



A Matter of Luck

Contrary to popular opinion, there's more to portfolio success than the asset allocation decision.

By Jim Otar, February 1, 2005

"Research has shown that asset allocation is the single largest contributor to a portfolio's success. In fact, one study concluded that asset allocation accounted for over 90% of the difference in a portfolio's investment return."

Different variations of this mantra appear in articles, sales brochures, and newsletters in the advisory business time and time again. Whenever I read it, I imagine myself at an auction; I can hear the auctioneer shouting: "I have 90% for asset allocation, do I hear 100%?!"

What was this research? It's based on a study by Gary P. Brinson, Randolph L. Hood, and Gilbert L. Beebower, "Determinants of Portfolio Performance I," *Financial Analysts Journal*, January/February 1995. This was a follow-up study to one they conducted in 1986.

What did this research encompass? It analyzed data from 91 large corporate pension plans with assets of at least \$100 million over a 10-year period beginning in 1974.

While this study is important for large pension funds, it has shortcomings when applied to individual retirement portfolios. That is because there are significant differences in the dynamics of cash flow, management costs, investor behavior, and the luck factor. Each of these elements has a profound effect on the eventual "success" of a retirement portfolio. In engineering terms, a pension fund can be modeled as "isobaric" (constant pressure), whereas an individual retirement portfolio is "isentropic" (constant entropy).

To get a better handle on the different factors affecting the success of a retirement portfolio, we must first redefine "success." I will define success as a retirement portfolio's "probability of survival." The lower the probability of running out of money, the more successful the portfolio. Only when withdrawals are less than the sustainable withdrawal rate do I define success as "the growth" of the portfolio.

Let's start with a specific example: Sam, 65, is retiring this year. He has saved \$500,000 for his retirement. Sam needs to withdraw \$30,000 in the first year of his retirement (a 6% withdrawal rate), indexed to the consumer price index in following years. He wants his money to last until age 90.

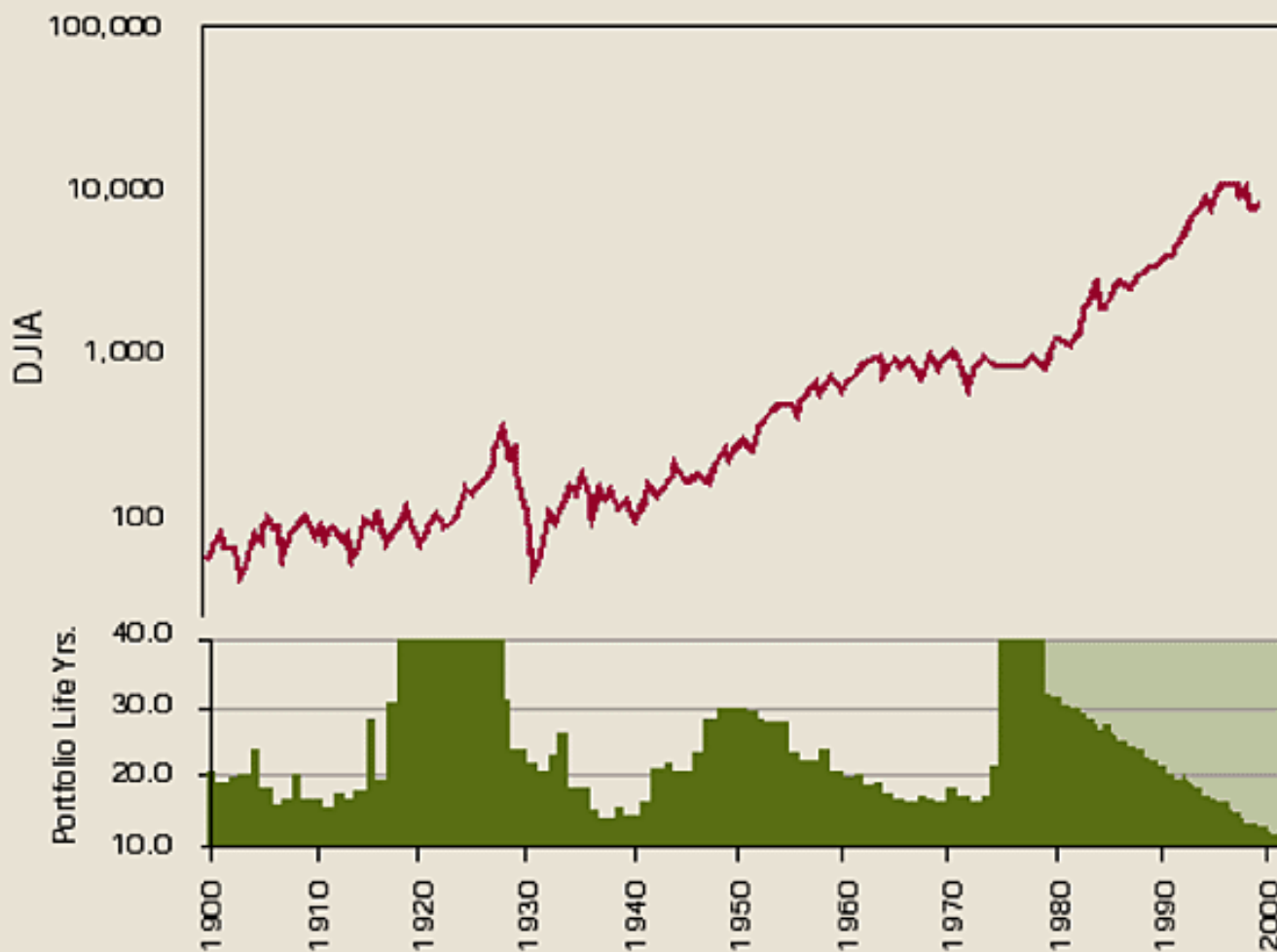
Assume that he is holding a balanced portfolio of 60% fixed income and 40% equities. His equities perform the same as the Dow Jones Industrial Average (DJIA). So using the actual historic data starting in 1900, I calculate the portfolio life if Sam were to retire in any of the years since 1900 (see the graph in "Timing Is Everything" below).



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Timing Is Everything

The graph below calculates the portfolio life if a 65-year-old client were to retire in any of the years since 1900. If he is lucky enough to retire at the beginning of a secular bull market starting in 1919, 1949, or 1982, then his portfolio will likely last until age 90, assuming he is holding a balanced portfolio of 60% fixed income and 40% equities, and his equities perform the same as the Dow Jones Industrial Average.



The upper part of the graph shows the value of the DJIA over time. The lower part of the chart shows how many years Sam's portfolio would have lasted if he were to retire in each of the years. I then calculate the probability of running out of money by age 90: It works out to be 66%.



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All of the portfolios for each retirement year since 1900 have the identical asset allocation, the same asset selection, and the same management costs. The only variable is the timing of retirement; if Sam is lucky enough to retire at the beginning of a secular bull market starting in 1919, 1949, or 1982, then his portfolio will likely be successful. If he happens to retire during any other time period, it doesn't matter what he does with asset allocation; he will likely run out of money at some point. I define this as the luck factor.

Now, let's figure out the contribution of the asset allocation factor. Say Sam makes the wrong asset-allocation decision. Instead of the optimum asset mix, he invests all his money into equities. What is the probability of running out of money by age 90? My calculation shows that it increases from 66% to 72%. This "wrong" asset allocation decision costs Sam an additional 6% in probability of depletion. The contribution of the luck factor (66%) is eleven times of that of the asset allocation factor (6%).

Instead of following a typical "buy it and forget it" strategy, let's say that Sam instead follows his mutual funds closely using a disciplined system. He retains only the topperforming equity funds in his portfolio. As a result of this strategy, the equity side of his portfolio outperforms the benchmark index by 4% each year.

Sam's probability of running out of money by age 90 is 35%. In this case, Sam's disciplined asset selection system creates a 31% reduction in the probability of his portfolio failure, calculated as 66% minus 35%. The contribution of the asset selection factor (31%) is about five times of that of the asset allocation factor (6%). (I'm not suggesting that one can outperform the index by 4% merely by paying more attention to the asset selection process. I used 4% as a possible upper limit in this example for calculation purposes only.)

Over the long term, the cost of portfolio management eats away some of the portfolio growth. Let's assume that Sam buys an equity mutual fund that underperforms the index by 2% because of its management expenses.

What is the probability of running out of money by age 90 in this case? It is 77%. Thus, the contribution of the cost factor is 11%, calculated as 77% minus 66%. This 11% cost factor is about twice as much as the asset allocation factor.

When we combine all of these factors so they add up to 100%, the luck factor contributes 58%, the asset selection factor 27%, the cost factor 10%, and the asset allocation factor 5% to the success of Sam's portfolio. These findings are vastly different from the "asset allocation" anthem sung by the retail financial industry.

I then followed the same steps for different withdrawal rates and calculated the contribution of each factor to the success of a retirement plan. Remember that we are defining success here as the "probability of survival" for withdrawals larger than the sustainable withdrawal rate and "portfolio growth rate" for withdrawals less than the sustainable growth rate.

The pie charts in "Mixing It Up" (see below) depict the contribution of each factor to success. Here are some important observations about each of the four factors that affect retirement portfolio success:



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Mixing It Up

Depending on the withdrawal rate, luck, asset selection, asset allocation, and management costs all play varying roles in the success of a retirement portfolio.

How each factor contributes to the success of a retirement portfolio



0% Withdrawal Rate



2% Withdrawal Rate



4% Withdrawal Rate



6% Withdrawal Rate



8% Withdrawal Rate



10% Withdrawal Rate



- Luck
- Asset Selection
- Asset Allocation



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Luck. The contribution of luck is lowest near the sustainable withdrawal rate (4%). This is interesting because we observe a similar outcome when we talk about common shares; many studies suggest that companies paying sustainable dividends to their shareholders add the greatest value to their shareholders' investments. Once the withdrawal rate is above the sustainable withdrawal rate, the luck factor increases substantially until it reaches 100% at a 12% withdrawal rate.

Asset selection. The contribution of asset selection is steady up to a 6% withdrawal rate. After that, the higher the withdrawal rate, the less significant the asset selection factor.

Management cost. The longer that the portfolio survives, the larger the cumulative management costs over the life of the portfolio. Therefore, this factor's contribution declines once the withdrawal rate begins to exceed the sustainable withdrawal rate.

Asset allocation. The contribution of the asset allocation decision to portfolio success tends to peak near the sustainable withdrawal rate. After that, it begins to sharply declines.

It's important to keep in mind that your clients' retirement savings must be sufficient not only to finance their retirement, but also to finance the luck factor. We can remove the luck factor from the retirement picture by using insurance products such as annuities. Refer to my previous articles "The Perfect Mix" (February 2003) and "A More Perfect Mix" (June 2003) for more detailed strategies using these products.

As an adviser, I find peace of mind in recognizing and quantifying the luck factor for individual retirement portfolios. In a majority of cases, it's the largest contributor to the success of a retirement portfolio. As financial professionals, we blindly project future portfolio values like a fortuneteller, claiming "over 90% of success is in asset allocation." We can do better than that.

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