With a Little Bit of Luck…

By Jim Otar

> *"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 our business. Each time I read it, I imagine myself at an auction: I can almost hear the auctioneer shouting: "I have 90 percent for asset allocation, do I hear 100 percent!"

What was this research? It is based on the study by Gary P. Brinson, Randolph L. Hood, and Gilbert L Beebower, *'Determinants of Portfolio Performance II*, Financial Analysts Journal, January/February 1995. This was a follow-up study to their original one 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 so 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 "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 define success as "the probability of survival" of a retirement portfolio. The lower is the probability of running out of money; the more successful is the portfolio. Only when withdrawals are less than the sustainable withdrawal rate then 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. He needs to withdraw $30,000 in the first year of his retirement, indexed to CPI in following years. He wants his money to last until age 90. Assume he is holding a balanced portfolio of 60% fixed income and 40% equities. His equities perform the same as the Dow Jones Industrial Average. 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.

I plot my findings in Graph 1. The upper part of the graph shows the value of 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 as 66%.

Graph 1
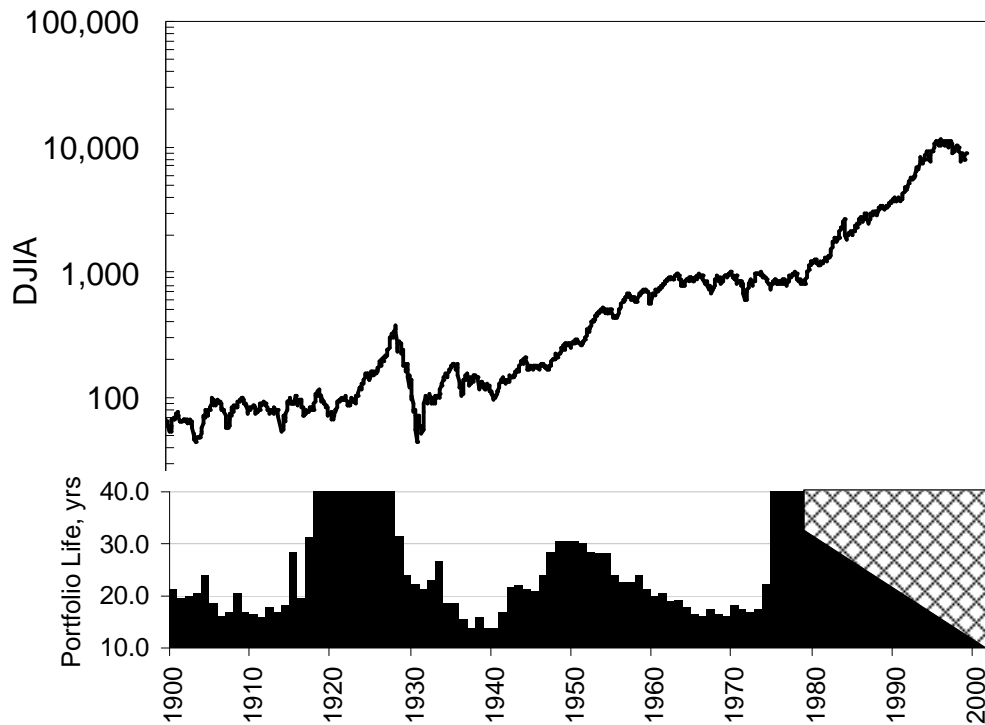
The "Luck" Factor:

All of the portfolios for each retirement year since 1900 have the same 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 markets starting in 1919, 1949 or 1982 then his portfolio will likely be successful. If he happens to retire at any other time period then it does not matter what he does with asset allocation; he will likely run out of money. I define this as the Luck Factor.

The "Asset Allocation" 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%).

The "Asset Selection" Factor:
Say instead of "buy-and-forget" strategy, Sam follows his mutual funds closely with a disciplined system. He keeps only the best performing equity funds in his portfolio. As a result, 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%. Sam's disciplined asset selection system creates a 31% reduction in the probability of his portfolio's 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 am 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 for calculation purposes only. Some portfolio managers do better than that, but a vast majority doesn't.

The "Cost" Factor:
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 (MER).

What is the probability of running out of money by age 90? It is 77%. Thus, the contribution of the Cost Factor is 11%, calculated as 77% minus 66%. This 11% Cost Factor is about twice of that of the Asset Allocation Factor.

When we combine these factors so that they add up to 100%, the Luck Factor contributed 58%, 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 the "asset allocation" anthem of the retail financial industry.

Summary:
I followed the same steps for different withdrawal rates and calculated the contribution of each factor to the success of a retirement plan. Remembering that we defined success as the "probability of survival" for withdrawals larger than sustainable withdrawal rate (larger than 4% in Sam's example) and "portfolio growth rate" for withdrawals less than the sustainable growth rate, the table depicts the contribution of each factor to the success:

Withdrawal Rate:

	0%	2%	4%	6%	8%	10%	12%

Contribution of each factor to the success of a retirement portfolio (25-year horizon):

	0%	2%	4%	6%	8%	10%	12%
Luck	40%	31%	19%	58%	78%	96%	100%
Asset Allocation	22%	32%	38%	5%	4%	0%	0%
Asset Selection	21%	19%	23%	27%	14%	4%	0%
Management Costs	17%	18%	20%	10%	4%	0%	0%

Here are some important observations:

- Luck: The contribution of luck is lowest near the sustainable withdrawal rate. 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 greatest value to shareholders' investments.

  Once the withdrawal rate is above the sustainable withdrawal rate, the Luck Factor increases substantially until it reaches 100% at 12% withdrawal rate.

- Asset Allocation: Its contribution to the success of portfolio peaks near the sustainable withdrawal rate. After that, it sharply declines.

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

- Management Cost: The longer the portfolio survives; the larger is the cumulative management costs over the life of the portfolio. Therefore, its contribution declines once the withdrawal rate exceeds the sustainable withdrawal rate.

In conclusion, I find peace of mind in recognizing and quantifying the Luck Factor for individual retirement portfolios. In majority of cases, it is 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". Surely, we can do better than that.

Jim C. Otar, CFP, CMT, BASc, MEng, is a certified financial planner, financial writer, market technician and a professional engineer. He is the author of "High Expectations & False Dreams – One Hundred Years of Stock Market History Applied to Retirement Planning" and the founder of www.retirementoptimizer.com. His articles are published in various magazines in Canada, U.S. and Australia. He won the prestigious CFP-Board Award for 2001 and in 2002 for his articles, the first Canadian to win such a prestigious award. cotar@rogers.com