It ain't volatility, it's sequence risk!

"…next time a fund manager comes peddling a *"volatility managed solution for retirement income"*, show them the door!"

by Abraham Okusanya | Jan 18, 2017

"It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so' – Mark Twain

The movie Big Short opens with above quote, which sums up the danger of thinking you know something that isn't actually true. There's only one problem. There's little evidence that Mark Twain actually said or wrote those words, which makes the irony all the more powerful.

The point is, many practices in financial services just aren't supported by actual observed data on how investment markets work. (Which makes you wonder, where do they come from? But that's a discussion for another day).

In a misguided attempt to manage sequence risk in retirement income portfolios, a great deal of effort is devoted to managing volatility. This has resulted in a vast number of '*volatility managed'* funds and model portfolios peddled by asset managers to advisers and clients in retirement.

The trouble is, managing volatility in retirement portfolio is, for the most part, a red-herring. It's a bit like bringing a knife to a gunfight.

In a retirement income portfolio, volatility isn't your enemy per se. Sequence risk is. Sequence risk is often confused with volatility. I fell into the same error in my early days of researching retirement income strategies but looking the empirical data more closely I realise that, while the two are related, they're very different.

- Volatility is the day-to-day gyration of a portfolio. It's often measured using 'standard deviation' – the extent to which your portfolio's returns deviate from the average over any given period of time.
- Sequence risk relates to the order in which portfolio returns occur. Specifically, the risk of having poor returns in the early stage of retirement, even if good returns then show up in the later stage.

Volatility has very little impact on the order of returns. Two portfolios might have the same average return (mean) and volatility (standard deviation) over a given period of time, but if the *order* (sequence) of returns is different, then the sustainable income would be different.

Got it? OK.

The Big Test

To measure the impact of volatility on sustainable income, I used the same dataset as my previous research; actual historical data over the last 115 years, between 1900 and 2015. This time, I look at the relationship between historical sustainable withdrawal over any 30-year period and volatility obtained over each of the 3 decades of retirement within that 30-year period.

- For this, I looked at every 30-year period between 1900 and 2015 inclusive. So, the first 30-year period runs between 1900-1929, then 1901-1930, 1902-1931… and the final 30-year period runs between 1986-2015. This gives 87 scenarios.
- The portfolio is composed of 50% UK Equities and 50% UK Bonds, re-balanced annually.
- No fee has been applied but when I retested the result with fees applied, the findings hold regardless.
- I examined the correlation between average sustainable income and the volatility over 30-year retirement period.

The Result?

There is little correlation between volatility and sustainable income. Regardless of the period considered, income is as likely to be high and sustainable with a high volatility as it is with low volatility, provided the equity allocation in the portfolio remains constant.

Correlation between sustainable income and return/volatility	Real Return	Nominal Return	Volatility
1st decade of retirement	83.0%	66.0%	8.2%
2nd decade of retirement	26.4%	14.0%	-6.8%
3rd decade of retirement	-33.2%	-25.9%	-38.8%
30 year average	65.1%	26.2%	32.0%

Source: Finalytiq

While there's a very strong correlation (83%) between returns in the first decade of retirement and the sustainable withdrawal over the entire 30-year retirement period, I find little correlation between volatility and sustainable income. There's a less than 10% correlation between volatility in the first decade of retirement and the sustainable income over a 30-year period. Even when I examined the correlation between volatility over the entire 30-year period and sustainable income, I only found a 32% correlation! Sustainable withdrawal rate has little to do with volatility itself.

This is shocking! I know. It probably goes again everything you know about investing. I know. I know. I felt the same way.

Don't just take my words for it. In an article published in the peer-reviewed Journal of Retirement in 2014, Kenigsberg et al carried out similar research using monthly historical data of US stocks and bonds. They noted….

To further test whether sequence of return (SOR) risk in the first decade overshadows volatility risk in determining the maximum Sustainable Withdrawal Rate (SWR), we ran a regression analysis on historical maximum SWR (as a dependent variable) first with the first decade's real return and then with the first decade's volatility as possible independent variables, using a 50/40/10 portfolio and the historical returns for the 702 complete 30-year periods between January 1926 and May 2014. We found that using the first decade's real return as the independent variable produces an R^2 value of 73%, whereas the regression using the first decade's volatility yields an R^2 of only 1%. Although the use of overlapping periods may complicate this statistical approach, we think the analysis at least suggests a greater influence from sequence than from volatility. Investors may be tempted to use investment strategies designed to produce relatively low volatility (and accept the typically lower returns that come with them) during the early part of their retirements in order to minimize the probability of an adverse sequence of returns. **But this is not necessarily effective. A strategy that produces low volatility may nonetheless deliver a highly disadvantageous sequence of returns because SOR risk and volatility, although not unrelated, are not the same thing.** *A poor SOR can just as easily be the product of persistence in returns (or autocorrelation) as of volatility.*

A tale of two sisters

Take two hypothetical sisters, Mrs Unlucky who started her retirement in 1906 and her much younger sister, Mrs Lucky who started her retirement in 1924. They both invested in a portfolio comprising 50% UK equities and 50% UK bonds.

Over the subsequent 30-year period, they both enjoyed good average return of 5.7%p.a. (nominal) and very similar levels of volatility (about 10.4%) in their portfolio. Their real returns were also very similar, at over 4.3%pa. But in terms of actual sustainable income from their portfolios? It's night and day! For some strange reason, Mrs Lucky's portfolio would have supported an annual withdrawal of twice that of her sister over a period of 30 years.

The following chart shows what would have happened if both retirees took **no income** from their £100,000 portfolio over the subsequent 30-year period.
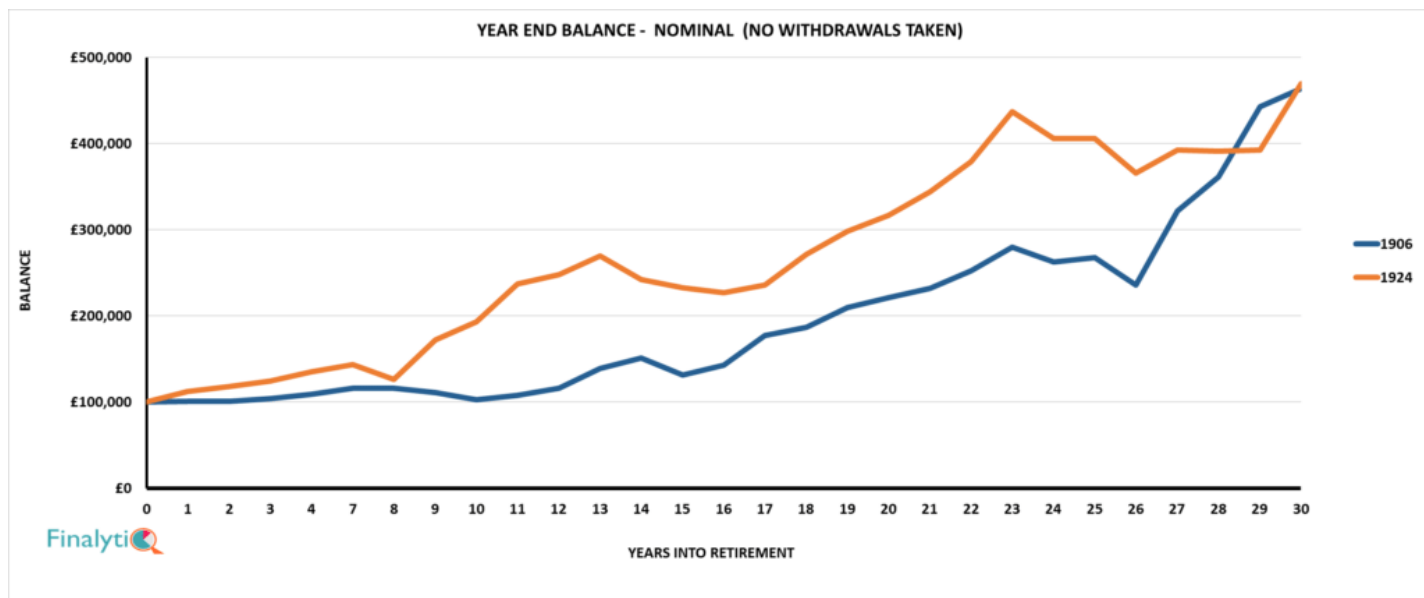
But suppose they both took an **income of £5,000pa** from their portfolios, *without adjusting the withdrawal from inflation* over a 30-year period? Mrs Unlucky (1906) ran out of money while Mrs Lucky (1926) ended up with more than her initial portfolio of £100,000!
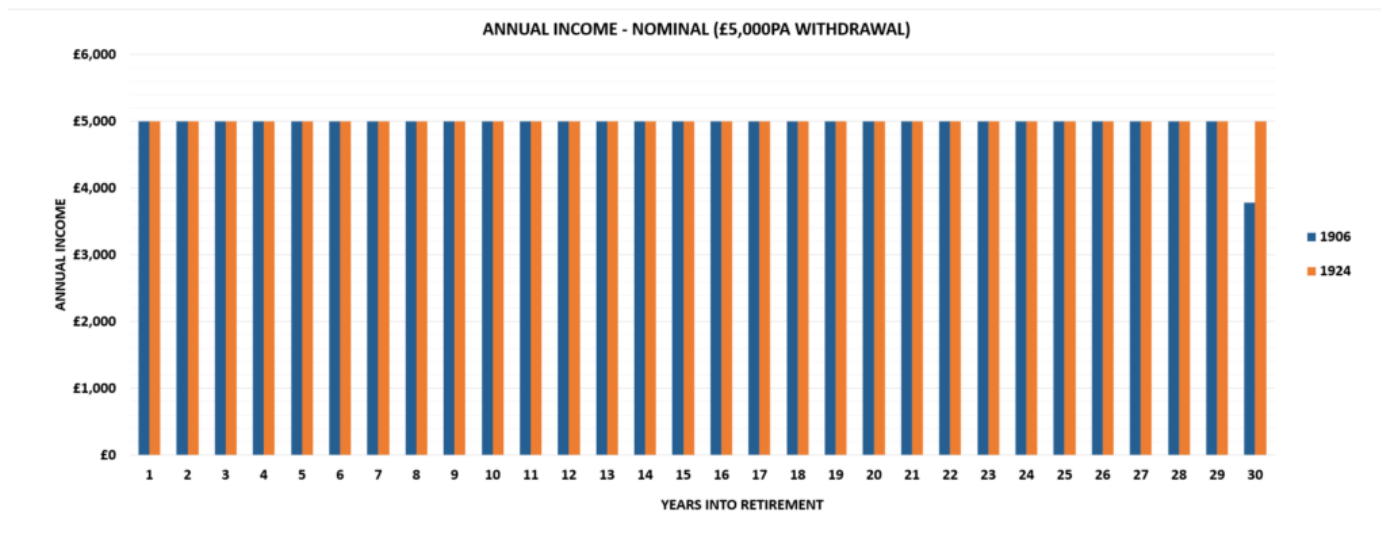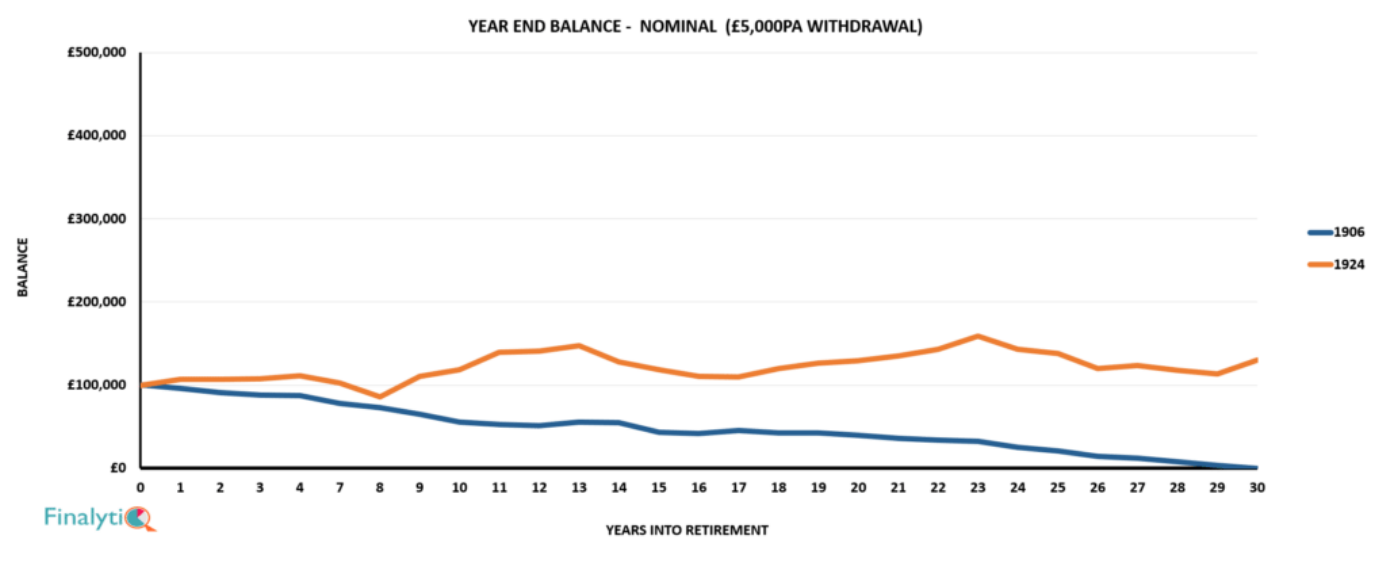
How could that be? Same average returns. Same volatility. But very different experiences in terms of the income from their portfolios. It's very simple; Mrs Unlucky got stitched up by sequence risk. The order of return was unfavourable. The table below shows the summary of portfolio returns in both cases.

	Mrs Unlucky (1906)	Mrs Lucky (1924)
30yr. Nominal Return (%pa)	5.72%	5.73%
30 yr. Volatility (%pa)	10.41%	10.46%
30yr. Real Return (%pa)	4.75%	4.33%
1st Decade Real Return (%pa)	-3.28%	9.82%
2nd Decade Real Return (%pa)	7.04%	2.22%
3rd Decade Real Return (%pa)	10.48%	0.95%

Look a bit more closely and you find that the returns in the first decade of their retirement were the key driver of the income over the entire 30-year period.

In the first decade, Mrs Unlucky got a return of -3.28%p.a. compared to Mrs Lucky's 9.82%p.a. And it didn't matter that Mrs Unlucky's portfolio gave a decent return of 7.04%p.a. and 10.48%p.a. in the second and third decades of her retirement. The damage had already been done.

So, what?

Sequence risk is the primary investment risk in retirement. Not volatility. Controlling volatility doesn't necessarily control sequence risk.

Many asset managers are barking up the wrong tree! The deluge of volatility-managed solutions designed for retirement income most likely won't work. In fact, taking volatility off the table may end up being dangerous for retirees because it impairs return. Add to that the impact of high fees that these products typically charge, they may actually amplify the sequence risk rather than reduce it.

So next time a fund manager comes peddling a *"volatility managed solution for retirement income"*, show them the door!

Abraham Okusanya

Abraham is the founder of FinalytiQ, a research consultancy for platforms, asset managers, and advisory firms. Recognised as one of the country's leading experts in retirement income, platforms and investment propositions, Abraham has authored several papers on these subjects and delivered talks to the Personal Finance Society, The FCA and several conferences across the country.

He holds a Master's degree from Coventry University and an alphabet soup of qualifications, including the Investment Management Certificate, Chartered Financial Planner®, CFP® and Chartered Wealth Manager designations. He was one of 5 finalists for the Professional Advisers Personality of Year Award 2015 but the award went to a more deserving winner, obviously!