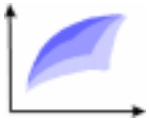
Efficient Frontier



An Online Journal of Practical Asset Allocation

Edited by William J. Bernstein
and Susan F. Sharin

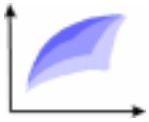
Fall 2001

Table of Contents

- The ETF vs. Open-End Index-Fund Shootout
- The Societal Risk Premium
- The Retirement Calculator From Hell - Part III
- The Changing Landscape of Factor Investing
- Link of the Month: Rothbard's *The Mystery of Banking*

Home E-Mail

Efficient Frontier



William J. Bernstein

The ETF vs. Open-End Index-Fund Shootout

I have to admit I've been dubious about the exchange-traded fund format. I just couldn't figure out the *why* of these things, aside from fees, commissions, and sending financial journalists' kids to private school. My first encounter with them—the WEBS series (now iShares country funds)—nearly did in my spreadsheet package with the statistical equivalent of anaphylactic shock. These foreign birds were a tracking-error disaster, with humongous shortfalls caused by excessive turnover.

So I was dubious when Barclays brought out a slew of new iShares, targeting every conceivable cross-sectional domestic index known to man and Gene Fama (even Russell 3000 Value and Growth funds, for God's sake!). Who needs these things when Gus Sauter can turn the same tricks in Vanguard's traditional open-end format? What difference do a few basis points of expense advantage make when Vanguard's tracking errors are uniformly positive by much larger amounts? And that's before fees, spreads, and premium/discount problems.

But life plays strange tricks on the morally certain. To my initial chagrin, an ex-neighbor of mine, after finding life as a small town Brahmin unrewarding, went back to study high-powered finance at Yale and wound up at Barclays. He then took it upon himself to send me to asset-class reeducation camp. Second, Jim Wiandt of IndexFunds.com had me review his upcoming monograph on the topic. (I have increasingly found myself the unwitting recipient of proposed drafts, but this one was a pleasure: concise yet comprehensive, fair, analytical, and well written. It's due out in April from Wiley.) And last, the Barclays' domestic offerings have defended their corner quite nicely.

As of July 31, all of Barclays' domestic cross-sectional funds have a one-year track record. While 12 months is not adequate to judge the performance of a single index fund, the aggregate performance of 19 iShares during this period gives a pretty good idea of Barclays' prowess in the domestic arena.

The funds at the top of the table provide direct head-to-head comparisons between Barclays, Vanguard, and the target index. The funds at the bottom have no corresponding Vanguard fund. (The iShares do not offer a Wilshire 4500 Fund.)

One-Year Returns: August 2000 to July 2001

S&P 500	-14.32%	-14.42%	-14.28%	-0.10%	+0.04%
Barra 500 Large Value	3.97%	3.91%	3.80%	-0.06%	-0.17%
Barra 500 Large Growth	-29.46%	-29.72%	-29.32%	-0.26%	+0.14%
Barra 600 Small Value	25.32%	26.27%	26.34%	+0.95%	+1.02%
Barra 600 Small Growth	-3.71%	-2.97%	-3.27%	+0.74%	+0.44%
S&P 400 Midcap	5.58%	5.05%	5.97%	-0.53%	+0.39%
Russell 2000	-1.62%	-0.86%	-1.62%	+0.76%	+0.00%
Wilshire 5000	-14.98%	-14.87%	-15.20%	+0.11%	-0.22%
Barra 400 Midcap Value	27.86%	--	27.67%	N/A	-0.19%
Barra 400 Midcap Growth	-12.31%	--	-12.59%	N/A	-0.28%
S&P 600 Small Cap	12.00%	--	12.27%	N/A	+0.27%
Russell 1000	-14.70%	--	-14.79%	N/A	-0.09%
Russell 1000 Value	8.75%	--	8.68%	N/A	-0.07%
Russell 1000 Growth	-35.07%	--	-35.08%	N/A	-0.01%
Russell 2000 Value	23.74%	--	24.34%	N/A	+0.60%
Russell 2000 Growth	-23.31%	--	-23.40%	N/A	-0.09%
Russell 3000	-13.83%	--	-13.89%	N/A	-0.06%
Russell 3000 Value	9.72%	--	9.96%	N/A	+0.24%
Russell 3000 Growth	-34.25%	--	-34.50%	N/A	-0.25%
Wilshire 4500	-20.89%	-20.52%	--	+0.37%	N/A

The result is a dead heat: in the head-to-head comparison for the first eight funds listed, the average tracking error (after expenses averaging about 0.23%)

was +0.20% for the Vanguard funds and +0.21% for the iShares funds. And this is no ordinary tie score—it's the equivalent of shooting eight even rounds with Tiger Woods. For the 11 iShares funds with no corresponding Vanguard fund, the average after-expense tracking error was exactly zero. Not too shabby, either.

It's not surprising that Barclays can walk the walk—they actually manage significantly more in indexed assets than Vanguard (almost $1 trillion). The reason you may not have heard about them is that, until recently, they had no retail presence; most of their indexing was done under "white label" agreements for large institutions.

So, back to the original question. Why deal with ETFs if you can own the same indexes without all the hassle of paying brokerage fees and spreads? Figure about 15 basis points in commissions and spreads each way. In the case of the iShares S&P 500 Index Fund, with its 9 basis-point advantage over the Vanguard 500 Fund, the ETF will take about three years to make up the difference. In all other cases, the iShares/Vanguard expense gap is smaller or even zero, so the ETF break-even points will range from very long to never. Even then, most of the time, the expense difference will likely be blown away by tracking-error differences. Nevertheless, there are several possible reasons for favoring ETFs:

1. First and foremost, if you are not a U.S. citizen, ETFs may well be your best fund choice. Residents of the land of the free and home of the brave do not appreciate just how miserable mutual fund offerings are outside these shores. With outsized expenses and dismal ongoing performance, foreign mutual funds make the average U.S. brokerage house look like a charitable foundation. At a stroke, ETFs may make the World According to Bogle available around the globe.

2. ETFs offer the possibility of greater tax efficiency. Certain asset classes are inherently tax-inefficient, because index reconstitution forces sales of appreciated shares. ETF shares are created and redeemed at the level of "authorized participants" who assemble and break apart the shares from and into their component stocks. The techniques involved here are enormously complex and center around two facts. First, when shares of an ETF are taken out of the market by sales, they are redeemed "in kind" by breaking them up into their component stocks; this is not a taxable event. Thus, "authorized participants" who do this are able to redeem the shares with the lowest cost basis, leaving the more tax-efficient high-basis shares in the fund. Open-end funds usually do the opposite, leaving the low-basis shares. Second, much of the tax-inefficiency of mutual funds or ETFs comes with the re-jiggering of the underlying indexes; in both cases, the stocks kicked out of the index must be sold for cash, incurring capital gains. The ETF advantage is that if it has incurred a large amount of share turnover because of expansion and contraction of its asset base, then when the index re-jiggering occurs, the shares sold would have a higher cost basis than the corresponding shares in the open-end fund. *Two enormous caveats* must be considered. First, tax-efficient large- and small-cap market funds for the S&P 500 and S&P 600,

respectively, are available from Vanguard. Further, there are some asset classes, like REITs, which are tax-inefficient even in the ETF format because of dividends. So we are really only talking about large- and small-value funds here. Second, at present, the added tax efficiency is only a theoretical advantage; in fact, ETFs can and do declare capital gains distributions—about 60% did last year. Thus, the potential tax advantage will take years to prove itself. It would be well to observe how ETF small- and large-value tax efficiency pans out before calling your broker.

3. If an asset class is not available from Vanguard, such as mid-cap growth and value, or the Russell funds, you can include it in your portfolio via ETFs. And going one step further, for my tastes, the Vanguard Small-Cap Value Fund is not diversified enough as a sole holding in this corner of the equity universe—it holds only 403 names. On the other hand, the Russell 2000 Value iShares Fund holds many more—1221 companies.

4. Paradoxically, if you're a very small investor and have fund holdings below the $10,000 threshold, you will incur the Vanguard $10 annual fee. For example, someone investing $3,000 in a Vanguard index fund will lose 0.33% of annual return from the fee, whereas he can purchase the appropriate ETF for a $10 commission at eTrade and never pay another cent in "low-balance" expenses.

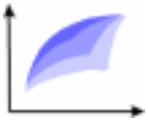
ETFs obviously hold certain advantages for institutional players, particularly that they can be sold short. The notorious NASDAQ Cubes—QQQ—actually saw net share *creation* during the recent NASDAQ collapse for just this reason. Interesting factoid: the average holding period of a Cubes share is four days. ETFs also have a more dubious advantage for small investors: they can be traded intraday. Whoopee.

In the opinion of Mr. Wiandt, the common bugaboos raised about ETFs—the discount/premium problem, the bid/ask spread, and dividend-reinvestment drag—are not significant. In most cases, these are less than 0.25%. In addition, as more shares are created and traded, the arbitrage opportunities at the authorized-participant level will narrow the discount/premium spreads even more. But Mr. Wiandt raises a more important point, namely, that "an ETF is only as good as its underlying index." If the index consists of liquid stocks, then its ETF will trade with reasonable spreads and minimal discount/premium problems. And if the markets are highly illiquid, and especially if there are currency constraints, as occurred in the past few years with the iShares Malaysia Fund, then the discount/premium problem will be enormous.

Finally, there are investors who should *not* use ETFs. If you're making periodic investments or frequently rebalancing your portfolio, ETFs are a waste of time and money—you'll be eaten alive by commissions.

I'm still wary, but cautiously optimistic. I wouldn't fill my portfolio with ETFs yet; however, the day may soon come when they are a solid competitor to the traditional open-end index fund.

Efficient Frontier



William J. Bernstein

The Societal Risk Premium

Financial economists like to talk about the risk-free rate: basically, the time value of money sitting in a perfectly safe vehicle. From an historical perspective per se, the very use of the term is fascinating. After all, it implies a society that is strong and stable enough to support a risk-free investment. Living in what is likely the most secure political, social, and economic environment ever seen on the planet, we take the existence of a "risk-free investment" for granted. But this is not always the case.

We have forgotten that our nation's early political and financial prospects were far from certain. The global investor in 1790 would have been hard pressed to pick out the U.S. as an up and coming success story. At its birth, America was a financial basket case. And its history over the next century hardly inspired confidence, with an unstable banking structure, rampant speculation, and a civil war. The 19th century culminated in the near bankruptcy of the U.S. Treasury, narrowly averted only through the organizational talents of J.P. Morgan.

Even England's political security has not been a sure thing during the past two centuries. Twice in this period—the Napoleonic Wars and early World War II, England's very existence was threatened. It is a commonplace that during times of turmoil, interest rates rise; economic historian Richard Sylla has said that a plot of rates over time is a sort of national "fever chart." This is true, in fact, of *all* rates of return—the "risk-free" rate, the interest rates of less-secure investments and, of course, equity returns.

The High Risk Environment of the Middle Ages

The capital markets are far older than most investors realize. Even before money first appeared in the form of small pellets of silver 5,000 years ago, there have been credit markets. For tens of thousands of years of prehistory, loans of grain and cattle were made at interest—a bushel or calf lent in winter would be repaid twice over at harvest time; such practices are still widespread in primitive societies. (When gold and silver first appeared as money, they were valued according to head of cattle, and not the other way around.)

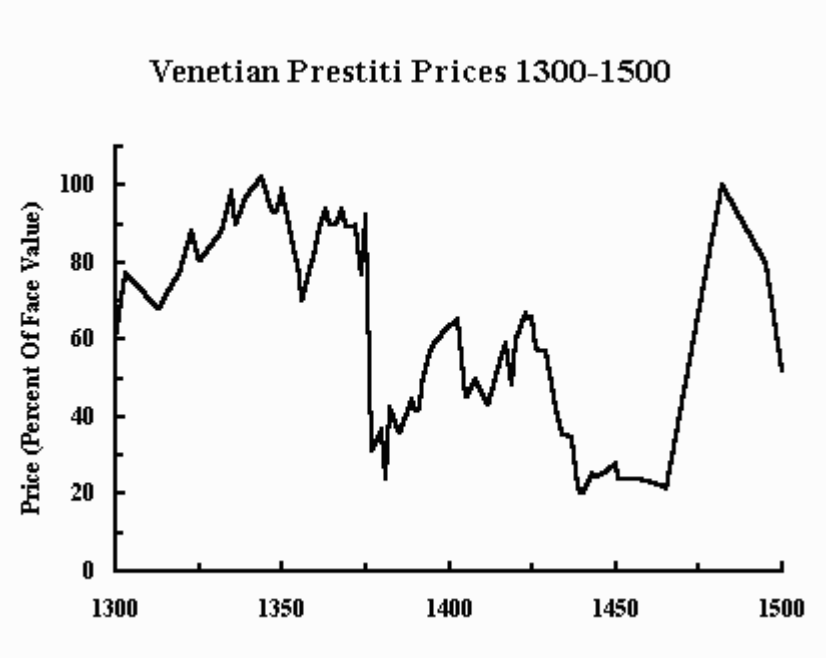
The earliest loans were short-term—enough to tide the farmer over until the harvest or to support the merchant until his ship returned with goods to sell in the marketplace. In many places in the world, agricultural loans are still the most common form of credit extended. But gradually larger businesses and,

finally, governments began demanding loans, and their needs were often long-term. Loan durations increased, and in many cases became *infinite*: that is, the principal was never returned. Such loans were known as "annuities"; wealthy citizens were often forced to purchase them. This is distinct from the modern insurance company annuity, in which payments cease with the death of the owner. Medieval annuities usually did not expire, but were handed down and traded among succeeding generations of investors. Modern investors, who live with endemic inflation, have trouble relating to this concept. But in the hard-money world before 1914, inflation was not high on the average investor's list of concerns.

The European annuity which arose in the Middle Ages—Venetian prestiti, French rentes, and finally the English consol—is a thing of beauty from a financial economic perspective because its value is so easily calculated: it is simply the interest payment divided by the prevailing rate. For example, an annuity paying £100 per year at an interest rate of 5% is worth £2,000 (£100/0.05 = £2,000). Thus, the value of an annuity is precisely inversely related to the interest rate.

The history of pre-Renaissance and Renaissance Europe was of constant warfare, with continuously shifting alliances and borders. The one constant over many centuries was the rivalry between Venice and Genoa, both commercial and military. In the 12th century, Venice began requiring huge amounts of capital to finance its wars. It solved this problem with forced loans from wealthy citizens, called "prestiti," which carried a rate of only 5%. Since prevailing rates were much higher, the purchase of a prestiti at a 5% rate constituted a kind of tax. But the Venetian treasury did allow owners to sell their prestiti to others. Naturally, the prestiti sold at substantial discounts to their face value—initially at about 75% of par. (In other words, its actual yield was about 6.7%.) For the first time in the history of capital returns, we are now able to examine the element of *risk*. Prestiti soon became the favored vehicle for investment and speculation among Venetian noblemen and were even held abroad.

Unfortunately, the Venetian treasury did not pay quite all of the interest on these securities, but economic historians believe that most of the interest was remitted to the owners. Even so, the total return to secondary-market purchasers was in the 6% to 8% range. Since long-term inflation was not a worry at that time, this represents a fairly healthy rate of return. A fast look at the above graph shows that owners risked the loss of large chunks of principal. For example, in the tranquil year of 1375, prices reached a high of 92½. But just two years later, after a devastating war with Genoa, interest payments were temporarily suspended and vast amounts of new prestiti were levied, driving prices as low as 19—a temporary loss of principal value of about 80%. It was partially mitigated, however, by the 5% annual interest payments made during the period. Even though Venice's fortunes soon reversed, this financial catastrophe shook investor confidence for more than a century, and prices did not recover until the debt was refinanced in 1482. Courtesy of Homer and Sylla's *A History of Interest Rates*, I've plotted the market price of the 5% prestiti in the 14th and 15th centuries:



Even taking these stumbles into account, investors in medieval and Renaissance Europe earned healthy returns on their capital. But these rewards were bought by shouldering risk, red in tooth and claw. Later investors in Europe and America also have experienced similar high inflation-adjusted returns. Even in the modern world, where there is return, there also lurks risk.

Certainly, such investment disasters had occurred in earlier civilizations, but the bear market in the 14th century Venetian bond market is the first reasonably detailed record we have of a real financial crash. It was by no means the last.

Consider the average prices of prestiti in three different years:

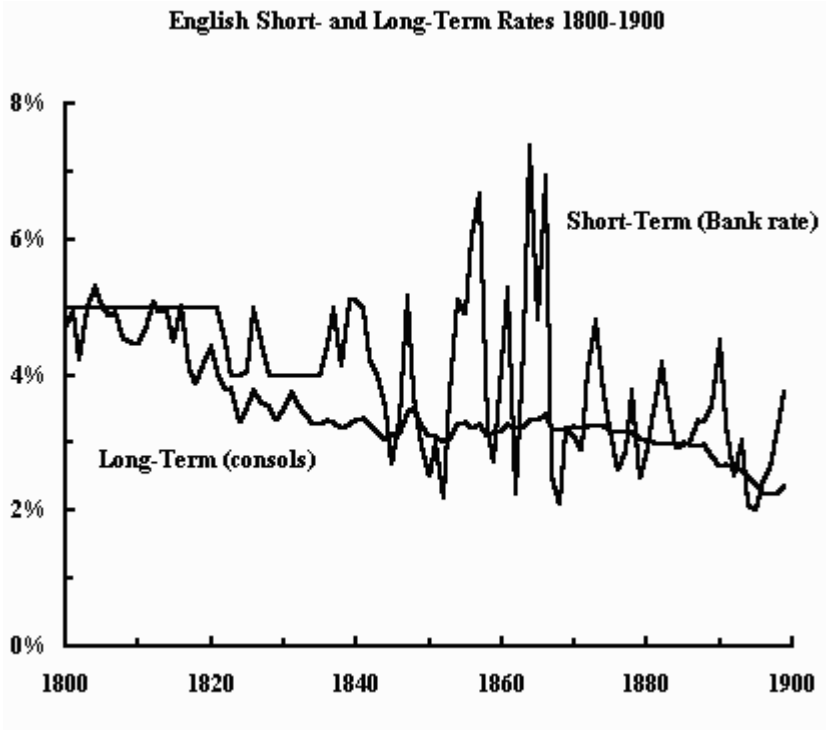
Year	**Price**
1375	92½
1381	24
1389	44½

The key concept is that buying when prices are low is always a very scary proposition. *The low prices that produce high future returns are not possible without catastrophe and risk.* In 1381, things looked bleak for La Serenessima: interest payments on presititi had been suspended, vast new amounts of them were being issued, and the Genoans were poised just outside the harbor entrance. Venetians brave enough to purchase prestiti at depressed prices in 1381 earned spectacular rates of return; conversely, had the history of Venice been placid, prestiti prices would have remained high, and returns low, given the inverse relationship between price and yield.

England in the 19th Century and Beyond

Let's fast forward a few centuries to the English capital markets. They allow for the first time direct comparisons between high-quality short-term (bill) and long-term (bond and consol) rates, when the Bank of England began operations in 1694 and immediately began to dominate the English credit markets. In 1749, the Chancellor of the Exchequer, Henry Pelham, consolidated all of the Bank's long-term obligations. These consolidated obligations later became known as the famous "consols." They were annuities, just like the prestiti, never yielding up their principal. They still trade today, more than two and a half centuries later. The consols, like the prestiti, provide historians with an unbroken record of bond pricing and rates over the centuries.

The rates for bills (and bank deposits) and bonds (consols) in 19th century England are shown below:



The modern investor would predict that bills would carry a lower interest than consols, since bills were not exposed to interest rate (i.e., inflation) risk. But for most of the period, short-term rates were actually higher than long-term rates. This occurred for two reasons. First, as we've already discussed, sustained high inflation only became a scourge in the 20th century. And second, wealthy Englishmen valued the consols' steady income stream. The return on bills was quite variable, and a nobleman desirous of a constant standard of living would find the uncertainty in the bill rate highly inconvenient. As you can see, the interest rate on short-term bills was much more uncertain than for consols. Thus, the investor in bills demanded a higher return for the more uncertain payout. This graph also shows something far more important: the gradual decrease in interest rates as England's society stabilized and came to dominate the globe. In 1897 the consol yield hit a low of 2.21%, which has not been seen since. This identifies the high-water mark of the British Empire just as well as any political or military event.

The tradeoff between the variability of bill payouts and the interest-rate risk of consols (and their modern reincarnation as long-term bonds) reverses during the 20th century. With the abandonment of the gold standard after World War I and the consequent inflationary explosion, the modern investor usually demands a higher return from long-term bonds and annuities than from bills. In recent years, in the developed nations, short-term rates have almost always been lower than long-term rates, since investors need to be rewarded for the higher interest-rate risk of bonds, due to the risk of serious damage from inflation.

The history of English interest rates reinforces the notion that with return comes risk. Anarchy and destruction lapped upon Britain's very shores between 1789 and 1814. Investing in such a treacherous milieu demanded high returns and they were forthcoming—a 5.5% perpetual rate (remember, no inflation) with the otherwise ultra-safe consols. On the other hand, the Englishman in the late Victorian era lived in what seemed at the time to be the height of stability and permanence. With such safety comes low returns. But history played a cruel trick on John Bull after 1900, with low stock and bond returns being the least of his troubles.

Most recently, this relationship of return vs. perceived risk was validated by Campbell Harvey and his colleagues at Duke, who found that stock market returns correlate quite nicely with the degree of perceived economic risk. It cannot be any other way—the most reliable way of earning high returns is to buy at low prices. And the only way of getting low prices is with economic, political, or military turmoil.

The lesson here for the modern investor is obvious. Today, many are encouraged by the apparent economic vigor and safety of the post cold-war world. And, yet, both the logic of the markets and history show us that when the sun shines the brightest, investment returns are the lowest. This is as it should be: stability and prosperity imply high asset prices, which result in low future returns. Conversely, the highest returns are obtained by shouldering prudent risk when things look the bleakest. The worst case scenario occurs when the world suddenly goes from seeming stability to something far worse, as occurred just before the lights went out in 1914. The recent very high stock returns in the U.S. would not have been possible without the chaos of the 19th century and the prolonged fall in prices that occurred in the wake of the Great Depression. Conversely, the current placid economic, political, and social environment has resulted in very high stock prices; this likely presages relatively low future returns, and with it, the increased possibility of market catastrophe.

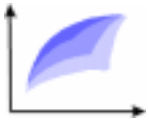
Don't count this possibility out. Consider the following quote from John Maynard Keynes in *The Economic Consequences of the Peace*:

> The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and

> new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages; or he could decide, to couple the security of his fortunes with the good faith of the townspeople of any substantial municipality in any continent that fancy or information might recommend. He could secure forthwith, if he wished it, cheap and comfortable means of transit to any country or climate without passport or other formality, could dispatch his servant to the neighboring office of a bank for such supply of the precious metals as might seem convenient, and could then proceed abroad to foreign quarters, without knowledge of their religion, language, or customs, bearing coined wealth upon his person, and would consider himself greatly aggrieved and much surprised at the least interference. But, most important of all, he regarded this state of affairs as normal, certain, and permanent, except in the direction of further improvement, and any deviation from it as aberrant, scandalous, and avoidable. The projects and politics of militarism and imperialism, of racial and cultural rivalries, of monopolies, restrictions, and exclusion, which were to play the serpent to this paradise, were little more than the amusements of his daily newspaper, and appeared to exercise almost no influence at all on the ordinary course of social and economic life, the internationalization of which was nearly complete in practice.

In short, the New World Order circa 1912. If we get a happier ending this time around, it will have to be at the cost of much lower equity returns—a cheap price, indeed, for avoiding the horrors of the last century.

Efficient Frontier



William J. Bernstein

The Retirement Calculator from Hell, Part III: Eat, Drink, and Be Merry

The advances in financial engineering over the past several decades have profoundly improved the lot of the average investor. The most spectacular are plainly visible to anyone willing to read—the mean-variance paradigm, which throws the tradeoff between risk and return into sharp relief; the efficient market hypothesis, which reduces portfolio implementation to finding the least expensive comprehensive asset-class exposure; and finally, factor-based analysis, which identifies those risks that reward.

The essence of investing is the deferral of current income for future consumption. For most people, this means retirement. And in this vein, one important advance has received relatively little attention—the switch from deterministic to probabilistic methods of liability planning. There are two ways to perform a probabilistic analysis: the so-called Monte Carlo method, which runs a large number of scenarios containing random variations in input data, and the "closed-form" method, which accomplishes the same thing with a single formula. The closed-form method, although mathematically more elegant, is not nearly as flashy as Monte Carlo, which can produce psychedelic graphics, beloved by users and journalists alike. It’s not surprising, then, that the clunkier Monte Carlo method has won out.

For centuries, investors used the amortization algorithm—the same formula used to calculate mortgages. Let’s say that you plan a 30-year retirement, estimate a 4% real return, and need $100,000 in annual income. Toss these figures into your trusty retirement calculator, and hey presto, out pops a required nest egg of $1,729,203. (Or, working from the opposite direction, if you have a nest egg of $1,000,000, you can spend $57,830 per year. (This $57,830 is "pre-tax"; that is, it must cover your tax bill as well, unfortunately.) As most of you are aware, you make life much easier for yourself when you work with inflation-adjusted returns and payments.

This "deterministic" method is hideously flawed. In the first place, your returns assumptions could be wrong. You or your spouse might not die exactly on schedule, thus outliving your money. And finally, you could get hit with an adverse returns sequence—even if you are correct about your life span, withdrawals, and portfolio’s long-term return. If results are worse than planned in the early years of your retirement, you are likely to run out of money. (I explored this topic in the first article of this series.)

The remedy for most of these problems is to use a probabilistic formulation (the Monte Carlo simulation)—that is, to toss in an element of random variation. This extra dimension of input, usually expressed as the standard deviation of annual returns, results in an extra dimension of output—the probability of retirement success. In the second part of this series, we examined such a probabilistic approach. (I was able to coax my friend David Wilkinson into writing a Windows-based application, McRetire, that computes retirement-success probabilities.)

But even this method, advanced as it is, can still mislead. Let's take a look at some output. Assume that you have a $1,000,000 nest egg with an expected 4.5% real return and a 10% standard deviation—about what a reasonable person can expect from a 60/40 globally-diversified stock/bond mix. Here are the 40-year success probabilities for the following before-tax monthly withdrawals:

Monthly Withdrawal Rate	40-Year Success Probability
$5,000	30%
$4,500	46%
$4,000	63%
$3,500	78%
$3,000	90%
$2,500	97%
$2,000	99.5%

A wide variety of web-based services are now available, such as Financial Engines, ClearFuture, and mPower, that will calculate the flip side of the above, estimating the success probability of the investment phase of your retirement plan.

The hard part, of course, is how to interpret this kind of output. Realize that these probabilities are merely an imperfect estimate of the *investment risk* you are taking. In other words, they assume the continuity of financial and political institutions over the period studied. Consider the implications of the above 97% success rate at a withdrawal of $2,500 per month ($30,000 per year). For this to be a useful estimate of your true chance of not running out of money, the "success rate" of your ambient political, economic, and military environment must be at least 97% over this 40-year period. Do you think that this is likely? Only if you are an historical illiterate (which, I'm afraid, subsumes many finance academics).

Let's examine a small sampling of possible political, economic, and military failure modes:

- The mildest scenario is that of catastrophic inflation, as experienced in Germany and Hungary in the 1920s or, more recently, in much of the developing world.

- Political failures are slightly worse, since these threaten the basic human motivation to work and produce. The state, for whatever reason, can decide to confiscate your assets or, worse, society's means of production. Anyone who judges this unlikely should turn on CNN during any G-8 or WTO conference.

- Local military action. Probably the lowest-probability item on this list, but something to think about on other continents.

- The Big One: Some deranged prime minister or colonel in central Russia, Pyongyang, or South Asia could let loose the four horsemen upon the planet.

So, think about what a 97% 40-year success rate means: the absence of all of the above for approximately the next 1,200 years. (A 97% success rate means a 3% failure rate; those 40 years divided by 0.03 is 1,200 years.) Ignore for a minute the uncertainties of the less-developed world and think only about the winners: Germany—in this century alone, three episodes of military and/or economic disaster, the first two associated with mass starvation. Japan—wartime devastation even worse than Germany's. England—near brushes with disaster in 1812-1814 and in both world wars. And even the United States—repeated banking failures, civil war, and the near-bankruptcy of the Treasury in the 19th century. The near collapse of the capitalist economy in the 1930s. And oh yes, I almost forgot—the entire globe barely missed mass incineration in October 1962.

History's best-case scenario was the Roman Empire, which survived more or less intact for about seven centuries (if you ignore the odd sackings of the capital after 200 A.D.).

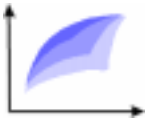
A wildly optimistic historian might give us another few centuries of economic, political, and military continuity. Back-of-the-envelope, that's about an 80% survival rate over the next 40 years. *Thus, any estimate of long-term financial success greater than about 80% is meaningless.*

Now, let's return to the above table. The historically naïve investor (or academic) might consider reducing his monthly withdrawals to a very low level to maximize his chances of success. But history teaches us that depriving ourselves to boost our 40-year success probability much beyond 80% is a fool's errand, since all you are doing is increasing the probability of failure for political, economic, and military reasons relative to the failure of banal financial planning.

Mind you, this is not a call for wild abandon. The above table constrains the retiree desiring a theoretical 97% success rate (of portfolio survival) from spending more than 3% per year of the initial real amount of his nest egg. Taking the accident propensity of the species into account would allow him to spend about 4%. But if you believe that we're about to encounter a bad returns sequence or simply wish to leave a few baubles to your heirs, you're right back to 3% again.

So live a little, and enjoy your money, for tomorrow we may be consumed by the ghosts of Hitler, Lenin, and Attila the Hun. And at withdrawals of 3% to 4% of your nest egg, don't spend it all in one place.

Efficient Frontier



William J. Bernstein

The Changing Landscape of Factor Investing

The 30-year waltz of speculative excess has taken yet another pass in front of the band as a new generation of investors forgot that asset value is simply discounted income. It really *was* different this time, with a spasm of financial hysteria worthy of Charles Mackay's *Extraordinary Popular Delusions and the Madness of Crowds* (published 1841). However, Mackay manufactured out of whole cloth most of the more outlandish "bubble companies" of the *annus mirabilus* 1720, including that all-time favorite enterprise "for carrying on and undertaking of great advantage but no one to know what it is." The 1990s actually saw whole flocks of these improbable beasts flash across the landscape, mesmerizing the credulous and astonishing the sane.

I'll admit it. I was thoroughly dissociated from the zeitgeist. I couldn't even figure out what part of speech Yahoo! represented. Was it an interjection, reflecting the ebullience of the era, or merely a noun, describing the company's shareholders?

But one thing of possible import did change, which seems to have gone unnoticed thus far—the relationship among the volatility of three returns factors: the market, size, and value. (To review, these are, respectively, the return of the market minus that of T-bills, the return of small stocks minus that of large stocks, and the return of value stocks minus that of growth stocks.) Consider now their returns in February and March of 2000:

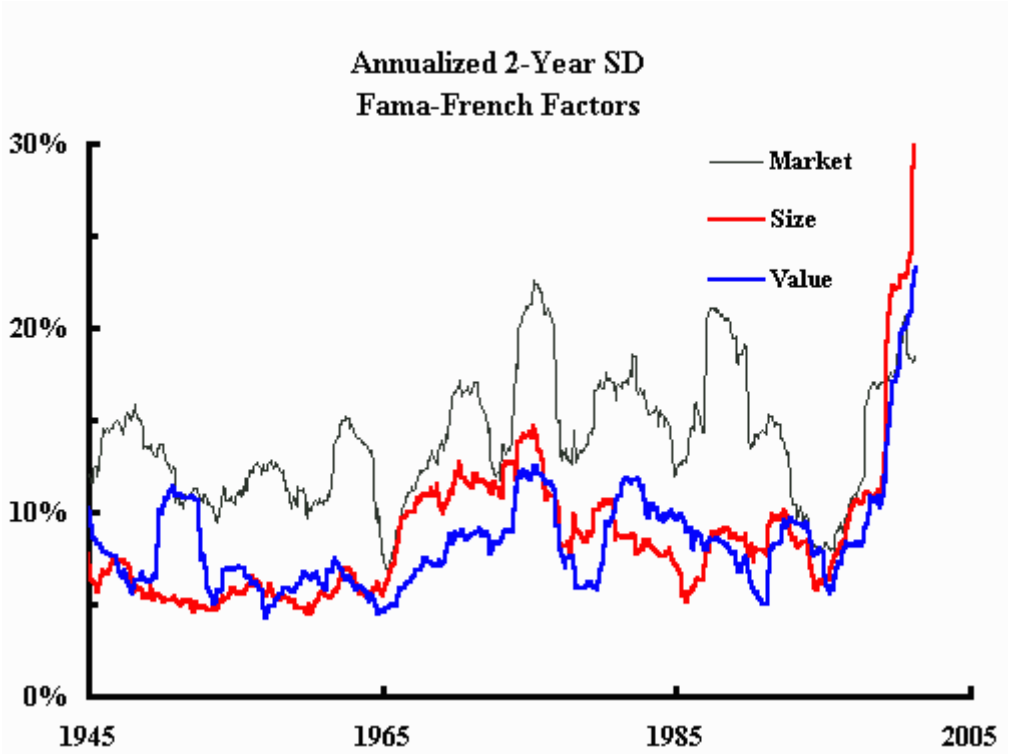
	Market	**Size**	**Value**
February 2000	2.55%	21.49%	-12.03%
March 2000	5.13%	-16.69%	7.81%

Pretty wild, eh? Stranger still, in the free-fall occurring the year after this crazy sequence of events, one of the sacred rules of asset-class investing was shattered: When stocks fall out of bed, small stocks break their legs. This time, a wrathful bear uniquely decided to spare the little guys. As you can see from the below table, in each of the four major bear markets ~~in~~ this century, small stocks (represented by the CRSP 9-10 Index) did much worse than large stocks. Not so, however, during the most recent smashup:

	S&P 500	**CRSP 9-10**
September 1929-June 1932	-83.41%	-89.21%
March 1937-March 1938	-50.04%	-71.25%

June 1969-June 1970	-27.01%	-51.89%
January 1973-December 1974	-37.24%	-58.37%
January 2000-March 2001	-19.88%	-8.01%

Finally, take a look at this plot of trailing 24-month standard deviations of the three factors since 1945:



For the first time, the small and value factors have become more volatile than the market factor. A single swallow does not a spring make, and rolling standard deviations are particularly treacherous; but it's possible that we are on the cusp of a new regime where the small and value factors may have both higher risks and higher returns, possibly as high as the market factor itself. (For the record, from 1945 to 1999 the returns for the market, size, and value factors were 7.85%, 0.73%, and 3.66%, respectively.)

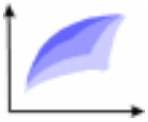
Why might this be so? First off, the market-factor return, better known as the equity risk premium, is sure to be lower than that of the past. Most likely it will be in the range of 4%, by virtue of the Gordon Equation, which stipulates that long-term stock returns are the same as the average dividend yield plus the dividend growth rate.

Size and value are another story. Why have they become more volatile? *Because for the first time, portfolio managers are actively trading them*. Twenty years ago, or even ten, it would never have occurred to a manager to systematically shift his entire portfolio up or down along the size or value axis. And had he wanted to, it would not have been easily managed. Now, such decisions are routinely executed at the institutional level. Consequently, the returns of these two factors are much less stable. With increased volatility

should come increased return.

Over the past two years, the volatility of the size and value factors hit most asset-class-based investors with the force of a two-by-four. The next few years will tell us whether this was a flash in the pan or a major shift in the investment risk-return paradigm.

Efficient Frontier



William J. Bernstein

Link of the Month: Rothbard's ***The Mystery of Banking***

Question: If you deposit a dollar in your local bank, how much of it can the bank lend out? 30 cents? 75 cents? No. *The bank can lend out approximately $10.* In fact, banks essentially print money. (And so can you, just by writing a check; the difference is banks need but ten cents in the till for every dollar they draft.) The late George Ball, after spending a career in law and diplomacy, retired back to Wall Street; once there a few years, he is reported to have said, "How come no one ever told me about banking before?"

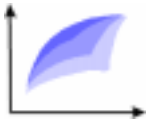
Unfortunately, primers on this fascinating system are almost as dull as the bankers themselves. From the Ludiwg von Mises Institute comes this lucid, if conservative and hard-money biased, out-of-print monograph. You'll need Adobe Acrobat to read it.

If you can get by his obsession with returning to the good old days of Grover Cleveland and the gold standard, "Rothbard's Complaint" will not only tell you everything you wanted to know about banking, it will entertain you at the same time (as long as you consume it in small bites). You'll never look at Alan Greenspan or your local bank in the same way again.

Home E-Mail

The Four Pillars of Investing

A new book by William J. Bernstein



Coming April 2002 from McGraw-Hill

The book for your friends and neighbors who groused after you lent them ***The Intelligent Asset Allocator***: "You've got to be kidding—there's *way* too much math in there; I couldn't get past the first chapter."

The Four Pillars of Investing is a journey to the heart of portfolio management, aimed at the liberal arts major seeking investment competence. Plenty of history and psychology, light on the math. ("Standard deviation" is mentioned only once, in a footnote.)

Here's a quick tour of the table of contents. Let us know by emailing t4poi@efficientfrontier.com if you'd like to be informed when the book becomes available.

The Four Pillars of Investing:

How to Build a Winning Portfolio

The Nature of the Beast

Chapter 1. No Guts, No Glory: *Risk and return in the capital markets from the ancient world to Yahoo!*

Chapter 2. Measuring the Beast: *Where stock and bond returns really come from.*

Chapter 3. The Market Is Smarter Than You Are: *How to get on the good side of an 800-pound gorilla.*

Chapter 4. The Perfect Portfolio: *All right, you can't have it. But you can get tolerably close.*

When Markets Go Berserk

Chapter 5. Tops— A History of Manias: *How you and your neighbors got snookered in the market's oldest con game.*

Chapter 6. Bottoms—The Agony and the Opportunity: *When only your grandfather owns stocks.*

The Analyst's Couch

Chapter 7. Misbehavior: *Meet the enemy, the face in the mirror.*

Chapter 8. Behavioral Therapy: *It hurts and it's not easy. But it is the only chance you've got.*

The Carny Barkers

Chapter 9. Your Broker is Not Your Buddy: *How Merrill Lynch and Smith Barney have their hands in your pocket.*

Chapter 10. Neither Is Your Mutual Fund: *The new opiate of the people.*

Chapter 11. Oliver Stone Meets Wall Street: *Bread and circuses for John Q. Investor.*

The Winner's Game

Chapter 12. Will You Have Enough? *How to avoid a diet of Alpo and Little Friskies.*

Chapter 13. Defining Your Mix: *Asset allocation without microprocessors.*

Chapter 14. **Getting Started, Keeping It Going:** *Getting off the dime. Sailing through the rough patches.*

Home E-Mail