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One of the more revered rules of thumb in retirement planning is that retirees can be comfortable in spending 4% per year of their accumulated net worth. While the origin of this rule is not certain, it has been popularized by financial planning expert William Bengen in a series of articles dating back to the 1990s. Using historical data, Bengen examined various stock/bond portfolio mixes and various withdrawal rules. In his research, a withdrawal rule means to determine consumption during the first year of retirement as a fraction (1%, 2%, 3%, 4%, etc) of net worth at that time, and then to let the dollar amount of consumption subsequently grow with inflation. For each withdrawal rule, he calculated the length of time that the portfolio remained positive under a wide variety of historical scenarios. In brief, his results are that withdrawal rates of 3% or less are too "conservative" in the sense that the portfolio is still positive 50 years after retirement in every one of his scenarios. At 4% withdrawal the proportion of scenarios in which the portfolio lasted 30 years or more is very high. This is not true for withdrawal rates of 5% or greater. Therefore, Bengen concluded that the 4% rule is safe.

Bengen also argued that keeping at least 50 percent of your portfolio in stocks (and as much as 75%) is strongly recommended as well. Even though equities have experienced severe downturns several times in the past hundred years, Bengen claims that the higher expected return on equities overwhelms the volatility risk.

My first thought regarding this argument is that historical data may not be an adequate guide to future potential outcomes. For example, historical housing price data showed no evidence of broad based housing price declines in the U. S., at least not until 2007. An alternate strategy for assessing the viability of a spending rule is to simulate portfolio performance given assumptions about the distribution of real returns. Assuming the expected return on equities is 5%, annualized volatility is 20%, and using a 50% allocation to equities, I calculate that the 4% withdrawal rule entails a substantial probability (about a third) of running out of funds within 35 years (before age 100 given retirement at 65).

While Bengen and many other financial planners or economists recommend an equity allocation of 50% or more, this is a matter of significant dispute. For example, retirement expert Zvi Bodie argues that, contrary to popular wisdom, the risk of equities does not decline as the holding period lengthens. While the variability of the average return does decline with horizon, the probability of a large loss increases. Thus, he recommends a very low equity weight for retirees. Instead, the bulk of retirement assets should be in inflation-indexed default

free debt (Bodie claims his own retirement portfolio is entirely invested in Treasury Inflation Protected Securities (TIPS)).

If you follow this advice and adopt a low risk portfolio allocation, what is the implication for acceptable withdrawal rates? Naturally, the expected real return will be lower, let's say 1%. For this case the 4% withdrawal strategy is close to being reasonable. If you withdraw 4% of your portfolio at retirement and then enjoy the same real consumption each year thereafter, it will be 30 years before your portfolio is extinguished. So, if you retire at 65 and then don't live past 95, you will be fine.

Of course, there is a lot of uncertainty about longevity. From the individual's points of view, longevity risk is the chance that you outlive your portfolio. The obvious solution is to buy inflation-adjusted annuities that make payments from a specified starting date until death. The sellers of the annuities take on the longevity risk. This is a risk that would seem to be a natural one for life insurance companies to take on. Suppose a life company has two core businesses: selling life insurance and selling annuities. If longevity turns out to be greater than expected, the life insurance business will perform better and the annuity business will perform worse. Simply by adjusting the relative sizes of these businesses, it would seem that life companies could largely eliminate longevity risk.

The problem with annuities is that life companies are worried about adverse selection. This is the risk that people with long life expectancies will be more likely to be annuity buyers and people with short life expectancies are more likely to be insurance buyers. To protect themselves, life insurers will tend to price annuities according to "worst case" (long longevity) assumptions, thus making them less attractive. Probably partly for this reason, aside from Social Security and Defined Benefit Plans, annuities represent only a very small portion of retiree assets.

Individual financial planning is a difficult problem. The individual must choose savings rate, investment allocation, and withdrawal rate all in the face of considerable uncertainty about future income, investment returns and mortality. Some economists are confident they have developed models that solve the savings/investment problem. I agree that these models provide useful insights. However, due to the complexity of the underlying problem, I'm skeptical that this confidence is fully justified.