



PARTING THOUGHTS

The Asset Allocation Hoax

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It is now common practice in presentations to individual investors and 401(k) plan participants to show a pie chart demonstrating that asset allocation—predominantly the allocation among stocks, bonds and cash—is the most important investment decision, explaining 93.6 percent of portfolio returns. The presentations generally show how historical combinations of stocks, bonds and cash have performed over various time periods: the longer the time period, the greater the certainty that stocks will outperform bonds or cash based on historical data. The presentations go on to discuss mutual fund options offered to implement the asset allocation advice. The presumption by the investor or the plan participant is that once the risk tolerance (and possibly the time horizon) has been established, investing is simply a matter of implementing a fixed mix of stocks, bonds and cash using the mutual funds being offered.

The industry standard for assessing the importance of asset allocation policy in determining portfolio performance is based upon the study, “Determinants of Portfolio Performance” by Brinson, Hood and Beebower (BHB). Published in the *Financial Analysts Journal* in July/August 1986, it is widely cited for its conclusion that 93.6 percent of the variation of returns is explained by asset allocation policy.¹ Unfortunately, both the study’s conclusions and the interpretation of those conclusions are wrong.

The BHB Study

Using quarterly investment returns of 91 pension plans in the *SEI Large*

Pension Plans Universe for a ten-year period beginning in 1974, the BHB study provides an innovative approach to evaluating the relative contributions of asset allocation policy (that is, establishing long-term, or what BHB call *normal*, allocations that don’t change over the investment period), market timing and security selection.

In the study, BHB comment on several methodological problems that require them to make certain assumptions for their analysis to go forward. First, they assume that the average asset class weights for the period studied are the same as the actual normal policy weights. Second, they assume that investments in foreign stocks, real estate, private placements and venture capital can be proxied by a mix of stocks, bonds and cash. Third, they assume that the benchmarks for stocks, bonds and cash against which fund performance was measured are appropriate. Each of these assumptions can lead to a faulty measurement of success or lack of success at market timing and stock selection.

The study then reports the results of the relative importance of asset allocation policy, market timing and stock selection. Over the ten-year period studied, market timing and stock selection cost the plans, on average, 1.1 percent each year. The range of policy return outcomes is small, which reflects the tendency of similar plans to gravitate toward a similar policy mix.

Brinson, Hood and Beebower also analyze what they call the ability of asset allocation policy to dictate actual plan returns. They measure the average (across the 91 pension plans)

amounts of variance of total portfolio returns explained by asset allocation policy, market timing and stock selection using statistical regression analysis. They conclude that asset allocation policy explains, on average, 93.6 percent of total variation in quarterly returns; in particular plans, it explains no less than 75.5 percent and up to 98.6 percent of total return variation.

Based on the observation that asset allocation policy explains 93.6 percent of total return variation, BHB recommend that deciding which asset classes to include in the portfolio and determining the normal weights for each of the asset classes allowed in the portfolio are properly part of investment policy.

It should be noted that BHB do not analyze the decision-making process used to determine asset allocation policy, market timing and stock selection. They do not provide any insight into why some plan sponsors did well and others poorly in each of the areas being measured.

They Focus on the Wrong Thing

The fundamental problem with BHB’s analysis is its focus on explaining portfolio volatility rather than portfolio returns. In fact, investors should be more concerned with the range of likely outcomes over their investment planning horizon than the volatility of returns. Explaining the volatility of short-term returns is not the same as explaining returns earned over time. According to BHB, asset allocation policy explains, on average, 93.6 percent of the variation of quarterly portfolio returns—not 93.6 percent of the

variation of the rate of return—earned by the 91 pension plans.²

In their analysis, BHB shift their focus away from analyzing holding period returns to analyzing the variation of quarterly returns. They do this, they say, to determine the ability of investment policy to dictate actual plan return. Why do this? *According to their own work, asset allocation policy explains only a small fraction of the range of ten-year portfolio returns earned by the pension funds reported in the study.*

In Table VI of their study (see Table 1), BHB show that asset allocation policy for the 91 plans over a ten-year period produced an average annual return of 10.11 percent, with a minimum return of 9.47 percent and a maximum return of 10.57 percent. The actual returns for the plans average 9.01 percent annually, with a minimum return of 5.85 percent and a maximum return of 13.40 percent. The range in annualized policy returns averages 1.10 percent. The range in actual returns is 7.55 percent. Another interpretation of the BHB study is that, for the ten-year period covered in their study, asset allocation policy returns explain only 14.6 percent of the range of actual portfolio returns!³

Why does asset allocation policy explain only a small fraction of the ten-year returns, but a large fraction of the variation of short-term returns? The answer is simple: the effect of compounding returns. Persistent small increments to periodic returns compound over time, while the volatility

in returns grows more slowly as the investment period is lengthened. When analyzing returns for short periods of time, it is easy to miss the significance of small persistent increments to returns in all the noise.⁵ Unfortunately, this shift in focus away from the variation in holding period returns to the variation of quarterly returns has been the source of profound confusion among those who cite the study's findings.

They Report the Wrong Number

While most investors agree that explaining the range of returns over their investment horizon is more important than explaining the fluctuations of quarterly returns, short-term volatility of returns is also important. However, the study misrepresents the relative importance asset allocation policy has on portfolio volatility when Brinson, Hood and Beebower observe that asset allocation policy explains 93.6 percent of the *variation* in quarterly portfolio returns. They define variation as the *variance* of quarterly returns. In fact, the most appropriate measure is the *standard deviation* of quarterly returns, which operates in the same units of measurement as return. That is why portfolio risk is reported in terms of standard deviation, not variance.⁶

While the BHB study observes that asset allocation policy explains 93.6 percent of the variance of quarterly portfolio returns when using the

more appropriate standard deviation, asset allocation policy explains only 79 percent of the variation of quarterly returns. Though still a big number, it does not appear to be as conclusive as the reported 93.6 percent.

They Do Not Consider Cost

Nowhere in the BHB study is cost mentioned. How many of the differences in returns are explained by differences in cost, including operating expenses, management fees, brokerage commissions and other trading costs among those pension plans in the study? Did patient investors perform better than impatient investors with higher portfolio turnover? Did plans with low costs outperform plans with high costs? We don't know.

BHB's analysis is directed at large, tax-exempt, institutionally managed portfolios. The issue of cost is more important for the individual investor, who is subject to a much higher and wider range of cost alternatives than are defined benefit pension plans. For the individual investor, cost can be a real killer when it comes to long-term investment performance. The cost of investing, including sales commissions, advisory fees, fund management fees, brokerage commissions, other trading costs and early tax realizations can vary by several percentage points annually between high- and low-cost approaches to investing. Over an investor's investment life cycle, excessive costs can reduce wealth accumulation by 50 percent!⁷ In fact, for many individual investors, cost is the most important determinant of portfolio performance, not asset allocation policy, market timing or security selection.

They Give the Wrong Advice

Based on the observation that asset allocation policy explained 93.6 percent of total return variation, BHB draw the implications that deciding which asset classes to include in the portfolio, and determining the normal or long-term weights for each of the

TABLE 1
Information Drawn from Table VI
Annualized Ten-Year Returns of 91 Large Plans: 1974–1983

	Average Return	Minimum Return	Maximum Return	Standard Range	Deviation
Policy Return	10.11%	9.47%	10.57%	1.10%	.22%
Actual Return	9.01%	5.85%	13.40%	7.55%	1.43%
Percentage of Actual Return Explained by Policy Return				14.60%	15.38% ⁴

asset classes allowed in the portfolio should be part of investment policy. According to BHB, market timing and stock selection reside in the sphere of investment strategy. The authors go on to say that because of its relative importance, investment policy should be addressed carefully and systematically. Implicit in BHB's analysis is the point that asset allocation policy, in terms of determining fixed weight asset allocations, is more important than market timing and stock selection. By market timing, they mean any attempt to shift portfolio asset class weights away from the policy mix to take advantage of perceived changes in asset class investment opportunity both short and long term.

Brinson, Hood and Beebower are not alone in advocating a long-term, fixed-weight asset allocation policy. Charles Ellis, in his book, *Investment Policy*, states that the "high purpose of investment policy is to establish useful guidelines for investment managers that are genuinely appropriate to the realities both of the client's objectives and the realities of the investments and markets."⁸ Like BHB, Ellis suggests establishing a long-term asset mix and risk and also making "careful, documented, and explicit judgments about what's 'right' for the particular fund and feasible for long-term investments in capital markets."⁹

However, the idea that a pension plan or an individual investor should set long-term fixed asset class weights is flawed. Only if expected returns are fixed should asset allocation weights be fixed. In fact, investment opportunities change over time, both absolutely and relatively. Historically, since 1926, we have witnessed dramatic shifts in stock and bond market valuations. Prior to the mid 1950s, stocks were considered a good investment only if their dividend yields exceeded bond yields. Results of studies by the behavioral economist Richard Thaler suggest that the historical risk premium of six percent to seven percent for stocks has been too generous, and that a risk premium of two percent is more appropriate, given investors' actual

time horizons.¹⁰ Given today's bond yields and stock market price-earnings multiples, equity risk premiums looking forward conform to Thaler's view, not a view based on extrapolating historical returns. Price-earnings, dividend yields, earnings and bond yields change over time, often dramatically. Even the riskiness of countries vary, with some economies disappearing altogether. Is it appropriate for us to assume the same expected return for stocks at a P/E of 20 and a dividend yield of 2 percent versus a P/E of 14 and a dividend yield of 4.5 percent?

The Better Answer

Asset allocation should be viewed as a dynamic process. It should take into consideration both pension obligations (or, in the case of the individual investor, investment goals) and capital market opportunities, including risk. However, the quantitative integration of financial planning, expectations-based asset class allocation and investment selection is rarely observed in practice in the institutional or private investor markets. Moreover, as investor goals and investment opportunities change, asset allocations should also change (obviously taking into consideration the cost-benefit relationship of making portfolio changes, such as transaction costs, market impact and taxes).¹¹

In 1975, the first successful quantitatively oriented asset allocation program based on modern portfolio theory was introduced by Wells Fargo. The S&P 500 Index fund, also pioneered at Wells Fargo, was used to implement asset allocation solutions.¹² According to Peter Bernstein in his book, *Capital Ideas*, the Wells Fargo program is "a method of calculating separately the expected returns for the stock market, the bond market, and the market for cash equivalents such as Treasury bills. Then, the assets are shifted to the market or markets that appear relatively most attractive. Although the notion is to buy low, sell high, the asset allocation program differs from market timing in two ways. First, it is

a scientific method for allocating assets. Second, the idea is to buy undervalued assets and to sell overvalued assets and to wait until the market corrects the perceived misvaluations; this approach differs fundamentally from flatly declaring that 'this is the bottom' or 'this is the top.'¹³

The Wells Fargo asset allocation program is considered by many to be the industry's most successful long-term approach to asset allocation. The basic approach remains fundamentally unaltered at both Barclay's BZW Global (the acquirer of Wells Fargo Nikko Investment Advisors in 1995) and Mellon Capital Management.¹⁴ Today, similar programs are being offered by some other major investment organizations.

The program employs expected returns based upon the yield curve, dividend yields and long-term projected earnings growth rates. Because returns for equities are driven by both price and cash flow, a fall in equity prices that is not in response to a decline in cash flow expectations results in higher return expectations. Higher return expectations in turn produce larger equity allocations, other things being equal.¹⁵

The idea that the most important investment decision should be fixed at some arbitrary point in time is strange advice. The advocates of fixed weight allocations often rely on historical returns to determine the allocations.¹⁶ Historical returns are not only unreliable indicators of future returns, they are often perverse indicators. Historical returns are the highest at market tops. Analysis of asset class returns shows that, after extraordinarily good or bad performance, a reversal of fortunes occurs more often than not. Those who rely on historical returns to set asset allocation policy are subject to *buying high and selling low* when they implement. Trend followers repeat this error. Those who advocate fixed-weight allocations are invariably looking backward. For those who evaluate investment opportunities prospectively, based upon fundamentals, the idea of fixed-weight asset allocation makes no economic sense.¹⁷

The Hoax

The financial services industry has seized upon the Brinson, Hood and Beebower observation that asset allocation policy explains 93.6 percent of the variation of portfolio returns. The BHB observation misrepresents the relative importance of asset allocation policy in determining portfolio performance. The financial service industry has taken liberties with the BHB study to market a wide range of investment products. Among the products are fixed asset class weight investment solutions, which rarely relate directly to the client's long-term financial planning goals. The fact that the fixed weight solutions are based on simple historical returns inflates expected returns and misdirects asset allocation solutions to overvalued investments. Fixed asset allocation solutions are inferior to analytically linking forward-looking strategic asset allocation solutions with financial planning. As the investor's circumstances or market opportunities change, so also should the investor's asset allocation.

Conclusion

There is little doubt that asset allocation is an important determinant of portfolio performance. However, such agreement does not settle the issue of how to do it. What are the appropriate asset classes? Should asset class weights be fixed or dynamic? How should asset allocation be determined? What about the cost of implementation?

Brinson, Hood and Beebower are to be commended for their work, upon which others will build. They are not alone in recommending that fixed-weight asset class be part of investment policy. The consulting community is behind the idea of separating the asset allocation decision from the investment manager selection decision to the point that tactical asset allocation often is referred to as an investment style. This permits the investment process to focus on selecting the best managers representing the asset

classes or investment styles incorporated into the strategic allocation policy. This conveniently shelters both the consultant and the investment manager from the most important investment decision. Unfortunately, the idea of fixed asset allocation policy weights is migrating from the institutional to the retail market. The idea that a static strategic asset allocation policy makes no economic sense does not appear to present a problem for investment advisors who advocate fixed-weight asset allocations. However, the unfortunate result for many investors who buy into the fixed-weight asset allocation policy argument will be the failure of their asset allocation and savings program to achieve their financial goals, because they are not forced to evaluate realistic investment return opportunities and their financial planning implications. ■

Endnotes

1. "Determinants of Portfolio Performance" received the prestigious Graham & Dodd award given to the outstanding article published each year in the *Financial Analysts Journal*. Brinson, Singer and Beebower published "Determinants of Portfolio Performance II: An Update" in the *Financial Analysts Journal* in May/June 1991. Using data for the period 1977-1987, they came to similar conclusions. The remarks in this paper pertain to both studies.
2. Most investors think of variation in terms of how investment performances compare. They are thinking of the range of investment performance as measured by what statisticians refer to as *the cross section of holding period returns*. When BHB perform their regression analysis on the time series of quarterly returns, they are not measuring how investment performances compare, but rather how each fund performed against the benchmark that *they* have chosen. They then report

the average benchmark relative performance for the 91 pension plans in the study.

3. Brinson, Hood and Beebower use statistical regression analysis to determine the contribution of asset allocation policy as measured by R-squared to explain the variance of quarterly portfolio returns. When evaluating time series performance of portfolio returns, the convention is to report alpha, the return not explained by the benchmark, and beta, a measurement of how the portfolio's return responds, on average, to the return of the benchmark. In the title of their study, BHB refer to the "Determinants of Portfolio Performance." Those familiar with regression analysis usually associate the term "portfolio performance" with alpha (non-systematic return) and beta (systematic return), not R-squared. Although R-squared can be used as an indication of diversification, its use can be misleading because the economic significance of R-squared cannot be determined by the number itself. It is possible to have a low R-squared with large economic significance or a high R-squared that is not high enough. Those running index funds worry if their R-squared is only 98 percent.
4. In terms of standard deviation, which is statistically superior to looking at the absolute range in returns, policy returns explain only 15.38 percent of actual returns.
5. The relationship between average return and risk changes as the time horizon lengthens. The reason for this is that persistent return compounds, while risk (random returns) grows more slowly at the square root of time.
6. Variance is a funny number. It is the standard deviation squared. Statisticians like it because of its nice mathematical properties; variances add. Explaining returns

in terms of variance overstates the true contribution of the more significant variables. Think of it as trying to explain the relative length of side "b" in a right triangle in terms of "b-squared" where "c" is the standard deviation of the portfolio, "b" is the standard deviation associated with asset allocation policy, and "a" is the standard deviation associated with other risks. According to the Pythagorean theorem, "a-squared" plus "b-squared" equals "c-squared." The variance of "a" plus the variance of "b" equals the variance of "c." But the relative lengths of "a," "b" and "c" are not the same as the relative lengths of "a-squared," "b-squared" and "c-squared." When "b" is larger than "a," reporting the relative importance of "b" in explaining "c" is overstated if the reporting is done in terms of the relationship of "b-squared" to "c-squared." The authors make the mistake of citing the relative importance of asset allocation policy in determining the "variation" of portfolio performance in investment policy in terms of variance, that is, standard deviation squared, not standard deviation.

7. An individual who starts investing 10 percent of his or her income in a tax-deferred savings account at 25 and who nets 6.5 percent annual return on the investment portfolio, rather than 9 percent, will suffer a 47 percent reduction in wealth accumulation at age 65.
8. Charles Ellis is managing partner of Greenwich Associates and a past president of the Association of Investment Management and Research.
9. Methodologically, the BHB study leaves many important questions unanswered. It did not evaluate how pension plans determined their asset allocation policy, nor did it evaluate how well each plan's policy mix performed. All BHB can say is how well each

plan did relative to their average mix, relative to the benchmarks chosen by BHB over the ten-year period studied. Who controlled the asset allocation decision for the plans in the study? The sponsor or, de facto, the managers? Were they based upon historical risk premia or forward-looking expectations? These and many other questions need to be addressed before investors should consider the study's far-reaching policy recommendations.

10. Richard Thaler is professor at University of Chicago. He is the author of *Introduction to Advances in Behavioral Finance* and a recognized leader in the field.
11. It may seem surprising that the systematic and quantitative application of these fundamental principles have not been widely employed. In fact, it is likely that few, if any, of the pension plans in the SEI study employed them!
12. The approach taken at Wells Fargo combines the ideas of efficient portfolio selection, pioneered by Harry Markowitz, with the method of stock valuation advocated by J.B. Williams.
13. Peter Bernstein is an investment advisor, consultant and the founding editor of the *Journal of Portfolio Management*.
14. Both Wells Fargo and Mellon report good investment performance from their asset allocation programs. The approach does not employ short-term market forecasts; rather, it positions the portfolio to take advantage of long-term expected return opportunities. Interestingly, the approach tends to perform well in intermediate-term periods (three to five years) and very well over longer-term periods. One explanation for the superior performance of this approach is that it tends to capture the tendency of markets to mean-revert. Even if markets did not mean-revert, this approach to asset allocation would provide the most appropriate allocation, tak-

ing into consideration the client's objectives and capital market opportunities.

15. This approach to asset allocation is a form of contrarian investing to the extent that fluctuations in the prices are not the result of changes in the level or risk of cash flow expectation.
16. It is curious that market analysts as a group, who quantitatively analyze historical market returns, show little interest in the role that bond yields, dividend yields and earnings growth rates play in the varying returns generated across time. It is also curious how many analysts automatically equate historical returns with expected returns.
17. This fundamental, disciplined expectations-based approach to asset allocation seeks to exploit the regularities in investment opportunity. It cannot, nor can any other process including fixed-weight asset allocation, protect the investor from the potential ravages of unexpected events. The markets, however, are sufficiently regular, in intermediate-to longer-term investment horizons, to permit investors to position themselves to take advantage of changes in the relative fundamental valuations of stocks, bonds and cash, while properly positioning themselves expectantly to best achieve their investment objectives. The alternatives are to either try to outguess the market in the short run or to throw in the towel and buy a fixed asset class weighted portfolio based on historical returns.

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