Stress Testing Your Plan

Probability of Success vs Excess

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Expected return doesn't matter. Sure, it's what everyone talks about, but it doesn't matter.

OK, expected return does have some importance. It is what we seek to maximize subject to a target risk level when building a portfolio. It also gives you an idea of the returns, on average, you're likely to receive. But planning on getting the average is a recipe for financial failure as it is planning for just a 50% probability of success. Who wants a coin flip to determine the likelihood of having enough resources to live a fulfilling life? No one. This is why financial plans are built on higher probabilities of success, such as 90%. Let's unwrap that.

What does a 90% probability of success in a financial plan really mean?

1. Given your goals, spending, savings, assets and asset allocation, 90% *of the time all* of the goals in the plan will be met over the life of the plan.
2. "*Of the time*" means "of the thousands of possible future return scenarios, 90% of them will have returns greater than or equal to what you would need for all included goals to be met." Only 10% of the time will returns be lower, requiring a goal or goals to be adjusted downward.
3. "*All of* your goals" means all the goals in the plan at the dollar value of each goal. For example, with a $1,000,000 estate goal, $999,999 is a failure and $1,000,001 is a success. The probability does not measure the magnitude of the success or failure. Two million is also a success, as is three or four million.

The probability of success is also the probability that the return you experience is equal to or higher than the return you planned on. So, a 90% probability of success is perhaps more aptly labelled, **a *probability of excess***.

Let's say at the end of 2008 you built a plan based on a 90% probability of success. Based on history, this means you built the plan using a 2.5% annualized return for the next 10 years for large cap stocks.[1] Ten years later, you look back and see that you earned a 13.1% annualized return - more than 10% higher. As a result, you have more than 2.5 times more money than needed to achieve your goals. Your plan needs adjusting. You can add goals, spend more or take less risk to realign your assets with your goals. Typically, the excess return you experience over a ten-year period will not be so high, but an excess return of some magnitude is expected nine times out of ten at the 90th percentile. This is also true for shorter and longer horizons.

Conversely, if you had a 90th percentile plan at the end of 1998, then you would have experienced close to the worst 10-year return for large-cap stocks in the post-World War II era – minus 1.4%. As a result, you'd now have about two-thirds of the assets needed to achieve your goals. You need to adjust your plan. One option: take more risk with the intention to grow your way out of the shortfall. Other options: save more now, or lower goals such your planned retirement spending or estate value. With 20/20 hindsight, we know that taking more risk would have solved the problem.

The examples above use extreme "experienced" returns for illustration of positive and negative outcomes relative to plan. They also show that the plan is based, at the 90% confidence level, on a low 10-year return assumption (2.5% for stocks). You don't have to be a statistician to recognize that the likelihood of exceeding 2.5% per year for stocks over ten years is much higher than the likelihood of not achieving it. The statistician just quantifies it. With a 90th percentile plan, you have a much higher chance of outperforming your plan (90%), than you do underperforming your plan (10%), but in either case, adjustments to your plan will be required.

The examples use a ten-year horizon, stress testing at the beginning of the horizon and waiting ten years for the result. In practice, stress testing on a quarterly basis, and when there are large market moves, enables you to make small adjustments as markets impact your plan. Stress testing then becomes part of an ongoing financial risk management process where you take steps to mitigate the downside outcomes when they occur (10% of the time with a 90th percentile plan), while taking advantage of the upside outcomes to reduce risk or reach for more aspirational goals.

Wealthcare offers the **Comfort Zone®** as a dynamic, interactive approach to managing your plan in response to market outcomes. With this approach, you don't have to be right on the direction of the markets, but you do have to be right about your goals, have clarified your goal priorities and understand your tolerance for risk. A plan result in the **Comfort Zone®** positions you for more upside and fewer downside surprises, while helping you to manage financial risk and to reach for more aspirational goals over time.

[1] See *Wealthcare Investment Perspectives*, "Stress Testing your Plan: Insights and Limits of Historical Returns", Table 2, January 15, 2018.

Sources in include the Center for Research in Securities Prices, Wealthcare.

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