Investment Policy Explains All

In this paper, the authors distinguish between actual asset allocation and long-term, target asset allocation, otherwise known as "policy." The investment policy, they say, has a greater effect on the portfolio's return than either the sponsor or manager, or the transaction costs or timing and selection.

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IS INVESTMENT POLICY REALLY THE PRIMARY DETERMINANT OF PERFORMANCE?

Recently, this well-established concept, first posited in the 1986 article "Determinants of Portfolio Performance" by Brinson, Hood, and Beebower,[1] has been challenged. Critics argued that the authors' use of R-squared to measure the importance of investment policy is inappropriate, and leads to an assessment of portfolio volatility rather than portfolio returns. Although these detractors suggest a variety of alternative measures, they ultimately conclude that the percentage of performance attributable to policy is not 93.6 %, as stated in the 1986 study, but a significantly lower number.

Who is right? That is, exactly how much of a portfolio's return can be explained by policy? To address this question, we took a critical look at the original study, its 1991 update, and the arguments raised against the two reports. We also conducted two extensive new studies based on recent mutual fund and pension plan data.

For those who thought that the question of policy importance had been conclusively asked and answered by the authors' study, we now say it wasn't. The critics' arguments do contain some truth – and some errors. Investment policy is not only the most important contributor to performance – it is even more important than originally thought. Our findings are described as follows.

REVISITING THE BRINSON-HOOD-BEEBOWER STUDY

In the original study the authors examined the quarterly investment returns of 91 large pension plans over a 10-year period (1974-1983), concluding that investment policy explained an average 93.6 % of the variation in total plan returns. An update to the study in 1991, which used data from 1977 to 1987, similarly found that 91.5 % of returns could be explained by policy decisions. The authors determined the impact of investment policy by regressing the actual returns for each plan against policy returns and then calculating the simple average of the R-squareds from these regressions. Based on their findings, the authors concluded that careful determination of investment policy – specifically asset allocation – was the most crucial element in determining fund performance.
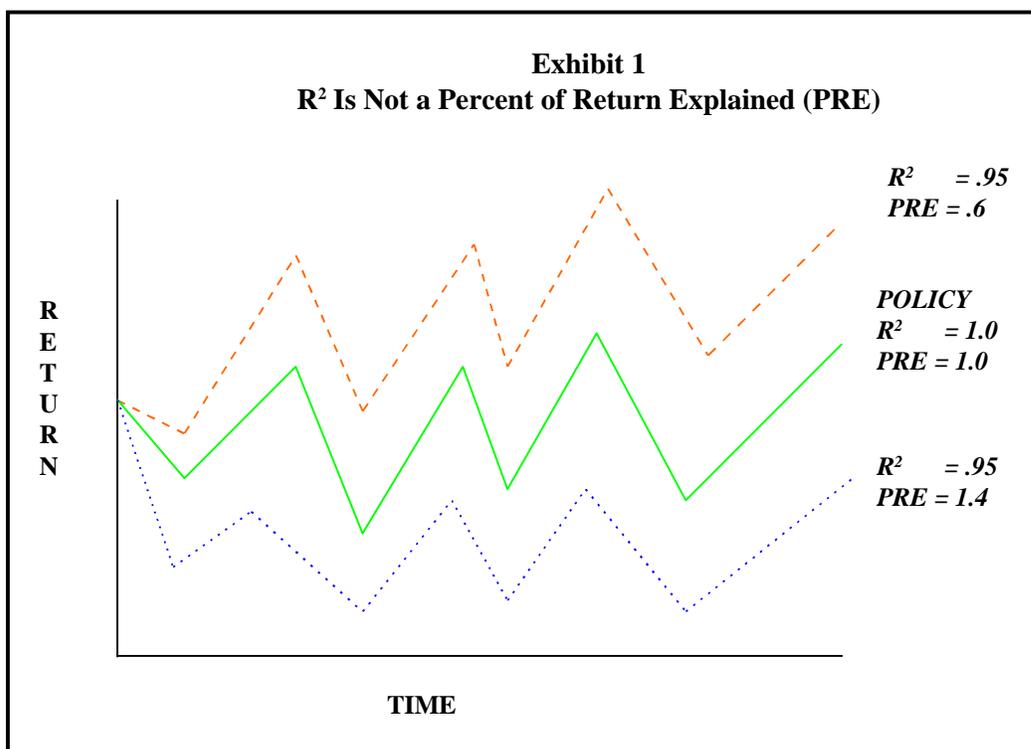
However, the study's use of R-squared has prompted recent critics to contend that the analysis focused on explaining short-term volatility, not returns earned over time. In this, they are right. R-squared is not the correct way to measure the percent of return attributable to policy. The high average R-squared result cited by their study tells us only that the average plan in the sample adhered very closely to its policy targets and used broad diversification within asset classes. It tells us nothing about the importance of asset allocation. R-squared measures the percent of volatility explained by policy, not the percent of return. The distinction between volatility and terminal wealth is shown in the Exhibit 1. Here we see cumulative

policy returns as the middle line in the chart, and the returns of two different funds with the same policy on either side of the policy line. One fund significantly outperforms its policy (top line), and the other significantly underperforms its policy (bottom line).

The volatility question is answered by R^2, which measures the percent of volatility explained by policy. In this example, the R^2 is .95 for both funds, meaning 95 % of the volatility in returns is explained by policy. Does this mean that investment policy is equally important for these two funds? We think not.

Investment Policy Versus What?

We think investors are really asking how much of their wealth was earned through investment policy versus other sources of growth, namely selection and timing. In the Exhibit 1, the top fund has good selection and timing and earns a premium above its policy return. If we take the ratio of the policy return divided by this fund's total return, we get 0.6, implying that 60 % of this fund's return is attributable to policy, with the balance attributable to good stock selection and timing. By contrast, the ratio for the underperforming fund is

Exhibit 1
R^2 Is Not a Percent of Return Explained (PRE)

R^2 = .95
PRE = .6

POLICY
R^2 = 1.0
PRE = 1.0

R^2 = .95
PRE = 1.4

RETURN

TIME

1.4, implying that 140 % of this fund's return is explained by policy, with the difference between this and 100 % explained by poor stock selection and timing.

However, critics of the authors' study go astray when they debate the correct measure for estimating the importance of investment policy, by focusing on the distinction between cross-sectional R-squared, which measures the tendency for policy to differentiate performance across funds, and cross-temporal R-squared, which is measured for each individual fund. In both cases, R-squared is an incorrect measure because it relates to the variability of returns, rather than the magnitude of returns. In our studies, we take the (in our opinion) correct approach to the question of asking how much of a portfolio's return can be explained by policy, by examining the magnitude of return.

TESTING THE BRINSON-HOOD-BEEBOWER CONCLUSION

To properly measure the effect of policy on the magnitude of performance, we developed a very simple framework that assumes there are only two components to total return: investment policy, and everything else. We then approximate the percent of return explained by policy by simply calculating the ratio of the policy return to the total return, using data provided in the Brinson-Hood-Beebower Study. Given the average policy return of 10.11 % and the average actual return of 9.01 %, the ratio is 10.11/9.01, or 112 percent.[1] Simply stated, this means that investment policy explains 112 % of the performance of the average fund in the authors' study, a far greater number than originally suggested.

But what about our other component of total return – everything else? If investment policy explains more than 100 % of the actual total return, then everything else must be subtracting value. To see why this makes sense, we can look at the three main components of "everything else": sponsor effects, manager effects, and costs. Sponsor effects have been shown to subtract value, especially if the sponsor follows the practice of hiring managers with strong historical performance records, then firing them after a period of underperformance. However, on average,

sponsors probably don't add or subtract much because their primary objective is risk control. Manager effects, in aggregate, must total zero versus the market because the managers, in aggregate, are the market.[2] This leaves costs, primarily transaction costs, as the major culprit in subtracted value.

What Is the Correct Percentage?

Once we had reassessed the conclusion of the Brinson-Hood-Beebower Study using a different methodology, could we find further evidence of the importance of investment policy? What is the actual portion of return that can be explained by policy? To address these issues, we conducted two separate studies, both focused on the same questions: a mutual fund study performed by Ibbotson Associates, and a pension fund study directed by Dale Stevens.[3] The mutual fund study examined 10 years of monthly returns for 94 U.S. balanced funds, ranging from $3 million to $24.8 billion in assets under management. In the pension fund study, we looked at five years of quarterly data for 53 funds with assets between $4 million and $701 million. The end point for both studies was March 31, 1998.

In both of our studies, policy return was calculated as the return that would have been earned if target policy allocations had been consistently followed, using index funds to represent each asset class. In other words, policy return is the weighted average return across appropriate markets where weighting is determined by policy allocation; and rebalancing is performed in each time period, that is, monthly for the mutual fund study and quarterly for the pension fund study.

To determine the appropriate investment policy for each mutual fund, a returns-based style analysis was run on each fund to establish the best benchmark, or policy, using large and small capitalization stocks, international equities, bonds, and cash, as well as appropriate benchmarks.

The average R-squared value from the analysis was 81.4 %, indicating that the benchmarks chosen were a good fit. In the pension fund study, actual policy allocations – including changes during the 5 years covered by the study – were used, along with each fund's custom benchmarks.

The percent of fund return explained by policy return was calculated as the ratio of annualized policy return divided by the fund return. In addition, we subtracted two basis points per month (about 25 basis points annually) from the policy return in the mutual fund study to approximate the cost of replicating the policy mix through indexed mutual funds.

The Question of Policy Impact

Our analysis of each group revealed that investment policy, on average, accounted for 104 % of the total return for mutual funds and 99 % of the pension fund results. (The success of an individual fund is indicated by a policy-to-actual-return ratio of less than 100 %, while failure is signaled by a ratio greater than 100 percent.) This means that, in general, the balanced mutual funds did not add any value above what was attributable to policy; in fact, the combined deleterious effects of timing, issue selection, and management fees and expenses actually eroded performance. The average pension fund in our study managed to add slightly to their policy-derived performance through security selection and/or timing. On a risk-adjusted basis, the mean result for mutual funds was even worse, at 123 %, while the average for pension funds moved to 100 percent.

Although results indicated that the average fund didn't beat its policy, this does not mean that all funds underperformed. At the top quartile of success in both studies, approximately 95 % of performance results were attributable to policy, providing further evidence of the critical role of investment policy. Overall, the percent of fund return explained by policy return ranged from 82 % (5th percentile) to 132 % (95th percentile), for mutual funds, and 88 % to 113 % for pension funds. On a risk-adjusted basis, the ranges were 76 % to 161 % and 76 % to 139 %, respectively. The wider range for mutual funds versus pension funds indicates that the mutual funds made larger timing and issue selection bets against their policies.

INVESTMENT POLICY INDEED EXPLAINS ALL

Investment policy explains even more of the average fund's return – approximately 100 % versus 93.6 % in

the Brinson-Hood-Beebower study – than originally thought. Although the policy-to-actual-return ratio is not a new concept, few consultants bother to distinguish among the effects on return caused by policy, manager, and sponsor. The result is a general lack of appreciation for the relative importance of each of these three contributors to performance.

Critics of this concept would say that surely manager selection must account for something. Managers must be important. Our data, and the common sense wisdom of Dr. William F. Sharpe, suggest otherwise. Manager selection matters, but not to any great extent.

To ensure that performance results are properly evaluated and attributed, methodologies for measuring and presenting the effects of policy, manager, and sponsor have been devised.[4] Consultants who routinely implement these methodologies will see firsthand that policy, on average, indeed explains all.

ACKNOWLEDGEMENTS

ENDNOTES

[1] Gary P. Brinson, L. Randolph Hood, and Gilbert L. Beebower, "Determinants of Portfolio Performance," *Financial Analysts Journal*, July-August 1986, pp. 39-44. The study was updated in Gary P. Brinson, Brian D. Singer, and Gilbert L. Beebower, "Determinants of Performance II: An Update," *Financial Analysts Journal*, May-June 1991, pp 40-48.

[2] The ratio of average results shown here is an approximation of the average of ratios across funds. In our two studies, we use the average of ratios across funds.

[3] This tautology is eloquently described in William F. Sharpe, "The Arithmetic of Active Management,"

Financial Analysts Journal, January-February 1991, pp. 7-9.

[4] See also Roger Ibbotson and Paul Kaplan, "Does Asset Allocation Policy Explain 40 %, 90 %, or 100 % of Performance?" working paper, 1999. The paper uses the same mutual fund and pension fund studies featured in this article to address additional questions that may be of interest to the reader.

[5] Ronald J. Surz, "Solving the Performance Puzzle," *Pension Management*, May 1996, pp. 38-40, and "Computer-Aided Pension Investment Decision Making," *Pension Fund Investment Management* (New Hope, Pennsylvania: Frank J. Fabozzi Associates, 1997), pp. 115-131.