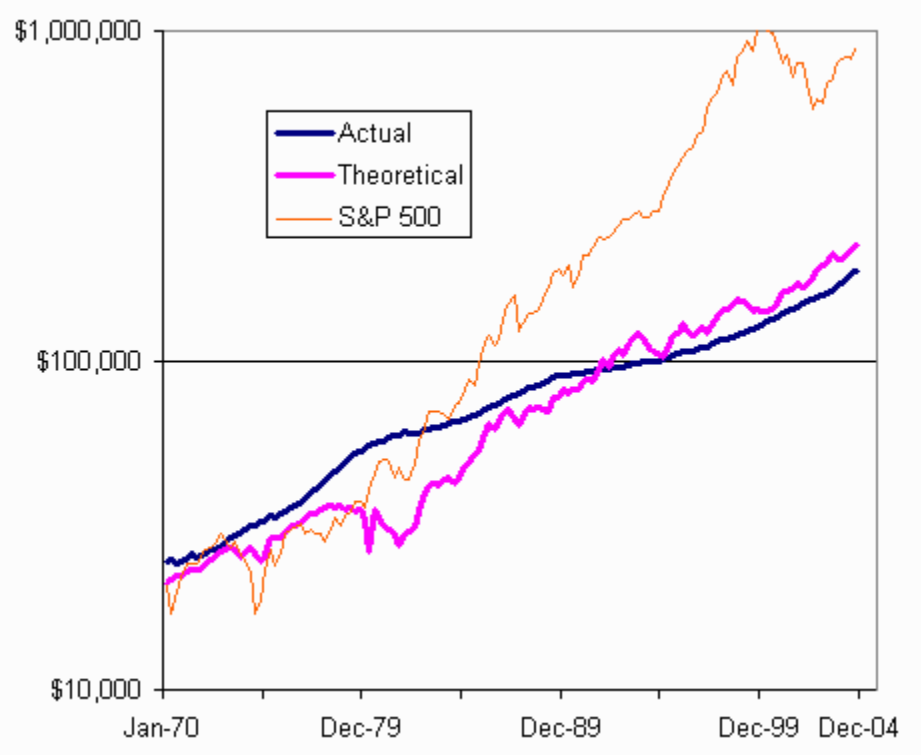
Why You Can't Afford a House in San Francisco

Is there a housing bubble? Why are homes in some cities outrageously expensive, while those in other cities easily affordable? In attempting to answer these questions, I found that a simple and intuitive model of the housing market does a remarkably accurate job of predicting median prices. This model allows us to think more clearly about the state of today's residential markets.

Imagine for a moment that we live in a world where all information about home prices is censored and both buyers and sellers—everyone, in fact—has not the faintest idea of where fair housing prices stand. In such a world, how do you estimate median prices?

Begin by assuming that most people mortgage themselves to the hilt. If the median family income in the U.S. is currently $60,000 per year and if lenders allow a mortgage/income ratio of 25%, then $1,250 per month is available for monthly payments. If the current 30-year fixed-rate mortgage is at 5.7%, then a theoretical median U.S. house price of $215,000 pops out of the spreadsheet. The actual value? $187,000. Not too shabby. (I'm ignoring the down payment, which I assume is borrowed from other sources, and thus is factored into the homeowner's presumably prudent-borrowing decision making. In any case, the down payment seems to be going the way of disco and balanced budgets.)

Next, repeat this exercise over the past 35 years. Data sources: Mortgage rates from the Bureau of Economic Affairs, median home prices from Freddie Mac and the National Association of Realtors. Family income was simulated by multiplying the BEA per capita income figures by two, which very closely approximates the census bureau's family figures. (The BEA approximation was used because it is a much more detailed time series.) As a dash of spice, the initial theoretical median home value in 1970, $21,141, was invested in the S&P 500 and allowed to run:



Indeed, the mortgage-to-the-hilt-at-the-30-year-fixed-rate method does a decent job of tracking median home prices.

What does this tell us about the state of the present housing market? First, with the actual median home price about 13% below that of the model prediction, there certainly is no bubble at the national level. In fact, the only time the model screamed "bubble" was in the late 1970s and early 1980s as theoretical home prices plummeted because of rapidly increasing mortgage rates. Rates peaked at over 18% in 1981, while actual home prices blithely continued climbing, albeit at a less heated pace than before.

Now that we understand what drives home prices—loan size dictated by rates and income—most everything else about the real estate market, even at the local level, falls neatly into place. For example, it might appear at first glance that falling mortgage rates are a good thing for home buyers. But for the most part, they aren't; all that falling rates accomplish is to increase the PV (present value) number that appears in the financial calculator. The bad news is that purchase prices go up, but the good news is that mortgage payments won't be much different than before the fall in rates. At the end of the day, new buyers will write the same monthly check to the bank, no matter what has happened to interest rates. The falling rate/rising price scenario isn't even that good for sellers; yes, they'll get more for their house, but this will be offset by the lower expected security returns available to the capital raised. Only the real estate agents and tax assessors are happy.

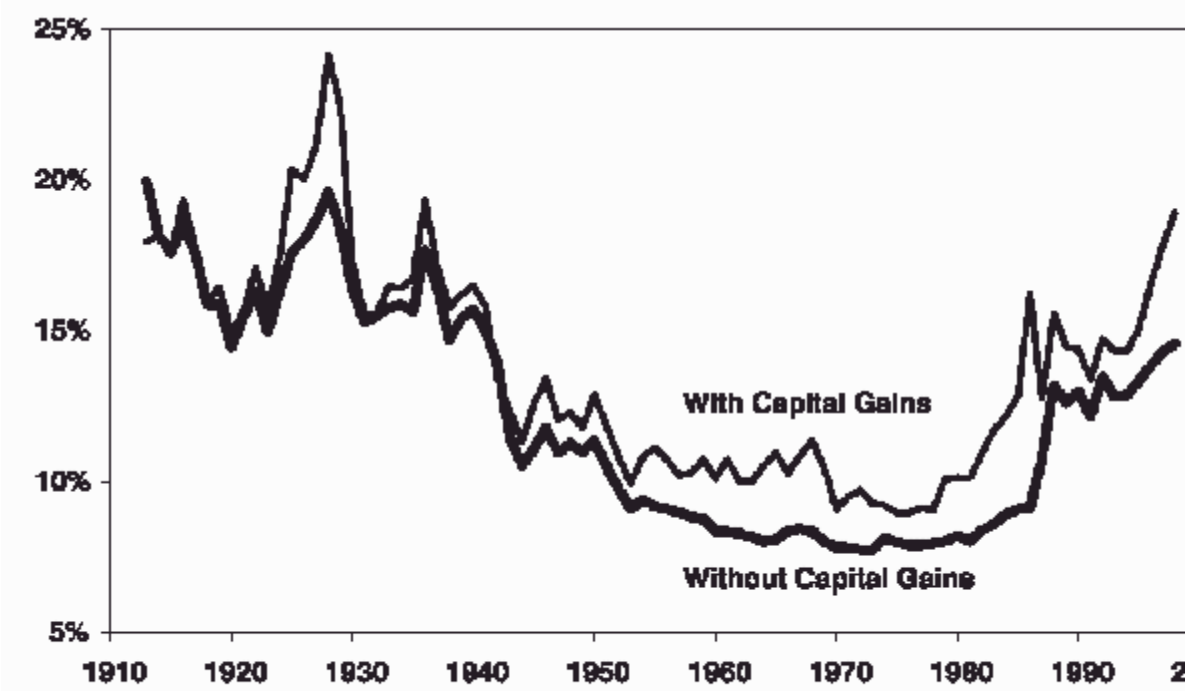
What about the "bubble zone"—California, Florida, New York City, and Boston? Simple. These areas attract an undue proportion of high wage earners, so if you move to one of these locales, you're competing for houses against

folks whose mortgage capacities are among the highest on the planet. When will home prices fall in these modern high-rent districts? When at least one of two things happens: mortgage rates rise, or the average income in these locales falls. If and when either happens is anyone's guess. To be sure, the increasing numbers of amateur speculators in hot markets, real-estate cocktail chatter, and proliferation of books and courses about getting rich in real estate all scream "bubble." But to the extent that these prices are propelled by high-earning boomers with insufficient savings, the bust may not occur for as long as another 15 or 20 years, if at all. And let's be clear about what we mean by "bust." As suggested by the above plot, home prices are far less volatile than either stocks or long bonds. But even a 10% to 20% fall in prices would wipe out the speculators and not a few first-time buyers who have fallen on hard times or who must relocate.

Since everyone in the housing market at a given moment pays more or less the same loan rate, what really determines the affordability of housing is where in a given area's wage ladder you fit rather than the absolute amount of your salary. Better a teacher in Omaha than an Upper East Side internist.

The rise in the median U.S. home price between 1970 and 2004 was only 6.05%, about 1.3% more than inflation. In this period, the return of the S&P 500 was 11.41%. True, stock returns going forward aren't going to be nearly that high, but given the retirement prospects of the boomers, neither are returns on residential real estate going to be as high as they have been in the past. I suspect that over the next few decades, the return of a prudently invested securities portfolio will outpace that of residential real estate.

About the only bit of arbitrage worth considering involves the growing gap in the high-flying markets between renting and buying. It makes no sense, as is the case in many cities, to buy a condominium for $500,000 when a similar flat can be rented for $1,800. Why the gap between rental values and mortgage payments? Thank compassionate conservatism. Rents, just like mortgage payments, are driven by salaries. Consider the widening income disparities of the past few decades, shown in this plot extracted from Pikkety and Saez's landmark study, which displays the total national income generated by the top 1% of wage earners:



Source: Adapted with permission of the authors from "Income Inequality in the United States, 191
Thomas Piketty and Emmanuel Saez, NBER Working Paper 8467.

Renters tend to be poorer than homeowners. As the income disparity between high- and low-salaried individuals has grown, it's no surprise that rental and mortgage payments have diverged.

Home prices and rents do not exist in a vacuum, and the factors that influence them are blindingly simple: the mortgage rate and the salaries of those in the market. Where these two critical values go, so go rents and home prices eventually.

Home