The drawdown risk

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Are annual equity returns serially independent? This sounds like an abstruse question, but in fact it holds the key to how much of our pension pots we can safely spend in our retirement.

To see the point, imagine someone who’ll live for another 30 years has just retired with £1m. He takes £40,000 out of this in his first year and the same amount, uprated for inflation, in each subsequent year. He then invests the rest in a mix of equities and bonds: equities have a real return of 5 per cent per year with a standard deviation of 20 percentage points; and bonds have a zero real return with a standard deviation of five percentage points. How likely is our retiree to run out of money before he dies?

Clearly, for high bond weightings he is likely to do so, because he is running down his wealth - consuming 4 per cent of it each year while earning less. For higher equity weightings, however, his spending is more likely to be sustainable. For example, a 60-40 equity-bond split will earn 3 per cent on average, which is sufficiently close to his 4 per cent drawdown as to imply that his wealth will be depleted only slowly.

However, that phrase 'on average' is doing a lot of work. There’s a danger that even over 30 years our luck will not even out and so equity returns will fall short of 5 per cent per year. If we assume that returns are serially independent - so that a bad year is as likely as not to be followed by a good one - then the chance that our retiree with a 60-40 equity-bond split will run out of money is just over 20 per cent. Higher equity weightings have less chance, and lower weightings more chance.

However, history tells us that returns haven’t been serially independent. If they had been since 1900 then we’d expect the standard deviation of annualised 30-year returns to have been 3.5 percentage points. In fact, the actual standard deviation has been only 1.5 percentage points. In other words, equity returns have been less than half as risky as we’d expect them to be if they were serially independent.
There's a simple reason for this. In the past, bad times for shares have led to good times. After the slumps of 1930-31 and 1973-74, for example, the market bounced back strongly. This means that for a long-term investor equities in effect diversified themselves; losses in one year were offset by unusually good returns in the following years. Shares have therefore been quite safe in the long term.

This puts our retiree in a much happier position. An equity-bond split of 60-40 or more means he is almost certain to keep his wealth. Javier Estrada at IESE Business School in Barcelona points out that this is true for US investors as well.

To put this another way, if future equity risk is as low as it has been in the past, then retirees with high equity weightings can spend a decent portion of their wealth in the confidence that their pension pot will be depleted only slowly in the long run. Even if you get hit by a bear market, the subsequent recovery will top up your pension pot.

But here's the big question: what reason do we have to suppose that history will repeat itself? I'm not sure there's an iron law that dictates that 'cheap' markets must recover. This is certainly not true for individual stocks as these can go bust, losing you all your money. And history also tells us that it can be true for whole stock markets. Will Goetzmann and Philippe Jorion have pointed out that many of the national markets that existed in the 1930s subsequently saw a catastrophic collapse. Looking at the history of the UK or US markets and inferring that cheap markets must recover is like seeing soldiers returning from a war and inferring that nobody died. You are committing the error of survivorship bias.

Unless we have a mechanism explaining why 'cheap' markets must bounce back, it would be foolish to rely on history repeating itself. Doing so would be making the same mistake as Bertrand Russell's chicken, who expects the farmer to continue to feed her only to be unpleasantly surprised when he breaks her neck.

However, there is one possible mechanism. It's that policy changes have ensured that stock markets' worst fears haven't materialised. For example, after the 1931 slump governments adopted better macroeconomic stabilisation policies. After the 1970s profit squeeze they took measures to restore profitability. And after the 2008 crisis they printed money to boost equity prices.

If policy-makers continue to do this, then long-run equity returns are indeed safer than the assumption of serial independence would suggest - because there is, in effect, a political put option which limits downside risk.

But will they continue to do so? The danger here isn't merely that they might lack the political will. (One reason why markets have historically feared leftwing governments...
might lie not so much in their actual policy programmes but in the fear that the political put option would become weaker.) It could also be that some risks to equities might not be so easily ameliorable by policy actions - such as, for example, a wave of creative destruction that favours unquoted companies over quoted ones.

My point here is an alarming one. The question of how much we can safely spend in our retirement depends to a large extent on a question to which we cannot give a wholly confident answer. It could be that long-term investors are taking on a lot more political risk than they realise.