Efficient Frontier
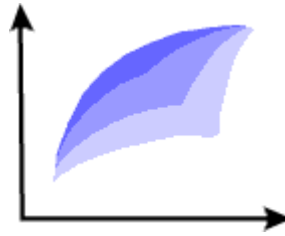
An Online Journal of Practical Asset Allocation
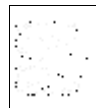
Edited by William J. Bernstein

January 1997

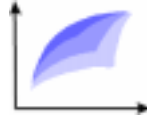### Table of Contents

Home

email

Efficient Frontier

A Brief Note to Our Readers

Most of you who who are perusing these pages are here, directly or indirectly, because of Scott Burns' column in the *Dallas Morning News* about my article on brokerage fees, **Bequeathing Your Assets to Your Broker** in the **September** edition. I am grateful to Scott not only for the boost given *Efficient Frontier* but also for his kindness and advice.

The jump in traffic resulting from this article was educational. The primary purpose of *Efficient Frontier* is to explore portfolio theory as it pertains to the average small investor. What I've discovered is that nobody really much cares about portfolio theory, and that to attract a wide audience *Efficient Frontier* will have to include more pieces which are of "general interest."

So be it. I enjoy writing "general" articles about investing, as you can see from the last two offerings. My hope is that my fluffier pieces will attract more readers to these pages, and that at least some of them will peruse the pieces on portfolio theory.

Please remember, however, that at the end of the day, an understanding of portfolio theory and asset allocation is much more profitable than pieces about brokerage fees, market bubbles, or elegant but inaccurate market sages.

Some readers have commented that they would appreciate some basic pieces on portfolio theory, more substantive than the fluff but not quite as technical as most of the articles. For those of you who want a primer on investing and portfolio theory I cannot recommend Frank Armstrong's ***Investing for the 21st Century*** highly enough. The book is apparently going into print soon, so I'd download it before Frank's publisher tells him to pull it.

In fact, this site originated from a book that I wrote, intended as a primer on portfolio theory for the small investor. The book was reviewed by several financial publishers, and rejected by all. One acquisitions editor told me that it seemed that I had not written the book with a narrow enough range of readers in mind -- much of the book seemed aimed at beginners, while some material was aimed at a more expert audience.

One of our readers, Matt Boxberger, from San Diego, very kindly translated the book into html for me, so for those of you who wish a sneak preview at the book, here it is. It's called:

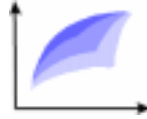## *The Intelligent Asset Allocator*

Comments? Suggestions? **email me**, I'd love to hear from you.

William J. Bernstein
wbern@mail.coos.or.us

Roll Your Own
Become Your Own Portfolio Analyst

The Search For the Holy Grail

by William J. Bernstein
wbern@mail.coos.or.us

The editor continues his search for the "holy grail" of small investor portfolio analysis -- an inexpensive software application which:

1. Contains long time series for a large number of investible asset classes.
2. Allows backtesting and quadratic optimaiztion of portfolios.
3. Contains a Markowitz mean variance optimizer.

Unfortunately, it hasn't happened yet. Glenn Manuel of Dallas Texas pointed out to me a tantalizing morsel available in the form of the **Mutual Fund Expert** avaliable from http://www.steelesystems.com. MFE is available in a number of packages ranging from a free demo up to the "Professional Plus" version, which normally costs $599 per year for monthly updates. The folks at Steele Systems suggested that a workable solution for investors wanting to investigate the behavior of various hypothetical index based portfolios would be to purchase a single edition of the Professional Plus version at for $105.

I found the Professional Plus version of MFE to be a quite workable portfolio backtester. Setting up this Windows based platform was a snap, and after a few minutes study of the program manual I was able to easily construct index based hypothetical portfolios, from which 3, 5, 10, 15, and 20 year returns and 3, 5, and 10 year SDs were automatically calculated. Annual and monthly returns could also be generated and graphed back to 1962 for several assets. One could not try out portfolio combinations as rapidly as is possible with a spreadsheet, but hey, writing portfolio spreadsheets is no picnic. MFE is designed primarily as a mutual fund survey, and has the same look and feel as Morningstar Principia, which is an added bonus if you purchase it as a portfolio tool. My only criticisms are 1) that it doesn't contain the Ibbotson database back to its 1962 inception, and 2) that the longest period SD is 10 years. It's not perfect, but is leagues ahead of any other inexpensive portfolio tool.

Morningstar Products Principia does a little better in terms of data, with a vast array of market

indexes going back 15 years. Unfortunately, a lot of the data is "buried" in the software. (For the hard core data freaks among you, the monthly data is found in Pricipia\control\openend\mtr.dbf. You will need the static.dbf file to identify the individual funds, and a database program to export the data in usable form.) Principia Plus with Portfolio Analyst has limited backtesting capacity, and is quite expensive.

For those looking for a free Markowitz MVO, Critical Point is a clunky Windows based shareware optimizer which can be downloaded from http://ftp.sunet.se. Once you have arrived at this site, use their search utility to find cripo098.zip.

Lastly, the editor apologizes for the inoperative ftp for the 1926-94 templates. If you really want a copy, email me.
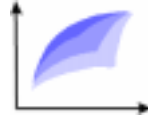
Know of a useful piece of inexpensive or free portfolio software? Let us know!

William J. Bernstein
wbern@mail.coos.or.us

Cover   Home   E-Mail

Efficient Frontier

When Doesn't It Pay to Rebalance?

William J. Bernstein
wbern@mail.coos.or.us

In the last edition of *Efficient Frontier* a simple formula for estimating the increased return obtained from periodically rebalancing a portfolio, ("rebalancing bonus," or "RB") was derived and found to accurately predict this "excess return," defined as the return in excess of the arithmetically weighted "Markowitz return." It is important to remember that the Markowitz formulation is valid only over single periods, and that problems arise when annualized returns over long periods are used. The commonly used portfolio of 50/50 stock/bond illustrates this phenomenon nicely. The annualized return on common stock for the period 1926-94 was 10.19%, and for long term corporate bonds over the same period 5.51%. The "Markowitz return" on an equal mixture of the two is the arithmetic mean, or 7.85%. Rebalancing this portfolio on an annual basis to maintain a 50/50 mixture yields a return of 8.34%; a "rebalancing bonus" of 0.49% is realized over the Markowitz return. In fact, however, this "excess return" is illusory. If one had put equal amounts of money into stocks and bonds on January 1, 1926, and had not rebalanced or paid taxes, then the long term return would have been 9.17%. In this instance the nonrebalanced portfolio has a higher return than the rebalanced portfolio. This is because over the 69 year period studied the significantly higher stock return overwhelms the bond return; for the last 40 years of the period the unrebalanced portfolio consists of greater than 90% stock. Thus the higher return of the unrebalanced portfolio comes at the cost of a much higher risk than the rebalanced one. In this case it is incorrect to calculate an expected return as the arithmetically weighted *annualized* returns. The proper returns to use are the *total* returns for each asset for the whole 69 year period, in this case 80,170% for stocks and 3,650% for bonds.

Perold and Sharpe point out that rebalancing is a "concave" strategy. Portfolio insurance represents the opposite of rebalancing, and is referred to as a "convex" strategy. They suggest that convex portfolio insurance strategies as well as buy and hold ("flat") strategies produce superior returns in markets with a prolonged upward (or downward) bias, and concave rebalancing strategies produce superior returns in stagnant markets. If the only two assets considered are stocks and bonds, and if stock returns are always much higher than bond returns over long time horizons, then obviously buy and hold, as well as portfolio insurance, will produce returns superior to rebalancing. As already pointed out, this will come at the cost

of gradually increasing portfolio risk.

However, things are very different for global equity portfolios. Over very long time horizons there is usually relatively little difference in the returns in most national equity markets; under such circumstances rebalanced portfolios dominate. For example, when looking at the 1970-94 period, rebalancing various MSCI national asset pairs almost always provides returns superior to nonrebalanced national pairs. Only when long term return differences among asssets exceed 5 percent do nonrebalanced portfolios provide superior returns, and then only at the cost of increased risk. (The exceptions which prove the rule are the very high returns of Japanese equity, and the very low returns of Australian and Italian equity.) Care should be taken to note that the superiority of rebalancing as a long term strategy pertains only to *national and regional* markets as a whole, and not among different industry groups. Over the course of decades entire industries often shrivel while others prosper mightily; rebalancing the pharmacutecal and petroleum segments of the S&P500 over the past three decades would have been a disastrous strategy. Although enitre national markets occasionally disappear throught war or nationalization, this occcurs much less frequently than the ongoing remolding of market segment capitalization characteristic of a market economy.

In last month's *Efficient Frontier* we derived the following formula, which was found to accurately predict the RB, defined as the return in excess of the Markowitz return calculated from annualized data:

$$RB_{1,2} = X_1 X_2 \{ SD_1 SD_2 (1 - C.C.) + (SD_1 - SD_2)^2/2 \}$$

or more simply,

$$X_1 X_2 (Var_1/2 + Var_2/2 - Covar_{1,2})$$

Stated succinctly, *the intrinsic rebalancing potential of any asset pair is the difference between its mean variance and covariance.* However, the RB calcualted from the above formula is valid only when returns for the assets involved are similar. How dissimilar do asset returns have to be before it no longer pays to rebalance? Obviously, over the 69 year period for 1926-94, the 4.68% difference between stocks and corporate bonds is "too high" to produce a rebalancing benefit in terms of return alone, although rebalancing still produces benefits in terms of risk reduction.

It is clear from the above that the actual rebalancing bonus of a two asset portfolio is:
1. Increased by the volatility of each asset
2. Increased by a decreased correlation between each asset,
3. Decreased as the difference in long term returns increases, and
4. Decreased further if this return difference is maintained over a long period of time

In order to further investigate this phenomena, Monte Carlo simulations of portfolios consisting of 50/50 mixed of assets with arbitrary returns and SDs were tested with monthly rebalancing over 5, 10, 20, and 50 year periods. In the first instance, both assets were assumed to have a monthly return of 0.0083 and an SD of 0.05, similar to that of US stocks. 201 runs were calculated and plotted, and the following result obtained:

Two Assets, Monthly r = .833%, SD = 5%
50 Year Holding, Monthly Rebalancing
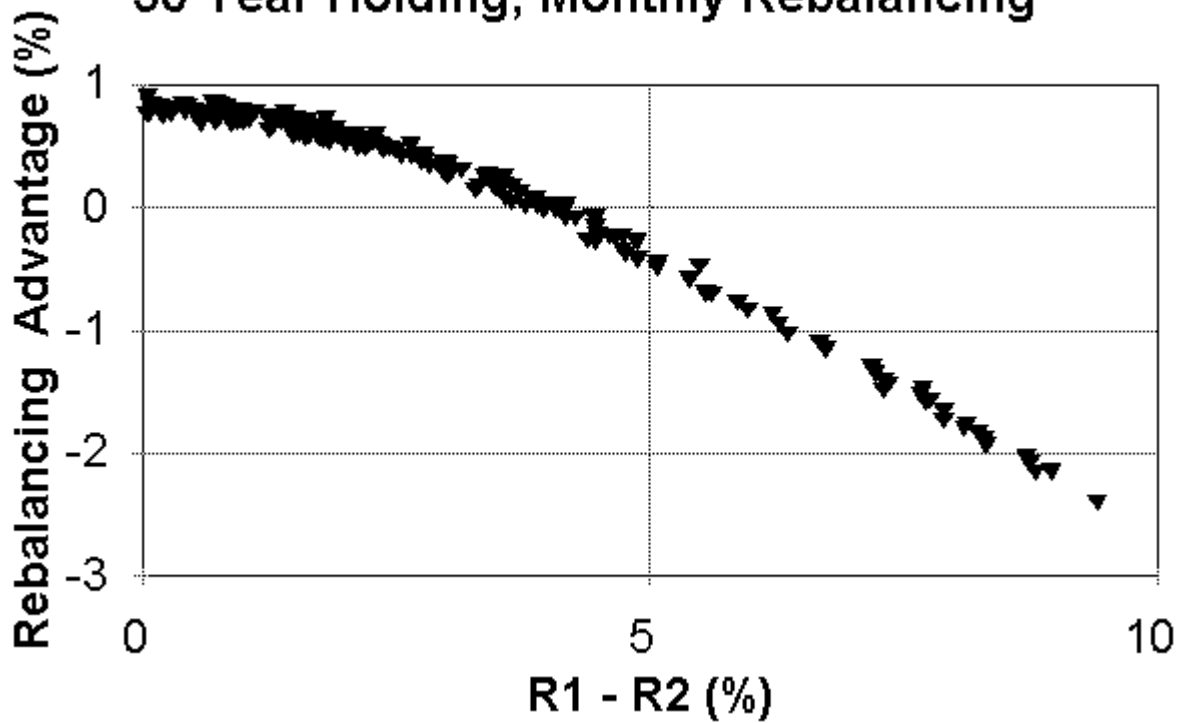
For a 5 year holding period, the following plot was obtained:

Two Assets, Monthly r = .833%, SD = 5%
5 Year Holding, Monthly Rebalancing
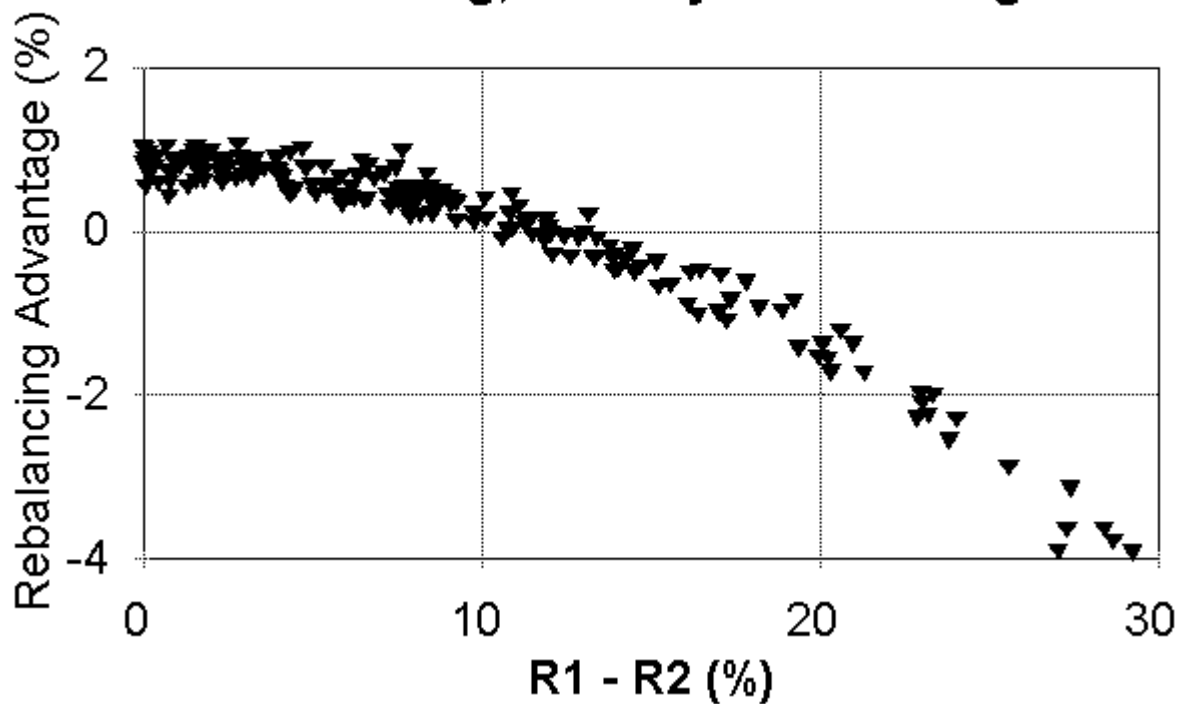
So, for a 50/50 mix of two assets with the approximate risk/return characteristics of US common stock *and a zero correlation* (as occurs with randomly generated returns) the "break even point" occurs at about 4% annualized return difference over a 50 year period, and about a 12% annualized return difference over a 5 year period. In other words, if the return gap between these two noncorrelated assets is less than 4% annualized over 50 years, or less than 12% over 5 years, then it pays to rebalance. If the return gap is greater, it does not.

For those of you who are interested, I've plotted the results for the following asset pairs:

Both Assets monthly r = 0.00833, monthly SD = 0.05
(above example)

- 50 year holding
- 20 year holding
- 10 year holding
- 5 year holding

Both Assets monthly r = 0.01, monthly SD = 0.1
(simulates a pair of very volatile stock classes
e.g., precious metals and emerging markets stocks)

- 50 year holding
- 20 year holding
- 10 year holding
- 5 year holding

One asset monthly r = 0.00833, monthly SD = 0.05
Second asset monthly r = 0.004167, monthly SD = 0.02
(Stock/Bond Model)

- 50 year holding
- 20 year holding
- 10 year holding
- 5 year holding

The data from the above graphs is tabulated below. Break even points for each model and holding period are estimated from the graphical data:

Break Even Points

	.00833/.05 Model	.01/.1 Model	.00833/.05-.004167/.02 Model
50 years	4%	5.5%	3%
20 years	6.5%	13%	5%
10 years	8%	17%	7%
5 years	12%	23%	9%

What happens when the correlation is not zero? It is difficult, but not impossible, to do Monte Carlo analyses with nonzero correlations, but it is actually easier to estimate the effect of this by inspecting the above formulae, which apply if the returns are equal. If we now raise the correlation from zero to 0.5, we have just lost 50% of the maximal RB (which occurs at the left margin in the above graphs). Simply slide the whole curve down so that it's apogee is now half the distance from the graph origin. For the example above for 50 years, increasing the correlation fot he two assets from 0.0 to 0.5 lowers the break even point from about 4.0% to about 2.7%. A good rule of thumb is that the break even point is decreased by one third by increasing the correlation from 0.0 to 0.5.

Discussion

The above simulations provide an approximate answer to the question "Under what circumstances does it pay or not pay to rebalance?" Rebalancing works best with volatile, uncorrelated assets whose returns are roughly similar. The above table of break even points provides an "outer limit" beyond which rebalancing is of no benefit. In the real world of the global equity markets, correlations among different national indexes average about 0.5. This would necessitate adjusting the above values down by about a third. Transaction costs will result in further downward adjustment, and taxability may completely eliminate any rebalancing benefit at all.

Consider for a moment that almost all of the world's major equity markets have monthly standard deviations clustering between the .00833/.05 and .01/.1 models used above. Over a 20 year period one can estimate the zero correlation break even point at about a 10% annualized return difference. Taking into account transaction costs and nonzero correlations an actual break even point in the 5%-6% range seems reasonable. How likely is it that the average difference in 20 year annualized return among various national or regional markets will be this large? Not very likely, in my opinion.

The above data also sheds some light on the stock/bond rebalancing problem. The last column of data in the table provides break even points for 2 assets with return/SD of .00833/.05 and .004167/.02. These are the approximate values for stocks and bonds. Over a 20 year period, the rebalanced portfolio will dominate if the annualized return difference is less than 5%. The expected long term return of common stocks at current prices can be closely approximated by the discounted dividend model at about 7% (2% dividend yield plus 5% earnings/dividend growth). This is about the same as the expected return of long term corporates, which is reasonably approximated by their current yield. If you believe that that stock returns over the next few decades are going to be 5% greater than long term corporate returns, then I have a large expanse of steel and concrete connecting Manhattan and Brooklyn that I can sell you which will provide you with an excellent cash flow in your old age.
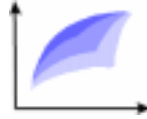
One must decide whether or not to rebalance one's portoflio. The above framework provides a rational quantitative framework in which to make this decision.

William J. Bernstein
wbern@mail.coos.or.us

Efficient Frontier

The Coward's Portfolio

January 1997 Update -- A New Value Based Index

William J. Bernstein
wbern@mail.coos.or.us

In the September issue we created two different index based stock portfolios, both of which bested almost all actively managed global mutual funds on a risk adjusted basis. The first is known as the "Coward's Equity Index" ("CEI"), and consists of a mix of small and large cap regional/national indexes. The second is known as the "Small Investor's Coward's Equity Index" and consists mostly of index funds, using actively managed funds for those areas in which index funds are not easily available to the small investor (small cap foreign and Latin American stocks). Both indexes are then combined with short term bond funds to produce a range of return/risk combinations. The 3 year plot covered the 7/93 - 6/96 period, and the 5 year plot covered the 7/91 - 6/96 period.

This latest results for the Coward's Portfolios are in, and once again our cowardly robots have beaten the great majority of institutional global managers. The first graph shows the 3 year plot for both the CEI and SICEI versus the global managers for 1/94 - 12/96. The second graph shows the 5 year return/risk plot for the CEI versus the global managers for the period 1/91 - 12/96. (The SICEI commenced in July 1993 and is not available for the 5 year period.) The individual data points represent global multiasset and asset allocation funds available (Morningstar Principia) for the period.

CEI/SICEI 3 Years (1/94-12/96)

CEI 5 Years (1/92 - 12/96)
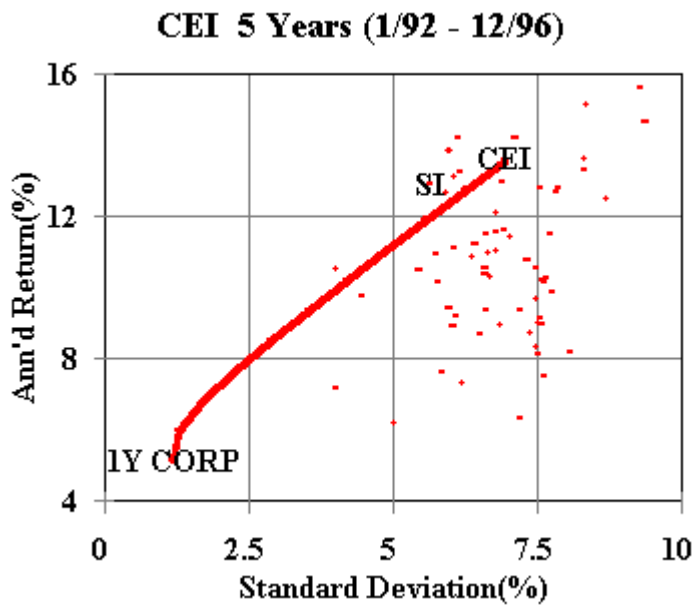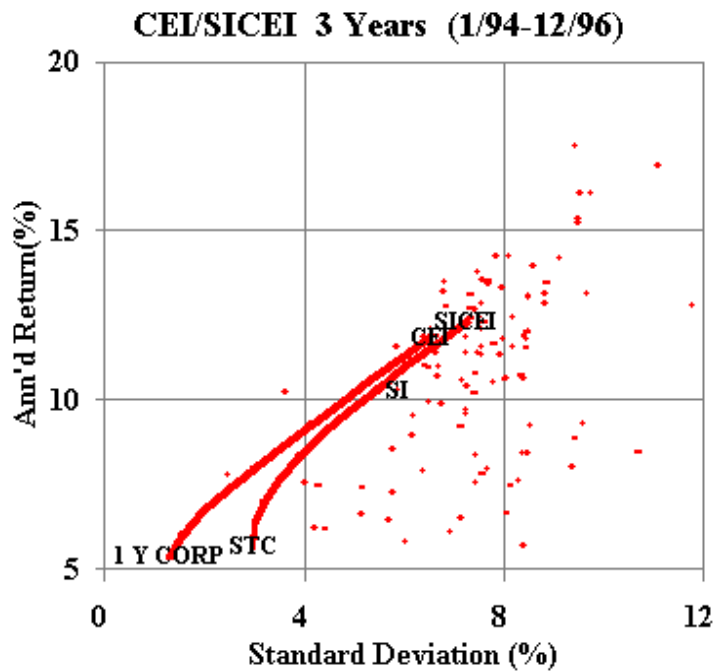
There is really nothing magic about either the CEI or SICEI. Almost any reasonably balanced global index based allocation strategy will beat the overwhelming majority of global money managers, reinforcing the notion that "professional global asset management" is something of an oxymoron. *In fact, about the only way to find an allocation which will **not** beat the average global money manager is to intentionally pick only the worst performing assets for the period studied.* Consider the performance of Jean Marie Evilliard's Sogen International Fund (designated as "SI" in both graphs). Mr. Evilliard is hailed as a money management genius for producing respectable returns with low risk. Indeed he is a genius-- compared to his peers. As you can see, however, he

slightly lags the asset allocation robot at 3 years, and bests it only slightly at 5 years.

Those of you who have read the September piece will note that a few more funds have beat the robots this time. This is because the average foreign exposure of the Morningstar global multiasset/asset allocation group is only 20%. Over the past 3 and 5 year periods US assets have outperformed their foreign counterparts, and this advantage has widened over the past 6 months. Given the miserable performance of the EAFE and foreign small cap sectors the performance of the robots (which are 60% foreign equity exposed) relative to the active managers is remarkable indeed. In fact, some may argue that the recent outperformance of US equity obviates the need for international diversification. This is shortsighted and foolish. In any given time period there will always be some regional/national indexes which outperform, and it is a pretty safe bet that the best performing asset of the past 5 or 10 years will not continue to dominate in the next period. For the 1985-89 period, for example, European and Japanese stocks trounced US stocks, only to be followed by the present era of US outperformance.

The Academic Coward's Equity Index

We've added yet another index. There is a growing "cross sectional" literature which demonstrates that "value" stocks seem to reliably produce higher returns than "growth" stocks. The most famous study was published in the June 1992 Journal of Finance by Eugene Fama and Kenneth French. The authors demonstrated that company size and price to book ratio explained all of the differences in return for the period 1963-90. Professor Fama is closely associated with Dimensional Fund Advisors (on whom we already depend for much of the CEI data), the premier provider of index funds to institutions and financial advisors. DFA has now come out with funds in each of the "four corners" of the global stock universe (small US, large US, small foreign, and large foreign) which invest only in stocks in the bottom one third of P/B values.

If Fama and French are right, over the long term the lower third P/B strategy should yield returns about 5% higher than an index of similar market capitalization, so a portfolio consisting of the above four funds should outpace the CEI/SICEI by a similar amount. Accordingly, I've constructed an index consisting of equal amounts of each of the four funds, and dubbed it the "Academic Coward's Equity Index" ("ACEI"). (The funds are the US Small Cap Value Fund, the US Large Cap Value Fund, the International HBM Portfolio, and the International Small Cap Value Portfolio. The ISCV only became available in January 1995; I've simulated its performance before then with an appropriate mix of DFA's older international small cap portfolios.)

The performance of the ACACEI is plotted in the below graph. To reduce clutter, I've expanded the scale from the first 3 year graph.

ACEI/CEI/SICEI 3 Years (1/94-12/96)
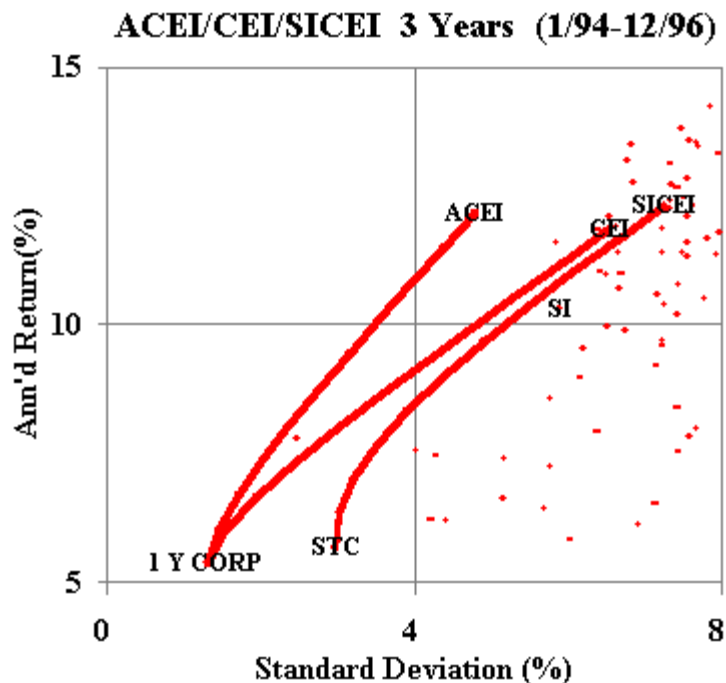
It's return/risk plot has a most curious appearance. The ACEI's return is about the same as the other two indexes, but it has much lower risk. The low risk of the ACEI is extremely interesting, and is due to at least 4 factors:

1) The high exposure to Japanese equity (18% versus 10% for the CEI/SICEI) serves to lower the SD of the portfolio over this period because of its low correlation with other assets. For the past 3 years Japan's markets have not marched in lockstep with the worldwide bull. The ACEI's exposure to Japan was highly deleterious to its performance.

2) Value portfolios defined by low P/B have slightly lower SD (risk) than the broader market.

3) The correlations among value portoflio components are also slightly lower than among broader market segments.

4) The Coward's Portoflio series assumes quarterly rebalancing, and thus uses SDs calculated form quarterly returns. For some reason, the International Value component quarterly SDs have yielded spuriously low values. Thus, much of the lower SD of the ACEI is somewhat artifactual.

The allure of the ACEI is not that its SD (risk) may be lower, but that it should produce higher returns. So far, because of its higher Japanese exposure, and perhaps other factors, it has not. However, the low P/B approach emerges as a superior study only over long time horizons. For example, although the Fama/French small cap value time series produces returns several points higher than that of the S&P500 over the entire 1963-70 time period, it underperformed the S&P500 for periods of up to a decade within this longer period. The ACEI is still an intriguing concept, and the passage of time, and particularly a global bear

market, may yet demonstrate its advantages. We'll keep you posted.

A Last Word of Caution

The three and five year data cover a period of very low volatility in many national and regional equity markets, particularly in the US. It is likely that in general volatilities will be higher in the future. As volatilities rise, correlations among assets also tend to rise. The combination of rising asset volatilities and rising correlations will probably produce a dramatic increase in global portfolio risk over the next several years. For planning purposes, I recommend doubling all of the portfolio SDs plotted above.

Cover   Home   E-Mail
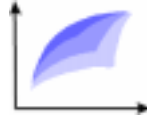
The Expected Return of
Precious Metals Equity

William J. Bernstein
wbern@mail.coos.or.us

Some of the most fascinating assets from the vantage of portfolio theory are precious metals and precious metals equity ("PME"). Of all the assets trafficked by mankind over the course of history, none has a longer paper trail than gold, with millenia of price data available to the analyst. In inflation adjusted terms, the long term return of the precious yellow is *zero*. This should surprise no one, as for centuries gold *was* money. Gary Brinson points out that an ounce of gold bought a fine men's suit in the time of Shakespeare, and so it does today. (Women's clothes are another story). Even in this era of fiat currency, the real return of gold is near zero. Consider that in 1926 the price of gold was $20.67 per ounce, and is now $380. It's return in the intervening 70 years has been 4.2% per annum -- exactly 1% higher than inflation.

However, most investors do not store bullion, but instead own shares in mining stocks, or the mutual funds which own them. What is the long term return of this asset class? It turns out that there is little usable data on the expected long term returns of PME. This is somewhat surprising, since mining shares have been traded on the major US and foreign exchanges for hundreds of years. However, I've not come across a reliable estimate of the expected return of PME. If you have, please let me know.

Why is this important? Because the return of both bullion and PME has a zero correlation with almost any other asset you might want to name. It is a superb hedge against inflation, which cannot be said of almost all other reasonably liquid assets. My portfolio simulations show that even if the long term real return of PME is zero, there is still some benefit to having a few percent of it in your portfolio.

One can cobble together a "precious metals index" which will estimate the long term return of this asset. The Morningstar database of mutual funds has a precious metals fund index which goes back to 1976, and before that the Van Eck International Fund, which started operations in 1956, became a precious metals fund sometime in 1968. Combining the Van Eck data for 1969-75 with the Morningstar data beginning in 1976 provides a 27.75 year time series -- just long enough to provide a reasonable estimate of the "true" long term return of this asset. The

results are startling -- the annualized return from January 1969 to September 1996 was 12.81%. This is actually *higher* than the S&P500 (11.24%), US small stocks (12.44%), and the EAFE (12.52%) for the same period. There is probably a few percent of survivorship bias built into this data, but the fact remains that the long term returns of PME and other common stocks are probably quite similar.

Why is this so surprising? For several reasons. Firstly, it is much higher than the low return of the metal itself. (Although on further reflection, this is perfectly consistent with the disconnect between the prices of other commodities, which have been declining slowly in real terms over the centuries, and the market capitalizations of companies which produce them, which has of course been increasing in real terms.) But more importantly, it contradicts the fundamental tennet of modern portfolio theory, namely, that one is not rewarded for undertaking nonsystematic risk. Since the correlation of precious metals and other common stocks is close to zero, *all* of its risk is nonsystematic, since it can be diversified away. Thus, the return of precious metals should be very low. (For those of you who are MPT freaks, this is another way of saying that because the beta of PME is low, its returns must also be low.)

In the real world, of course, nobody has heard of or cares about Markowitz and Sharpe, and most investors find nothing imaginary about the nonsystematic risk of PME, and demand compensation for it. This provides profit to those who actually can ignore this nonsystematic risk. This is not to say that investing in precious metals is easy. Inflationary/deflationary and interest rate cycles typcally occur over about 30 year periods (the so-called Kondratieff Wave) so a *very* long term perspective is needed. For example, for the 12 year period from January 1981 to December 1992 the return of the precious metals index was -1.27% annualized versus 14.65% for the S&P 500.

Precious metals investing has another, more subtle advantage as well. For those who are able to periodically rebalace their portfolios, significant excess returns are available. For example, a portfolio consisting of 50/50 S&P/PME, rebalanced annually, has a return of 13.83%, which is considerably higher than either asset alone. The "minimum variance portfolio" for these four assets (S&P, US small, EAFE, and PME) consisted of 73.6% S&P, 14.6% EAFE, and 11.8% PME and had a return of 12.57%, which was higher than any of the individual equity assets except for PME itself. Portfolio simulations for the 1969-96 period show that a "coward's portfolio" consisting of equal parts S&P, US small, EAFE, and PME leavened for risk with the 5 year treasury index is nearly maximally efficient at all levels of risk for these 5 assets.

The lesson here is that most investors take the price volatility of high SD/low beta assets very seriously. CAPM is like Fabian Socialism. It looks good on paper, but falls apart badly in the field. Those who can shoulder risk are rewarded, be the risk systematic or nonsystematic.

Conclusions

1. While the long term return of precious metal bullion is close to the risk free rate the long term return for precious metal equity appears to be similar to that of common stock.

2. Because the correlation of PME returns and other common stock returns is

very low substantial decreases in portfolio risk are available from the judicious use of this asset. For those willing and able to rebalance, significant increments in return are available as well.

3. In order to fully reap the portfolio benefits of PME the investor must be able to ignore its substantial nonsystematic risk. She must also be able to endure long periods in which PME will be an albatross around the portfolio's neck. Most important of all, she must be able to weather from time to time the jeers of others.
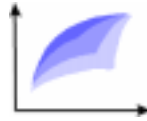
DATA SUMMARY FOR 1969-96

Asset	Ann'd Return	Standard Dev.	Correl with PME
S&P500	11.24	15.97	-0.02
US Small	12.44	23.80	-.02
EAFE	12.52	21.84	+0.06
PME	12.81	42.71	-----

William J. Bernstein
wbern@mail.coos.or.us

Cover   Home   E-Mail

Efficient Frontier

EVERYBODY'S GRANDCHILDREN
OUGHT TO BE RICH

William J. Bernstein
wbern@mail.coos.or.us

In the halcyon summer of 1929 John J. Raskob, a senior financier at General Motors, granted an interview to **Ladies Home Journal**. The roaring twenties' financial zeitgeist is engagingly reflected in this quote from the article, entitled modestly, *Everybody Ought to be Rich*:

> Suppose a man marries at the age of twenty-three and begins a regular savings of fifteen dollars a month -- and almost anyone who is employed can do that if he tries. If he invests in good common stocks and allows the dividends and rights to accumulate, he will at the end of twenty years have at least eighty thousand dollars and an income from investments of around four hundred dollars a month. He will be rich. And because anyone can do that I am firm in my belief than anyone not only can be rich but ought to be rich.

The genius of hindsight is a delicious tool. Mr. Raskob probably had no idea what sort of rate of return his hypothetical young man was actually earning. It should be remembered in this era of spreadsheets and $20 handheld financial calculators that the computation of an internal rate of return is a formidable task using only pencil and paper. In fact, our young man was quite an investment genius -- turning 15 dollars per month into $80,000 over 20 years requires an annualized rate of return of about 26 percent! Perhaps in 1929 a 26% annualized rate of return did not seem unreasonable. It was not until the aftermath of the 1929-32 market catastrophe that the long term return of common stocks was estimated with any accuracy. In 1996 most serious investors are aware that one cannot expect more than about 10%-12% long term.

This interview, and the investment scheme he was promoting, is remembered to this day as an absurd example of the infectious mood underlying the pre-1929 stock bubble. For those of you who haven't noticed, we are in the midst of a similar market bubble. Most standard valuation measures currently *exceed* 1929 levels. The 1996 version of "Everybody Ought to be Rich" is the mantra expounded on *The Motley Fool*; "Every penny you haven't invested in stocks will hurt you in the long run."

And yet, in the long run Mr. Raskob was not far off the mark. Let's imagine that Mr. Raskob's hypothetical young man began investing 15 dollars per month in common stocks on January 1, 1926. He continues doing so until he dies at age 91 on December 31, 1994. Using market

return data supplied by Ibbotson Associates, calculations show he would have accumulated $2,462,295. Had he invested in small stocks, he would have $11,730,165. Obviously, this calculation contains a number of unrealistic assumptions: that the principal and dividends were never spent, taxes were not paid, and stocks were bought free of commissions. Perhaps our estimates are off by a factor of 2 or 3; still, the long term results are impressive.

An optimist might cite this as an example of the "magic of compound interest." Too much is made of this phenomenon. A more realisitc observer would note that our industrious saver died an old man without enjoying his fortune -- had he consumed even a few percent of his assets each year his estate would have been vastly smaller. (Over a 69 year period each percentage point of return lost to spending cuts your accumulated total in half. Spend 3% of you assets each year and you have less than $300,000 instead of over $2 milllion.) Me, I'd rather be 25 with a bit of change than old and comfortably well off.
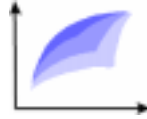
So let's modify Raskob's edict: Everybody cannot be rich, but at least you can leave a lot of money to your grandkids.

William J. Bernstein
wbern@mail.coos.or.us

The James Grant Paradox

William J. Bernstein
wbern@mail.coos.or.us

James Grant cuts a very impressive figure indeed. He is a noted financial journalist, author, publisher of *Grant's Interest Rate Observer*, and frequent guest on *Wall Street Week*. His command of financial history is unparalleled, his deductive powers dazzling, and his gift for phrase is Churchillesque. He doesn't have a bad tailor, either. To give you a small taste of how devastating his prose can be, consider his treatment of the efficient matket hypothesis in the Introduction of his book, **Minding Mr. Market**:

> To suppose that the value of a common stock is determined by a corporation's earnings discounted by the relevant interest rate and adjusted for the marginal tax rate is to forget that people have burned witches, gone to war on a whim, risen to the defense of Joseph Stalin, and believed Orson Welles when he told them over the radio that the Martians had landed.

Why, then, is Mr. Grant so often wrong? As any viewer of *Wall Street Week* knows, Mr. Grant has been bearish on stocks and bonds since rocks were hard. In fairness, he has offered some spectacularly profitable advice (for example, shorting the Peso in 1993). However, faithfuly following his recommendations over the past few decades would have been very harmful to your wealth. How could somebody so persuasive, clever, and smart be so wrong?

To answer that question, let's delve into a bit of my wife's family lore. Her late father was a contented, lifelong worker on the assembly line at Mack Truck. He was a large, handsome, generous man, and a pillar of the neighborhood, but nobody mistook him for a scholar. Early 1942 found him in boot camp. Towards the end of basic training he spent a few days taking aptitude tests. The last section consisted of series of nonsense letter sequences, which the examinees were supposed to decode. My father-in-law's eyes glazed over. He began to randomly mark answers. A few days later, he was told by an awestruck sergeant that his cryptanalytic skills were too valuable to be wasted in the infantry. He had obtained the highest score on the code test, and would spend the rest of the war breaking the enemy's ciphers. Alas, my father-in-law was also an honest man. The truth of the matter consigned him to the beaches of Normandy.

The point is this; some problems are so difficult that any effort to solve them is counterproductive. This is the reason why no one can predict the direction of the financial

markets with any consistency. The main purpose of market strategists is to make astrologers look good. I never cease to be amazed that most investors think that financial "experts" can forecast stock prices and interest rates from data on unemployment, the Fed Funds rate, and the like. Remember that the best time to buy stocks is usually when economic indicators are the gloomiest. The best time to sell is when there is unlimited blue sky.

So the next time you hear someone predict the direction of stock prices from economic data, ignore them. Even if they're on Lou Rukeyser every week. Even if their verbal SAT score is 800. Even if they're wearing a $2000 suit.

William J. Bernstein
wbern@mail.coos.or.us