

How I Stopped Worrying About Uncertainty and Learned To Trust the Numbers

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Back in 1946, a nuclear physicist working at the Los Alamos National Laboratory, Stanislaw Ulam, was convalescing from an illness. Unable to binge Netflix (as I do when recovering under bed rest) he instead amused himself by playing solitaire. Ever the mathematician, Ulam began wondering about the statistical probability of a successful solitaire game. As he is reported to have said,

“The first thoughts and attempts I made to practice the Monte Carlo Method were suggested by a question which occurred to me in 1946 as I was convalescing from an illness and playing solitaires. The question was, what are the chances that a Canfield solitaire laid out with 52 cards will come out successfully? After spending a lot of time trying to estimate them by pure combinatorial calculations, I wondered whether a more practical method than “abstract thinking” might not be to lay it out say one hundred times and simply observe and count the number of successful plays. This was already possible to envisage with the beginning of the new era of fast computers.....” ⁽¹⁾

And that was the start. Stanislaw Ulam and his colleague, John von Neumann, a founding figure in computing, developed algorithms on von Neumann’s computers which allowed solutions to complicated problems to be approximated by running random simulations from a probability distribution to produce hundreds or thousands of possible outcomes. The results are then analyzed to get the probabilities of different outcomes occurring. This was a breakthrough in the method of computing solutions to problems with a probabilistic interpretation and the work was highly secret at the time. Ulam and von Neumann required a code name, and a colleague of theirs, Nicholas Metropolis, suggested using the name Monte Carlo, referring to the Monte Carlo Casino in Monaco where Ulam's uncle would borrow money from relatives to gamble.

What does this have to do with relief from uncertainty?

There are almost always legitimate reasons to worry about the stock market. In fact, in hindsight it seems that the most worrisome times were those when we didn't think that we needed to worry. Today the issues that immediately come to mind include the trade negotiations with China, fractious political fights, immigration and border walls, slowing GDP growth, and inverted Treasury yield curves, to name a few.

It is not easy to be sanguine about negative news and the possible impact on one’s portfolio; especially when there is little likelihood of future portfolio contributions and that portfolio is being relied upon to provide required income. The real problem is that market corrections and economic recessions do not come with a written save-the-date announcement. It is impossible to predict the future, and regardless of how sophisticated, no signal is fool-proof. For example, consider the recent article written by Justin McNichols (“Do the



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Recent Yield Curve Inversions Guarantee a Recession?") that analyzes the recent yield curve inversions. Each recession in the past has been preceded by an inverted Treasury yield curve. That certainly sounds definite, but unfortunately, not all yield curve inversions have resulted in a recession, leaving us with a signal that has been sometimes wrong. And even in those times when the signal was correct, it has taken roughly up to two years for the subsequent recession to manifest. So what then is an appropriate response to conflicting indicators and market uncertainty?

Financial Planning and the Monte Carlo Solution

If worrying about the future is not a solution, then what is? I would argue that being prepared for the future is a viable response, and that one of the better ways to do that is to have an appropriate asset allocation and an updated lifetime income analysis within a financial plan that is calculated with a Monte Carlo simulation.

As we learned, Ulam and von Neumann designed the Monte Carlo calculations to simulate thousands of possible outcomes, and then to define the probability of those outcomes becoming reality. As we use this in personal financial planning, we can test the sustainability of income from a portfolio by running a thousand or more randomly generated market returns based on an appropriate portfolio benchmark. The results illustrate the potential impact that investing and spending are likely to have over the course of many years.

For example, a portfolio of 60% large company U.S. stocks and 40% Treasury bills has, according to data available from Robert Shiller going back to 1871, an average annual real return of 5.9%. The Monte Carlo analysis will run a thousand or more possible returns for each year of the analysis based on the 5.9% mean return, and will show the probability of the portfolio to provide you with lifetime income. This analysis naturally contains periods of recessions and slow growth, as well as periods of robust and positive growth.

The success ratio of the Monte Carlo analysis of the portfolio retirement income sustainability in your personal financial plan can be relied upon, even in periods of great uncertainty, as it has included uncertainty, and calculated the numbers accordingly.

As an emotional backup to relying on the Monte Carlo analysis, I find it helpful to identify two important things. The first is to evaluate the amount of income that you absolutely need to have in order to live comfortably, and the second is to determine from where you would withdraw that money in the event of an adverse stock market environment. Generally, money market, bank deposits, and fixed income (bond) positions in a portfolio can be the source of required cash, providing you with the luxury of not having to sell stocks at an inopportune time simply to fund living expenses.

A further action to build trust in the numbers is to run your financial plan periodically. This ensures that reality meets projections, takes into account changes in experience and spending and will keep your financial plan current.



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At Osborne Partners, we believe that a methodical investing discipline combined with personalized financial planning is an essential element to achieving financial goals.

- (1) Eckhardt, Roger (1987). "Stan Ulam, John von Neumann, and the Monte Carlo method" (PDF). Los Alamos Science, Special Issue (15): 131–137.

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