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Chris provides financial planning, investment planning and full implementation services to about 100 families.

We are pleased to welcome new clients. New clients should have $1 million or more of investable assets.

Sustainable Withdrawals

Certainly one of the most important issues in financial planning today is the twin questions of how much a retired person should withdraw each year from their portfolio, and what the asset mix of the portfolio should be, to have the best probability of sustaining those withdrawals. The decision will make and break a great many retirees' lives (and financial advisors' careers).

The problem remains acute today (2019) because low interest rates do not yet provide sufficient income for most people, while equities with their much higher expected returns are as volatile as ever.

Interestingly, the solution runs counter to a widely-held idea in the financial and legal worlds. As a result, many planners and advisors will have difficulty grasping the solution.

How should investors (and advisors) handle this tricky problem?

Short answer: Newly retired people in their 60s should withdraw a dollar amount equivalent to 4% of their portfolio. They should expect a high probability that withdrawals can be significantly increased over time and will last 30 years or more. And their portfolio should hold as close to 75%, and not less than 50%, in equities.

(A portfolio weighting of 75% equity runs counter – actually inverse – to an old rule of thumb which says that the retirees' bond allocation percentage should be roughly their age: so a 65-yr old would hold 60% - 70% of their portfolio in bonds.)

That's it. If you are interested in some of the 'why', read on.

Longer Answer: The joint life expectancy of a newly-retired 65 year-old couple is about 24 years. But life expectancy is based on median survival, so fifty-fifty is only half the picture. In the other half is a 20% probability that at least one of them will live for 30 more years. That's a one-in-five chance that one of them lives longer than 30 years[1].

Thirty years is a long time. Inflation of 4% cuts your purchasing power in half over only 18 years. The 10% inflation of the 70s cut purchasing power in half in 7 short years. If you retired in 1950 your cost of living would have gone up two and a half times by 1980.[2]

One-in-five is too high to play Russian Roulette. So trash the notion of getting cautious in your old age. A 65 year-old needs to be thinking long term growth.

Second, the idea that it's possible to determine a single withdrawal rate: a dollar amount, escalated each year for inflation to last 30 or more years into an uncertain future, is a dangerous fiction. Nobody should be under any illusion that it is possible to reach into a box and pull out a correct number.

As we will see, 20 or 30 years simply encompasses too many disparate economic phases for there to be a one-size-fits-all withdrawal number, or an asset mix that you set today and leave on autopilot. So the question really becomes: what is my strategy for today's economy, and what might the signals be for a change in future?

Of course, nothing I say in this essay or anywhere else should be even remotely construed as a prediction of the future. As someone once said, 'The future depends on too many things that haven't happened yet'. We can make plans that have good probabilities, yes, but certainty isn't part of the game.

Third, there is no hiding from risk. If you want 'no risk' I can't help you. (Neither can anyone else). Things that seem certain, such as bonds or a pension, are exposed to inflation (and various other risks as well).

The First Law of Thermodynamics applies to risk: different investments just shift the risk from one place to another but it never goes away. If you think, or are told, that an investment is 'low risk' don't be fooled, because the risk is there somewhere. A bond just moves the uncertainty out to the long-term future.

Even government pensions – the envy of every non-government worker – have limits and hurdles to their inflation indexation, so they are not fully protected and inflation will likely corrode their purchasing power to some degree[3] .

Yes, an annuity is available that guarantees payments indexed for inflation at 3% for the rest of your life. One million dollars will buy an annuity payment stream of $30,000 per year or the equivalent yield of 3%[4]. This certainly helps address the big questions. But an effective yield of 3% is a quarter less than the 4% I'm suggesting. (The 10% inflation of the 70s would still kill you, and an annuity leaves nothing to your estate).

Guarantees are expensive in an uncertain world.

Finally, much of the retirement 'analysis' out there is based on flawed methodology, which leads to either unnecessarily pessimistic or overly optimistic conclusions, almost always an attempt to sell you something.

But here's the good news: I believe that by following the advice in this paper, investors have a very high probability of a long and prosperous retirement.

Which brings me to the 'Sequence of Returns Problem'.

Sequence of Returns Problem

When most people - including all financial planning software and a great many advisors - think of withdrawals from their portfolio, they think in terms of a long-term average return. They think if the portfolio's expected return is 5% or 6% or 7% (a reasonable expectation from an equity-oriented portfolio), they can withdraw that amount.

Reasonable, but wrong. An average return is fine in the asset accumulation phase – while we are saving for retirement. The way compounding math works, it actually makes no difference whether the good years are early or late in the game: you end up at the same place at the end[5].

But the game changes when you are taking money out of your portfolio.

Thinking in terms of long-term averages gets you into trouble in retirement because markets don't work that way. Like fording a river whose average depth is 2 feet: the critical detail is the maximum depth. The investing parallel is the variability of the returns: specifically, the maximum short-term decline.

Say you estimate your long-term return at 6%, and so you set your withdrawals at 6% or $60,000 on a million dollars. If you then have a decline in the first year of say 20%, and you withdraw your 6%, you are down 26%. If the markets don't recover right away and another year goes by, you are down 32%; another year of zero gets you down 38%. (It's actually worse because your fixed dollar withdrawal becomes a higher percentage of the remaining portfolio.) You erode your capital base so that the portfolio cannot recover when markets do, and you quickly go over the edge to ruin.

On the other hand, if you start with a string of good years, and withdraw 'only' 6%, your portfolio can continue to grow, and you can quickly reach the point where you never run out of money.

This is known as the 'Sequence of Returns problem', or more particularly the sequence of bad returns. The point is you can't afford a string of poor years, especially early on. The higher your regular withdrawal rate, the less variability you can stand. The traditional antidote is to add bonds to the mix because bond prices were stable and they generated interest income.

But today, with bond yields in the 2% range and inflation at 2%, bonds just preserve capital in the short term. Over the longer term, withdrawals and inflation will destroy the capital in bonds. So the more you have in bonds, the lower your likely long-term return, so the less you can take out anyway. This is the curse facing today's retirees.

Sequence of Phases

The second reason averages don't work for planning is the key economic variables can deviate from their averages for a long time.

The last 100 years is best thought of a series of phases, not 100 individual years. These phases had distinct economic and financial characteristics, during which different types of investment assets behaved very differently. Looking only at the averages obscures the fact that the river can be 6' deep for a long time. Like decades.

The Depression, the booms of the 50s and 60s, the 10% inflation and zero market returns of the 1970s, followed by the great bull markets of the 1980s and 1990s, and the financial crisis of 2008/9 bringing interest rates to zero; each had very different effects that played out over years on the various investment asset classes.

Thus people who retired in these different phases had very different experiences. What were those experiences and how do we invest today?

Research

The best study I have found[6] looks at how various asset mixes and withdrawal rates would have fared using the actual sequence of historical returns for retirement beginning in each year since 1926. William Bengen's methodology illustrates the impact that the actual economic phases over that time had on retirement incomes. Studying the actual sequence of returns allows us to correctly perceive for example, the worst-case scenarios of the 1930s and the 1960s, which other types of simulations do not[7].

3% Withdrawal

Using an initial withdrawal of 3% of the portfolio value, with increases each year for the actual inflation rate, and with an asset mix of 50% bonds and 50% US stocks, your money would last indefinitely for any retirement year in the 50 years from 1926. (Thus the life annuity referred to earlier paying 3% and indexed to inflation at 3% isn't much of a guarantee.)

4% Withdrawal

With an initial withdrawal rate of 4% and a mix of 50% stocks/50% bonds, you begin to see the effects of the major negative economic cycles: in most scenario years your money would last indefinitely, except for people retiring in the late 1930s and 1963 – 69, who would have run out of money after about 35 or 40 years. The catastrophe of the 70's is beginning to poke its nose into the tent: retirements in the late 30s were eventually ruined by the inflation and bear markets of 1969 and 73-74, while retirements in 7 out of 10 years between 1963 and 1973 were hit immediately - and eventually ruined - by the 1969-74 troubles.

Still, a 4% withdrawal rate holds very good odds.

What happens if we increase the weight in equities?

75% Equities

At a 4% withdrawal rate and 75% equities, your money will have lasted at least 30 years even under the worst-case scenario since 1926. The strong equity market recovery after WWII was able to carry the late 1930s retiree through the 1970s and her money would last indefinitely.

Only retirees beginning in the 5 years 1965-69 would run out, and those only after 30-35 years. This is because the bear markets of 1969 and 73-74 inflicted so much damage, and inflation through the rest of the decade cut long bonds in half while boosting withdrawals, that the portfolio eventually succumbed.

Still 30 years is very good odds.

A 4% withdrawal rate has a decent probability of actual growth in retirement. In 70% of scenario years your portfolio would be well over its initial value after 20 years, and in 40% it would be more than double the initial value[8].

This is because with the exception of retirements in the late 1920s or those nasty late 1960s, the superior growth of equities eventually outruns inflation and the portfolio continues to grow.

A 4% withdrawal rate and high equity weighting are a good bet.

5% Withdrawal

The camel of retirement ruin is much further into the tent with an initial withdrawal rate of 5%. History shows that 5% is sustainable by a 75% equity portfolio for at least 20 years in all scenarios since 1926 except 1966-69, and for 30 years except for retirements in 1929, 1937 and most of the 10 years between 1963 and 1973. In 32 out of 50 scenario years - almost 65% of the total - a 5% withdrawal rate is sustainable indefinitely by a 75% equity portfolio.

This means if you are sure that it's not the 1930s or 1963 - 1973, an initial withdrawal rate at 5% is possible. But 20 years isn't long enough for most 65 year-olds. And 65% odds of success is the same as 35% odds of failure. Not a good bet.

It is very important to see that increasing the withdrawal rate by just one percent from 4% to 5% shortens the bulletproof horizon from 30 to 20 years, and even that won't work if you are hit by a replay of the 70s. The picture is sensitive to small changes compounded over time.

Withdrawals of 5% are about as sustainable for 20 years with a 50/50 asset mix as the 75% equity mix, but you run out of money at different times for different reasons. The lower volatility from bonds get you through the late 60s (just barely), but inflation gets you in the end because the bonds are eventually overtaken by inflation (where, as we saw earlier, the 75% equity can pull ahead of inflation).

The message is a different asset mix with a 5% withdrawal rate is a bit like shuffling deck chairs: if you hit the iceberg of the 70s it doesn't really matter.

Bengen's data shows that withdrawals of 6% can last 30 years or more in 20 out of 50 scenario years, but you must have a string of good years to start off, 30 years is a minimum target for most 65 year-olds, and 40% odds is a lousy bet.

The point is that the odds of success drop dramatically as withdrawals increase from 4% to 6%.

Replicating the Rhymes of History

The study shows that the positive and negative retirement outcomes are driven by the broad trends of the cycles, especially those that happen to dominate the first decade of retirement[9].

Government bonds, for instance, did well during the Depression as deflation multiplied the purchasing power of the interest income. So Depression people thought bonds were safe and stocks were the kiss of death. Then bonds lost half their value in the 1970s as inflation and interest rates rose to historical peaks (bond prices rise when rates fall).

Stocks also did poorly through the 70s as double-digit inflation corroded, and pessimism eroded, the sky-high valuations of the 1960s (exception: resources and real estate). The triple-whammy of 10% inflation, poor bond and stock returns through the 70s was as bad for 1960's retirees as the Depression. In the early 80s, when I entered the business, people thought both stocks and bonds were a waste of time, and all you needed was oil and real estate.

Bonds subsequently did as well as stocks – both were fabulous through the 80s and 90s. Bonds were driven by declining interest rates for 25 years to 2016 when rates stopped falling. Now, with rates at generational lows, the probability of another tailwind for bonds is nil, yet many retrospective types continue to recommend traditional bond allocations. They think bonds are safe.

What are the chances of another decade of zero returns in equity markets?

There have been three periods in the last 100 years where US equity markets have had a zero return for 13 or more years: 1929 – 1944, 1968 – 1982, and 1999 - 2013.

The key hallmark to the beginning of each of these periods - The Roaring Twenties, the Nifty Fifty of the 60s, and the Tech Bubble of 1999 - was widespread speculative euphoria and New Paradigm delusionary thinking that drove market valuations to generational highs.

Since the last of these ended in the US in 2013, and seems to be ending for Canada in 2019[10], I believe it will be another generation or two before it happens again – like a war, when those who lived through the last one are no longer around to tell how bad it is.

Today

Today the sun shines: the 30-year bond is showing no sign of inflation anywhere near the horizon. We have a booming US economy with unemployment at 1950 levels. The economy today is driven not by recovery from the devastation of the war, but by the recovery of 1.3 billion people - one quarter of the world's population – from 50 years of Communist deprivation.

We have gently rising or flat interest rates with low inflation, like the 50s and 60s. Mildly negative for bonds, fine for equities.

Importantly, another rhyme with the past is from the 1980s. Equities in the 1980s were driven by strong earnings growth that investors were unwilling to recognize. Investors remained traumatized by the inflation of the 70s, the losses in bonds, and the 81-82 bear market, which together made up the 2nd of the decade-plus doldrums referred to above.

So today we actually have the best of the 50s and 60s: solid economic growth (in China and the US anyway) with little inflation. Equity market valuations are modest because investors remain scarred by the crisis of our age in 2008-9.

My view is that we are in very normal times, and should expect very normal market behaviour. I have no idea, of course, and neither does anyone else, but the emotional ebb and flow of the news cycle seems to me no different than it has been in the

30+ years that I've been following it. We will certainly experience a bear market here somewhere, because we always do, but there is a long way to go before euphoria drives valuations to blow-off top levels like 1929, 1968, or 1999.

Flexibility: Bear Market

Other studies show that another very powerful thing you can do to achieve both a higher withdrawal rate AND virtual certainty that you will never outlive your money is to adjust the withdrawals to fluctuate with the portfolio return. You simply reduce your withdrawals after a bad year, and increase them again after markets recover[11].

Other studies propose a formula that adjust the withdrawal by both the previous year's return and the remaining years of life expectancy[12]. As your life expectancy declines, you can withdraw a larger percentage of your portfolio. In practice a 10% portfolio decline because of market volatility would be partially offset by one less year of life expectancy so the withdrawal would decline by about 6%[13].

Note that this methodology ensures you don't run out of money, but, like an annuity, you have no money left, so you may want to apply it in a limited way. I'm happy to discuss the pros and cons of these complexities.

Inflation: Flexibility

Virtually all financial planning software assumes that withdrawals increase each year for inflation, often at 3%. This is reasonable, but annual increases are the reason most standard financial plans eventually collapse. Much better to increase your withdrawals after a few good years, when you are ahead of the game.

In the meantime, stick with 4%, hold as much equity as you can stand, and be flexible on spending.

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Endnotes

1   Society of Actuaries Retirement 2000 Table, per Vanguard Group Inc, 'Advice and Retirement'

2   www.in2013.com $250 was required in 1980 to buy what cost $100 in 1950

3   A typical teacher's pension has an inflation indexation hurdle of 2%; if inflation is 1.9 for the next 20 years the increase is not triggered, while the reduction in purchasing power is 32%.

4   Estimate based on joint life couple aged mid-60s.

5   OK to be more precise it's actually better to have the volatility in the early years if you are saving regularly because you buy more units at lower prices, so the capital is there for the good years.

6   William P Bengen, 'Determining Withdrawal Rates Using Historical Data', Journal of Financial Planning, October 1994. For retirements in 1976 and later, he extrapolated returns at the average from 1992 onwards.

7   Some analysts use Monte Carlo simulation, which randomly generates many iterations of retirement scenarios using actual market returns. The problem with Monte Carlo is it treats each year as independently probable, so you'd have an equal chance of 1929 each year of each iteration, which is not how markets behave. Markets exhibit positive serial correlation, which means some number of positive years punctuated by some number of negative years. Not quite cyclical, not quite random. Monte Carlo buries the serial correlation in a sea of randomness.

8   Keep in mind 70% odds of growth is also a 30% chance of having less than you started with.

9   Markets are probably random over short time periods like hours or days but over longer periods exhibit positive serial correlation, which means that a trend tends to continue... until it changes.

10 The correction of December 2018 took the TSX below its pre-crisis high of mid-2007 - 12 years ago, per Trading Economics. The S&P500 by contrast is almost double its 2007 high.

11 A variation is to redeem the same number of units each year, so the dollar amount fluctuates with the unit value.

12 'The Only Spending Rule You Will Need', Barton Waring and Laurence Seigel, Financial Analysts Journal, February 2015

13 Tretiakova and Yamada, Rotman International Journal of Pension Management, Spring 2013, and Waring & Siegel propose the withdrawal rate mimic an annuity payment, ie, 1/#yrs life expectancy x recent portfolio market value. In your first year, with a life expectancy of 25 years, you would take out 1/25th of your portfolio – which happens to be 4%. [$40,000 on a $1million] If your portfolio declines by 10%, the next year you would take out 1/24th x $900,000 which works out to $37,500, a decline of 6%.