

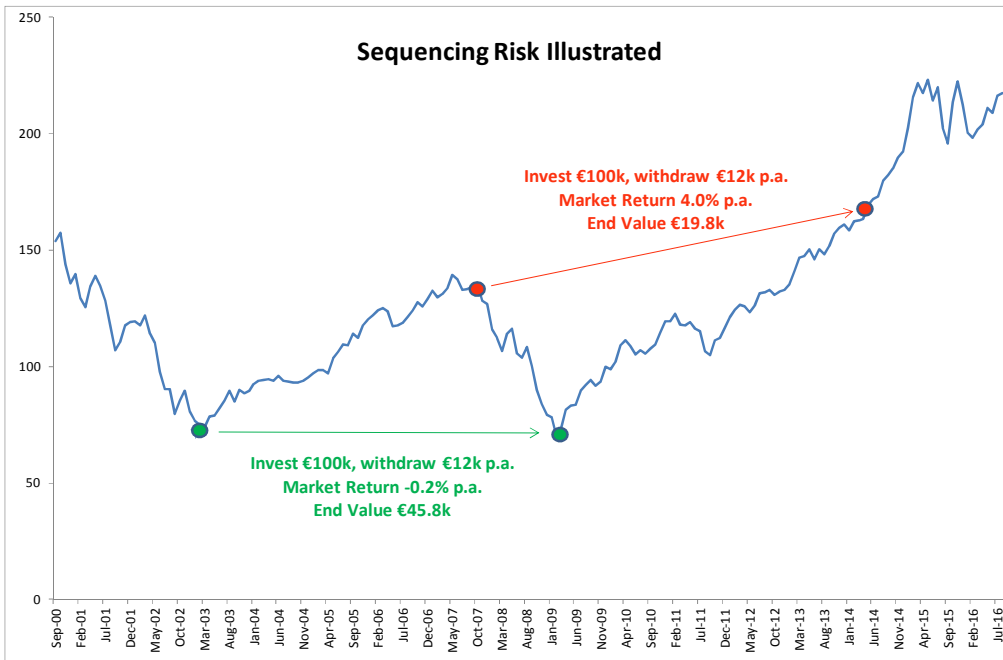
## Sequencing Risk and Client Advice

*Joe Mottley 06-Oct-17*

ARF business is becoming a major part of the wealth management landscape, and it poses particular challenges to the financial broker. How should the portfolio to be structured to produce a return adequate to fund 30 years' income requirements, and yet not be excessively risky? Most advisors now employ a straight-line model to make projections for the client: if the starting portfolio is €X, the annual income requirement is €Y, and the anticipated average annual return is Z%, it's a simple calculation to estimate what the year-by-year portfolio value might be, and when it might be fully depleted. The model can be enhanced by assuming an average annual level of inflation, and escalating the income requirement in line with that – still a relatively simple spreadsheet calculation.

This is a useful first-order approach to formulating the client advice. But it has one critical flaw: it ignores sequencing risk. Even if we correctly predict the long-term average return, the actual yearly return will fluctuate randomly, and the client's fortunes are dependent on the path it takes. To boil it right down – after a big drop in the market, the client must liquidate a higher proportion of the fund to meet a given cash income requirement, leaving less on the table to participate in the future recovery. It's the equivalent of being forced to eat your seed corn when the harvest is bad. It is the mirror image of 'dollar cost averaging': for a portfolio with regular new investment (such as a long term pension saver) volatility is inherently beneficial because drawdowns allow more assets to be purchased for the same fixed cash inflow.

Consider the example illustrated in the following chart. Thelma and Louise both invest €100,000 in a passive global equity fund for a six-year period, withdrawing €2,000 each year. Thelma starts in March 2003; over the six years she has a rather disappointing average market return of -0.2% per annum, and finishes with a fund worth €45,797. Louise starts later, in December 2007. She sees a much better average return of 4.0% per annum, and yet her end value is only €19,820. What happened? Thelma enjoyed some very good years in the earlier part of her investment, followed by a market downturn later on. But unlucky Louise experienced an equity crash at the outset, leaving less money to benefit from the subsequent market rally.



Source: MSCI.com

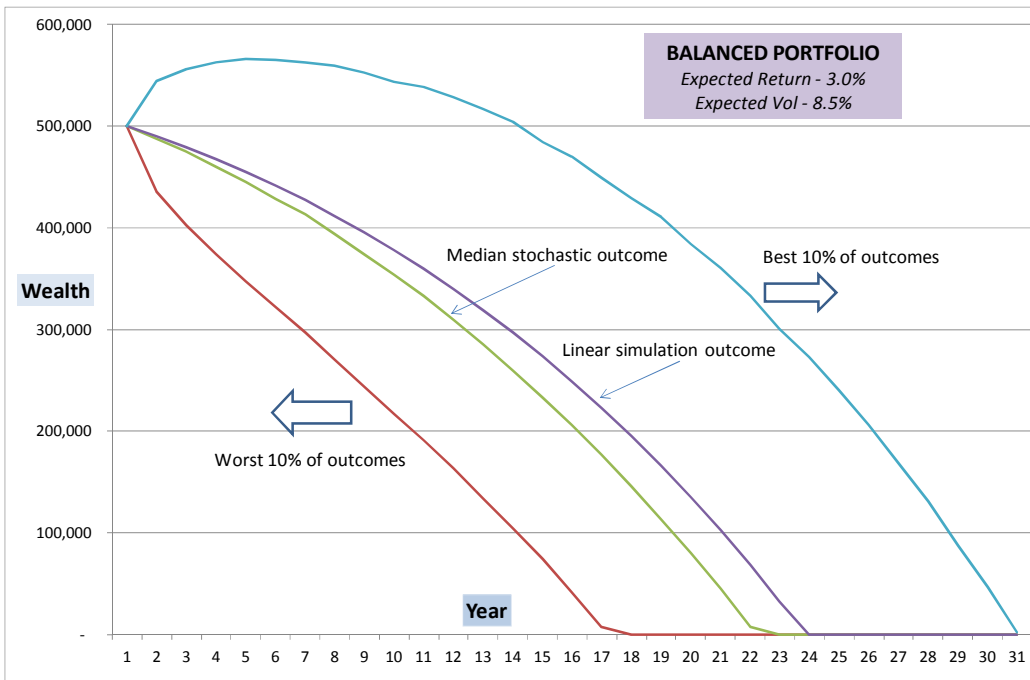
One way to mitigate sequence risk is to keep the income withdrawal fixed in percentage terms. When the market falls, you take less cash out. The client will still suffer the psychological trauma of market volatility, but the ‘eating the seed corn’ effect on future returns is eliminated. That might be feasible for the recent retiree with other sources of income, where they are happy to limit withdrawals to the 4% minimum. But in later years the other sources of income may have dried up, and the ARF must fund annual living costs which are well ahead of the Imputed Distribution.

For the client who cannot avoid sequence risk, how best to assess it for a given portfolio? It needs a statistical approach: by conducting a ‘Monte Carlo’ simulation which generates many thousand random sequences of possible market returns, you can illustrate to the client what the possible range of best-case and worse-case outcomes might be. With the requisite tools now available online (and for free), this can be a relatively straightforward process.

The following chart shows a simple illustration. We take a hypothetical ARF investment scenario with the following parameters and assumptions:

Starting Size	€500,000
Starting Annual Withdrawal	€25,000
Inflation	2.0% p.a.
Expected Average Portfolio Net Return	3.0%
Expected Portfolio Volatility	8.5%

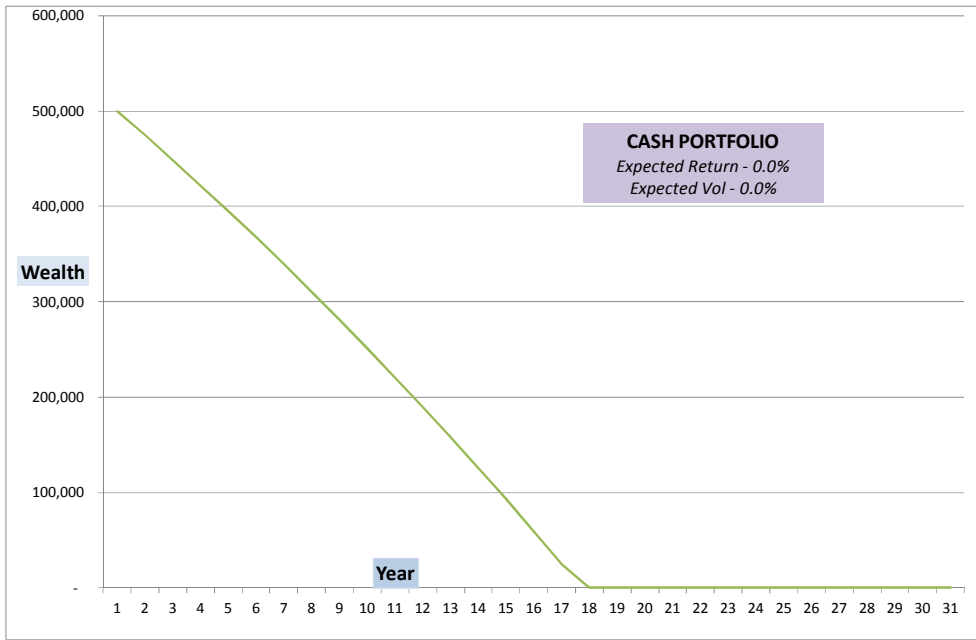
The income requirement escalates every year in line with inflation. The assumed net return at 3% is low, but that reflects the reality of today’s market valuations. A 3% projected return with volatility of 8%-9% would be quite representative of a typical balanced portfolio.



Source: [portfoliovisualizer.com](http://portfoliovisualizer.com)

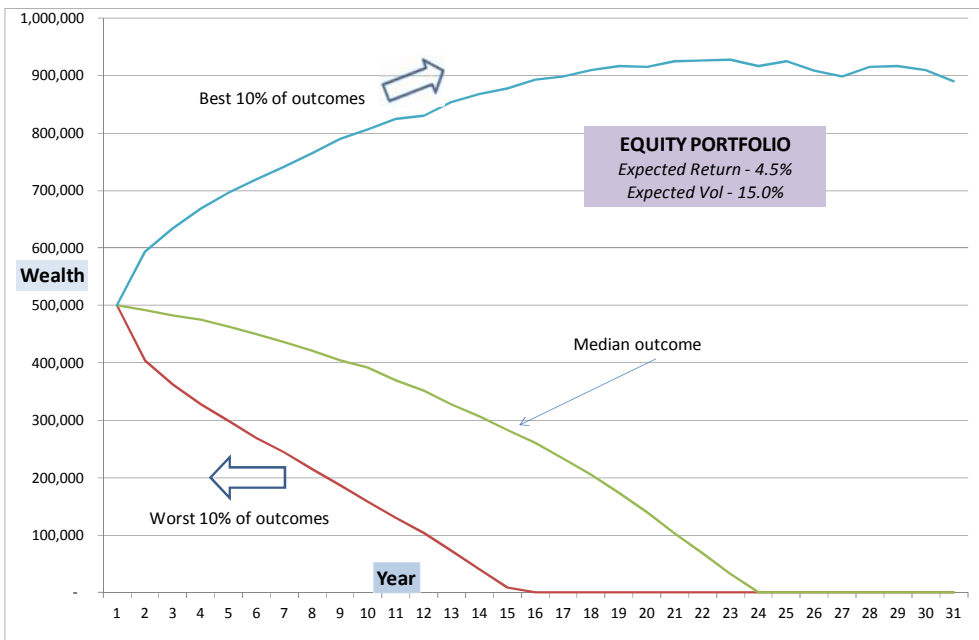
There is a wide range of potential scenarios: the worst 10% of outcomes result in bomb-out before year 17, while the best 10% see it lasting for the full 30-year term. The median result is bomb-out at year 22. The chart also shows the simple linear projection of the same portfolio, which suggests bomb-out at year 24. Intuitively, you might imagine that the linear projection should coincide with the median stochastic projection, but that is not so. The gap demonstrates that volatility is more likely than not to be harmful for a portfolio in decumulation.

Let’s examine what happens if the portfolio risk level is moved up or down. It’s best illustrated by the two obvious extremities: a pure cash portfolio (for simplicity we assume zero expected return and zero volatility) and 100% global equity portfolio (where we estimate net return at 4.5% and volatility at 15.0%).



Source: [portfoliovisualizer.com](http://portfoliovisualizer.com)

With zero volatility, there is no range of different outcomes for the cash model. It projects full depletion in year 17 – the same, coincidentally, as the 10th decile outcome for the balanced portfolio.



Source: [portfoliovisualizer.com](http://portfoliovisualizer.com)

The all-equity portfolio shows a very different picture, with a much wider range of outcomes. The worst 10% of outcomes now see bomb-out coming before year 15. The median outcome is a little

better than for the balanced portfolio – bomb-out in year 23 rather than 22; but the best outcomes are much better, with the upper scenarios seeing the portfolio growing larger over the 30-year span.

The comparison of the balanced and the all-equity model is instructive. We all recognise that some risk must typically be taken in an ARF portfolio in order to cover the long-term income requirement, but beyond a certain point the reward for greater risk is marginal. In this example, a near-doubling of portfolio risk (by moving from balanced to equities) results in much more lucrative best-case outcomes, but the median outcome is only slightly better and the worst-case outcomes are more painful. Of course the results depend on the trade-off between risk and prospective return, but the examples here are based on our best estimates of volatility and returns for various asset mixes at current market valuation levels.

There are no easy conclusions to be drawn from the exercise. But one message is clear. To ensure your clients have a properly-informed understanding of the risk-return tradeoff they face, it is essential to take them through some variant of stochastic illustration, rather than depend on a simple linear projection. The key ingredients are the software tools, which are readily available, and the return and volatility assumptions. As with every other aspect of financial planning making sure that the assumptions are realistic and well-grounded is vital.