

Trouble With Averages, And (Deterministic) Cashflow Planning

'Never try to walk across a river just because it has an average depth of four feet.' ~ Milton Friedman

If you were to put one foot in a bucket of ice and the other foot in a bucket of boiling water, on average, your body temperature should be normal, or so goes the saying. The danger of sequencing risk and volatility drag examined above demonstrates why using deterministic cashflow planning models, with assumptions based on averages in financial planning is insufficiently robust. Especially in retirement planning. Sadly, this approach is prevalent amongst the vast majority of UK financial planners. Most of the cashflow planning tools used by planners (such as Voyant, Prestwood/Truth) are primarily deterministic models, and even the highly regarded Certified Financial Planner accreditation is primarily assessed based on this model.

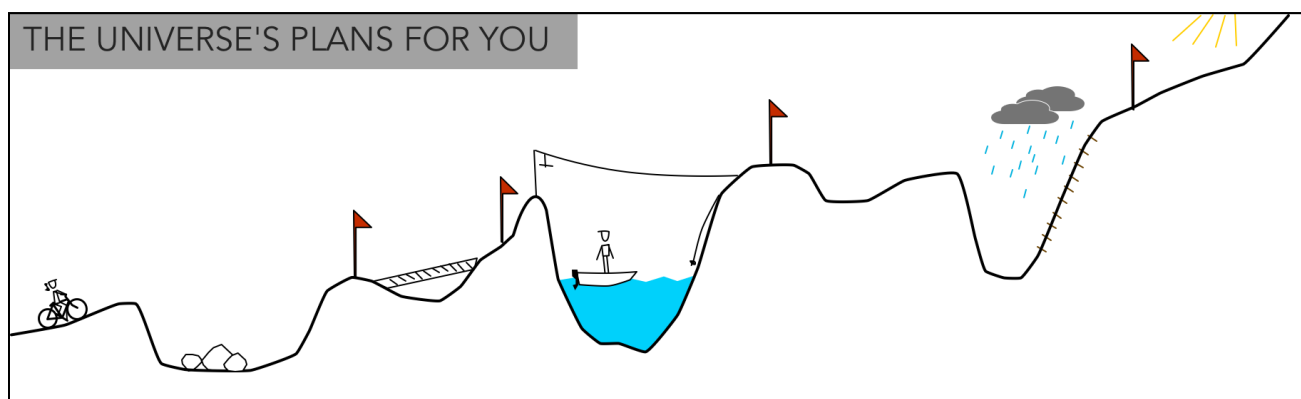
The lack of robustness and rigour aside, perhaps more worryingly, deterministic cashflow planning models risk misleading clients. Because they are often used as tools to help clients visualise likely retirement outcomes, they give clients an impression

that their investments grow in a smooth, linear format over time, when in reality nothing can be further from the truth. Add to this the fact that product illustrations are also deterministic, you end up with meaningless data being served to clients, with no real grounding in reality.

Deterministic planning tools convey the illusion of certainty, where there is none. The reality is, investment outcomes are unknown, so why pretend to clients that they are? As we have shown, assumptions of long term averages are unhelpful. They can be easily thwarted by the powerful combination of volatility drag, sequencing risk and 'pound cost ravaging.'

These are ever present dangers in retirement portfolios. Using tools that attempt to simplify potential outcomes, but in the process miss some of the most important factors that could impact the plan's outcome is clearly an inadequate approach.

Your (Deterministic) Financial Plan Vs The Market's Plan



Some financial planners argue that ‘whatever the plan is, it would always be wrong’ or that ‘all plans are wrong, regardless of the tool you use’. This argument misses the point, as it is not about being right or wrong. The key is to ensure that the plan is rigorously tested under a range of possible but ultimately unknown outcomes. And

inflation. The concept of sequencing also applies to inflation. Higher inflation in the first decade of retirement means that clients need to increase withdrawals earlier on in retirement to maintain their lifestyle. This could wreak havoc with their retirement plan, even if inflation becomes restrained in later life.

“Sequencing applies to inflation as well, because higher inflation in the first decade of retirement means that clients need to increase withdrawals earlier on in retirement to maintain their lifestyle.”

why wouldn't someone use the best tools available for the job? In the absence of certainty, why run oversimplified straight-line projections, when in actual fact you could run thousands of potential outcomes to estimate the probability of success or failure?

Besides investment returns, deterministic modelling tools also assume a linear path for other unknown inputs into the planning process, namely life expectancy and

Higher inflation in the early stages of retirement results in higher levels of base portfolio withdrawals, upon which later inflation compounds. Using average inflation, without accounting for the risk of unfavourable sequencing makes deterministic models far from robust.

Some financial planners have also argued that reviewing clients' financial plans on a regular basis enables them to overcome the serious shortcomings of deterministic

models. However, the subtle yet compounding nature of sequencing risk and volatility drag means that it may be too late before it is picked up. Clients may have to rein in their portfolio withdrawals significantly to avoid running out of money. This would be unsatisfactory for clients, and uncomfortable for the planner who gave the initial recommendations.

Another scenario could be that using insufficiently robust deterministic cashflow plans may also lead planners and their clients to take a knee-jerk reaction to lower portfolio withdrawals at the first sight of negative portfolio returns.

The point here is, while regular planning meetings are a key part of helping clients stay on track, it is no proper mitigation for using tools that are inadequate for the job. Of course, some of the short comings of deterministic models can be addressed by using a geometric mean of returns, but this doesn't entirely overcome the fundamental flaw of implanting a visual image of a linear path in retirement. Even with very conservative assumptions, it is difficult to take account of how extreme scenarios may affect potential outcomes.

Right Tool For The Job

'The future of financial planning is in Monte Carlo. No, not the city. The technique'
~ Investment Advisor (June 1, 2002)¹.

It is interesting that we are having this debate in the UK in 2015, because across the pond in the US, this debate is all but over. Most leading financial planners have adopted the stochastic models - Monte Carlo models to be specific - as the de facto tool for modelling retirement outcome. The model has been widely adopted by most financial planners. Many retirement experts such as Moshe Milevsky, David Blanchett, Wade Pfau, and Michael Kitces use Monte Carlo in their work, and have written extensively about its power (and

weaknesses) in retirement planning.

Monte Carlo simulation is a mathematical method used to estimate the most likely outcome and the odds that certain events will occur. Like the roulette wheels associated with the casinos of Monte Carlo, these simulations reproduce outcomes by generating random numbers within set parameters. Unlike a roulette wheel, the Monte Carlo method uses random numbers to quantify uncertainty and chance events.

"The reason Monte Carlo simulations are being used more frequently (by financial planners), is because they do a better job explaining the potential outcomes versus time-value-of-money calculations, such as future value. The problem with a future value calculation is that it treats the outcome as certain, while in reality, and especially with the markets, nothing is certain. A Monte Carlo simulation provides a more 'colourful' perspective of the range of potential outcomes given the expected return and volatility of a portfolio"

~ David Blanchett, Morningstar's head of retirement research²

¹ The Nuts and Bolts of Monte Carlo, June 2002 Issue of Investment Advisor. Available at www.thinkadvisor.com/2002/06/01/the-nuts-and-bolts-of-monte-carlo

² Adam Zoll (April 2013) Monte Carlo's Role in Retirement Planning. Available at <http://www.morningstar.co.uk/uk/news/107766/monte-carlos-role-in-retirementplanning.aspx#sthash.bs0XvcMZ.dpuf>

Monte Carlo is a significant improvement on deterministic models, because it takes into account the unpredictability of returns and factors such as life expectancy and inflation. They are based on an assumed mean, standard deviation and correlation, and express potential outcomes in terms of the probability of successfully meeting clients' objectives. This is valuable information for planners to consider and communicate to their clients. It gets clients and their advisers talking about financial planning and retirement outcomes in terms of probability rather than certainty. And this goes right to the heart of communicating and demonstrating clients' capacity for loss. By running thousands of scenarios using specific parameters, planners can determine the likelihood of specific outcomes. Some Monte Carlo simulations even allow users to adopt a more "fat-tailed" distribution method. This means that the odds of extreme events are counted as being greater than they are in a traditional bell-shaped distribution curve. This enables planners to define outcomes in terms of probability of success or failure - that is, the percentage of

outcomes and drives home the importance of ongoing financial planning. A good Monte Carlo tool should also enable planners to investigate the magnitude of failure. In other words, if there is a 30% chance of failure, what is the magnitude of the potential shortfall?

Monte Carlo isn't the Holy Grail but it is a significant improvement on deterministic models. It has its shortcomings, not least of which is the fact it is too often utilised as if it is an absolute answer. Like all models, you need quality inputs to get quality outputs. It should never be treated as an absolute forecast, but rather as an educated guess of likely outcomes.

Advisers have also complained about the 'black box' nature of many Monte Carlo tools. And there are tendencies to focus excessively on the probability of success/failure, and ignore the magnitude of failure and sensitivity of inputs. But these aren't shortcomings of the model as such, just how it's implemented by financial planning software providers.

"Monte Carlo analysis has become an increasingly popular arrow in the financial planner's quiver, as an improvement over the oversimplified traditional straight-line projection." ~ Michael Kitces³

trials that resulted in a successful outcome (or failure). So for instance, the planner may decide, together with their client, that a success rate of below 70% probability is unacceptable to them and the plan needs to be adjusted by reducing withdrawals or changing asset allocation, to bring back the probability of success to an acceptable level. They may also decide that a success rate of more than 90% is too cautious and have a conversation about increasing withdrawals (if required by client). This communicates clearly to the client, the probabilistic nature of the potential

In the UK, Monte Carlo software available to financial planners include eValue's Retirement Modeller, Capita's Synaptic Modeller, Iress' XPLAN and Voyant. A cursory look at these tools shows that they still have a long way to go. The 'blackbox' approach of some of these tools means that many financial planners don't understand them and are wary of using them. Many also place significant constraints on the planner's ability to influence the underlying assumptions. It's hard to find a tool that actually gives advisers a great degree of flexibility in this regard.

³ Michael Kices (July, 2012) 'It's Time For The Next Generation Of Monte Carlo Analysis Software'. Available at <https://www.kitces.com/blog/its-time-for-the-next-generation-of-monte-carlo-analysissoftware/>

Many of these tools also have an excessive degree of focus on products and funds, rather than just being purely financial planning tools. One exception is Voyant, although it is primarily a deterministic model, with Monte Carlo simulations added in. The Iress Xplan tool is particularly unique in the sense that it sits within the back office system and portfolio values and asset allocation are pulled through automatically, saving the adviser considerable time in keying data. Capita's Synaptic Modeller is powered by Moody's Analytics stochastic engine, a major advantage given Moody's global risk modelling capability, but navigating the system could be a little easier.

Key Takeaways



Deterministic tools aren't sufficiently robust in modelling financial planning outcomes in retirement as they ignore the danger of pound cost ravaging and risk misleading clients into expecting a linear path.



Monte Carlo models are more suited to modelling retirement outcomes, but the tools available to UK advisers require significant improvement.