

Annuities and Risk in Retirement

Ron Bewley PhD, FASSA

0. Introduction

The typical view about risk and retirement seems to be that people should take on less risk the older they get, and equities are not usually suitable for investors in retirement - except, perhaps, in a balanced fund. With life expectancies increasing, some people will be spending more time in retirement than in the workforce accumulating wealth. One simple solution to accumulating wealth for retirement is just to work longer. Another is to think more deeply about how we manage our investments during retirement. In this paper, I explore the latter course of action.

1. Longevity risk

Through diet, healthcare and other improvements, life expectancy has been steadily increasing over time. For example, when a current 65 year old was born in 1947, life expectancy for a male was then 66. In that same year, a 65 year old was expected to live another 12 years - to 77. This *conditional* life expectancy of 77 is greater than for the newborn's 66 because, by definition, death had been avoided by the 65 year for that period of time - while the newborn was to face an uncertain infancy and beyond.

Moving forward, the same official data source reveals the life expectancy of a boy born today has increased from 66 in 1947 to about 80 and for the current 65 year old - from 77 in 1947 to 84. Women are typically expected to live about three years longer than a man of the same age.

Planning for retirement is difficult not least because we don't know how long an average person will live but also because we do not know how far from average each of us will turn out to be! Take myself. At 63 - and if I am average - I have a 50% of living past 84 - and a 50% chance of not making it that far. If I make it until 84 - and without updating the life expectancy data taking future improvements in healthcare, etc into account - I would then have a 50% chance of making it past 90, a 15% chance of making it past 95 and a 5% chance of becoming a centurion.

There are two ways to cope with this so-called longevity risk in retirement planning. Either the retiree buys appropriate insurance - called a guaranteed annuity - or he/she has a flexible investment strategy to help cope with the unforeseen. There are many sorts of annuities with very different outcomes and costs - just as there are many different sorts of flexible investment strategies - and they are all dependent on life expectancy, current age and the current age of any spouse or partner. It is not possible to cover all the possibilities in a short note such as this and so I will use a few simplified cases to provoke discussion on how one could approach setting up a retirement plan.

2. ASFA guidelines on 'comfort'

ASFA (Association of Superannuation Funds of Australia) put out guidelines on what people might save or spend in retirement for a comfortable lifestyle and these data are regularly updated. Currently, ASFA says that a couple needs \$55,080 per year to maintain that lifestyle but, of course, comfort means different things to different people. I suggest that this standard is definitely 'liveable' but less

than that many of us would have dreamt about - planning big trips, hobbies and dining out with family and friends on a regular basis.

A single person needs - by ASFA standards - to spend \$38.43 per week on clothing for comfort but a couple only needs an extra \$19.21 for clothing to experience the same degree of comfort. It is less than obvious to me what the economies of scale are in clothing. Why is the couple's expenditure not double the single amount?

Similarly, leisure expenditure for the single person is \$218.07 per week and only \$80.78 extra for a couple. I wonder how this economy of scale works in practice. The best one though in my opinion is for transport. A single person spends \$138.92 per week and a couple only \$2.64 more. Do they do everything together in one car? I can understand that two people might share the same car but doesn't either ever get a bus or a taxi when they are doing different things - or simply drive more by taking turns to see different groups of family and friends? Nevertheless, this is the industry standard and I will accept it for this research note but suggest those considering retirement to check what this all means for themselves long before the accumulation phase of retirement funding ends. I suggest a couple should spend closer to double the single person's comfort level (\$40,297) than the advised \$50,080 to experience the same degree of comfort.

3. ASFA guidelines on saving

ASFA has another table stating that \$850,000 in savings is needed to produce a comfortable lifestyle for a 65 year old couple. This figure allows for inflation. Depending on eligibility for a part aged pension - currently \$31,643 for a couple, less than \$850,000 may be sufficient. Of course, in this changing world of retirement ages and austerity, one risk that all people should consider is the risk of what the rules and amounts of aged pensions might be at some point in the future - particularly the far off points! Since there are asset and income tests on aged pensions, I have ignored full or part aged pensions in the following calculations. Readers should consider their own particular circumstances.

The 'fine print' accompanying the ASFA table is that it is assumed that the return on the couple's savings is 7% pa after tax and fees, and inflation is 3% pa. The fund runs out after 22 years when the couple, if still living, have to go on a full aged pension as there would be no personal savings left. At the moment, my understanding is that there is no tax payable after 60 years of age if the fund is in pension mode. Of course, all tax assumptions should be checked by a qualified professional since there may be special circumstances and there are limits on what might be taken out of a superannuation fund which depend upon age. Because of the complications of different circumstances such as some funds being in pension mode while others are in accumulation, I have ignored pension limits in this note.

Running out of funds after 22 years in the ASFA assumption for comfortable living is an easily understood risk. Of course the assumption of retiring at 65 in the ASFA case increases the chance of the retirees not living past 87 - as opposed to 82 in my example. From Section 1, this ASFA plan could leave a person retiring at 60 having to spend many, many years solely funded by the aged pension - and that pension might not even be there in the same form when he or she gets there. Even by assuming a 65 year old retirement many men and women will live well past 87.

What might be less obvious to the less experienced investor are the risks associated with the assumptions of the return on the fund and the level of inflation. If the 7% return remains the same but inflation is 4% pa and not the 3% pa assumed by ASFA, the fund runs out after 19 years - about three years quicker than with the ASFA assumption. Of course, there might be some relationship between the return on the fund and inflation but there is no such relationship that is precise.

The Reserve Bank of Australia (RBA) has a target of keeping inflation within a band of 2% - 3%. The RBA has fulfilled this goal well in recent times but there might well be times when it cannot keep inflation in the range sometime in the future.

In my lifetime, I have experienced lengthy periods of controlled inflation as we all have experienced in recent times in Australia. But I also recall in the mid 1970s (in England but I also think in Australia) that inflation was greater than the interest rate on my credit card for a while. It would only take a short period of a surge in inflation to derail this ASFA investment strategy.

My interpretation of the 7% pa return on the fund agrees with what people commonly assume for a balanced fund - that contains cash, bonds and equities. That 7% assumption is an average over time but, since the fund is being drawn down, fluctuations in the actual return over time on the fund could seriously deplete the fund prematurely. Equally, a good run of returns could increase the life of the fund. The volatility of the return on the fund is not taken into account in the ASFA calculations.

4. Guaranteed lifetime annuities

The income stream in Section 3 can be thought of as an account-based income stream or annuity where the retiree could take out some lump sums from time to time - after 65 years of age - with obvious consequences for longevity risk. But there are many other sorts of annuities - one of which guarantees the annuity no matter what the rate of inflation, implicit returns to keep the fund going, and longevity risk for the holder of the annuity. If the lifetime annuity or pension is to be passed on to a surviving partner after death, it is called a reversionary pension. Typically these pensions cannot be passed on to annuity owner's children.

Since significant risks are being taken off the table, the lifetime annuity costs a lot more to purchase than, say, an ASFA-style annuity. One quote I recently received for a hypothetical couple - both aged 60 - for a comfortable lifestyle was about \$1,340,000 - not including any fees charged by the adviser. For a reversionary pension, the cost increased to about \$1,590,000. In my opinion, the sort of people who have those sorts of retirement savings would not call the official definition of 'comfortable' (\$55,080 pa) very comfortable at all. But let me analyse this concept further.

If the \$1.34m were placed in the 'ASFA balanced fund' at age 60 with a 7% return and inflation was 3%, the couple could each live to 100 and would still have nearly \$1m left to give to any grandchildren (or keep it for very old age) so it is not really longevity risk that one is paying for. Given that on death there is no money left for anyone's inheritance with this option, the guaranteed plan might be thought of as particularly expensive. Of course, those who die young, in effect, subsidise those who live much longer.

However, if we increase the inflation assumption from 3% to 4% (seemingly an innocuous assumption) - but keep the fund's returns at 7%, the fund is exhausted at about 102 years of age. That small increase in the inflation assumption costs the fund about \$1m, 40-years-out in today's dollars. Of course changes to the fund's assumed rate of return have similar effects. Inflation risk is very expensive to cover indeed.

For those who do not have a 'lazy' \$1.34m at hand, you can, of course lower the annuity payments and lock in a life that you consider to be less than comfortable with no prospect of a better future before you die! Rather than that, I would like to introduce the concept of an alternative strategy that can increase the life of your savings.

5. A flexible investment strategy

A major problem with some annuities is that the retiree is locking in a future with incomplete information. For example, the couple that, for whatever reasons, gains information during retirement that they will be among half of the people that do not outlive the average age might rue having given

away the right to commute their fund and spend now. Or perhaps one partner passes away early in retirement and the survivor then wants to adopt a different lifestyle - either less or more expensive now that he or she is single.

Most investors are familiar with the pie chart associated with asset allocation. A circle is divided into sectors of different areas and colours to denote the proportion of wealth held in different asset classes. While this way of thinking is very good for asset accumulation, I believe that there is a much better way of thinking for retirees.

My views on this topic started with a paper I wrote with three colleagues (at the Commonwealth Bank of Australia) in 2003 and presented at a 'Retirement Conference' held at UNSW while I was still Professor of Econometrics at that institution. The conference proceedings were published in a book in 2007.¹ The theme of our paper was the need to take on a risky asset in retirement for certain groups of investors because of longevity risk. I followed that paper up with a series of presentations on the theme *Bread, butter, jam and cream* while I was at the Commonwealth Bank of Australia, first as General Manager Quantitative Research & Investment Strategy and then as Chief Investment Officer in CBA's Private Client Services. The notion in that stream of work was having three pools of funds. The first almost guarantees a very basic lifestyle - bread and butter living. The second is a bit riskier and allows for some luxuries - the jam. Finally, a much riskier investment might provide for longevity or bigger luxuries like extended overseas trips - the cream.

By working out how much one thinks that one might need, or like, in each category of bread butter, jam and cream one can work out what one's asset allocation should be and by reverse engineering - and not just comply the simple pie chart! My current thesis - now that I have retired from both my university position and my bank position - is that it is sometimes much better to think of assets in segregated funds or 'buckets'. The possibilities for this strategy are many and varied I will but first consider just two buckets: one for cash and one for equities. Cash might be term deposits or extremely safe fixed income products.

If there are no draw downs nor additions, my distinction between a single fund or bucket and a segregated set of buckets is irrelevant. However, if the draw downs in retirement are first taken only from the cash bucket, the equities bucket has more time to grow and iron out short-term fluctuations. This segregation is particularly important when the 7% balanced fund or some other assumed return for equities is allowed to vary through volatility over the life of the fund. Of course, as one gets older, the proportion of funds in the riskier asset - equities - gets bigger in the segregated strategy. These risks must be thought about before starting such a scheme. But, given time to accumulate and the flexibility of choosing when to switch the equities into cash, this scheme is much less risky than a typical equity holding - in my opinion.

If we return to the \$1.34m guaranteed example - the fund never runs out unless, of course, the provider goes into bankruptcy - as in a Lehman-Brother-type collapse! In my first 'bucket list' retirement plan for our 60 year old couple, let me take an even more conservative approach than ASFA. I will assume inflation at 4% pa not 3% (a change in an assumption that seriously depleted the funds in an earlier example) and cash at 5% giving a return of only 1% pa after inflation not the 7% return giving a 4% return after inflation as in the standard ASFA example. For equities, let me assume dividends at 4% (currently over 5%) - which, compared to my previous research at the bank is a modest assumption. If I also assume dividends at 80% franked, the so-called grossed-up dividend is 5.4% pa. I also assume 5% growth in equities which, from other research I have published seems

¹ Who's Afraid of the Big Bad Bear? Or Why Investing in Equities for Retirement is Not Scary and Why Investing Without Equities is Scary (with N Ingram, V Livera and S Thompson) in H. Bateman (ed.), *Retirement Provision in Scary Markets*, Edwin Elgar: Cheltenham, 14-44, 2007

conservative (I believe 7% is a more usual assumption). If we put \$1m in the cash bucket and the rest (\$0.34m) in equities, the results are quite amazing.

The first cash bucket runs out at aged 80 but then the equities are moved from its bucket into the same cash fund to replace the depleted funds - and there is now no longer an equity component. Even at 4% inflation, the fund exceeds a value of 1m every year in today's prices until the retirees are 84 when the fund is drawn down in cash to leave a sum of \$200,000 at aged 100!

So if I compare this bucket strategy with the guaranteed annuity, not only can the couple access lump sums or leave money for the grandchildren in the flexible arrangement, they have about four years money or more at aged 100 should they live that long. Of course not all risks are covered but how many of us hire security guards and use bullet proof cars to drive to work in Sydney in case of a terrorist attack? Different people may have different risk tolerances.

Let us now move to a three-buckets scenario: cash, a balanced fund, and equities. For simplicity, let us put half a million each in the cash and balanced funds buckets and the rest in equities. I have made no serious attempt to optimise this allocation among buckets. I retain the previous assumptions and do not draw down the balanced fund nor equities until cash is nearly exhausted. The balanced fund is transferred to cash at that point and the equities bucket is not drawn down until the other monies are nearly exhausted. Then the accumulated 'never touched' equities funds that most retirees think are too scary are moved across to cash - but they have possibly grown substantially while the pension is taken from the relative safety of cash.

In this stylised case, the first cash bucket is exhausted after about 10 years when the balanced fund (Bucket 2) proceeds are moved to cash. The recharged cash fund now runs out at about aged 80 when the equities are sold and moved to cash. In today's prices the fund has only 'spent' about \$300,000 on supporting the couple comfortably until they are 86 since they still have over \$1m in their fund! They would have over \$300,000 left in today's prices at age 100.

If I now go to what I think are more reasonable assumptions of 3% inflation (not 4%) as with ASFA and 7% on equities (not 5%) the couple has more than \$2m in today's prices at aged 100 - more than they started with. More importantly the couple never has less than the amount that they started with at 60!!! But watch for those limits on draw downs. Some cash might need to be taken out of super and put into a non-super account.

Effective investment strategies are complicated and no paper such as this can solve anybody's problems. I hope this paper is food for thought. The practical wrinkles are that, with say equities, the investor does not have to wait until cash is exhausted until the equities are sold - it could be a bad time for equities. In good times, a little might be taken off the table - just to be sure. And why stop at three buckets? And why not have a bucket of equities from which only dividends - but not capital - are drawn when needed?

6. Five buckets

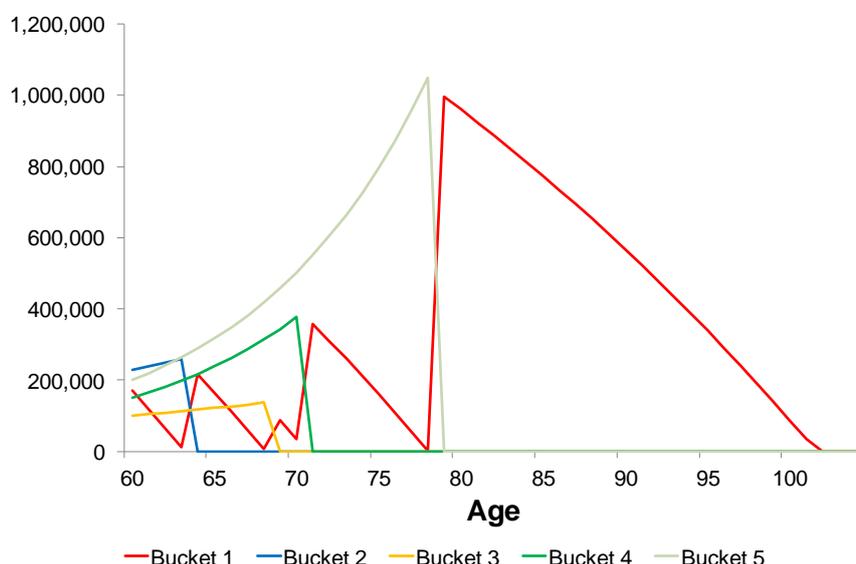
In order to show what might be achieved with a bit of thought, I built a calculator for a five-bucket model and I played around with it for just a few minutes - no more. I started with the same \$850,000 that ASFA starts its example with but I assumed retirement at age 60 not 65. Bucket 1 is cash (in my example) which I assume returns 5% with 3% inflation. In my example, any pension is always taken from cash and that is not a volatile asset. I chose two balanced buckets for Buckets 2 and 3 using the same assumptions as ASFA - 7% return and obviously again 3% inflation. I use two buckets with the same asset so that some of the fund (Bucket 3) can keep working at 7% while Bucket 2 has been transitioned into cash at 5% to keep the pension safer.

I assume Buckets 4 and 5 are 100% equities - but high-yielding defensive stocks. I assumed a dividend of 5% fully franked and a capital return of 5.5% for these buckets. In each case, as cash runs out the next Bucket is passed across to cash.

Recall that the straight ASFA example runs out at 82 - after 22 years - if the people retire at 60. A single bucket approach using the current example assumption of returns and my allocation to each bucket would have an assumed return of 8.9% including franking credits and runs out after 94. Of course, market volatility could play a big role in either the ASFA or single bucket approach but the single bucket approach would likely be riskier as the expected return is higher. However, the 5 bucket model does not run out until the couple is 101!

Since different people have different tolerances for risk the different approaches cannot readily be compared since the equities in Bucket 4 do not get used for the first 9 years. At least until that point the 5 bucket approach is relatively conservative. The accumulation and run down of the buckets for this example are shown in the chart.

Chart: A stylised example of how the value of each bucket might change over time



7. Conclusions

I assume that everyone is aware of the 'advice' disclaimer. Basically there are so many variables in everyone's life that what is 'good for the goose might be bad for the gander'. This note was meant to be a thought piece to help people ask the right questions of their advisers.

The main take-away for those that followed the argument so far are as follows:-

- 1) Stylised examples can be improved upon - perhaps massively. Consider not waiting for the equities bucket to be sent to cash on the prescribed day but take profits early if they equities happen to have been doing well.
- 2) Having a smaller pool of discretionary money - say in equities (if you can afford it) - can be used to great effect for big holidays, health issues and the rest. Time the holidays to suit market conditions.
- 3) Simple asset allocation decisions work differently in accumulation and pension modes. Tax and limits on draw downs must be observed in practice.
- 4) We can insure too much risk away. Imagine having a zero excess on car insurance unless you are a terrible driver.

5) Decisions locked in cannot always be changed even if circumstances do. Flexibility is a big offset for risk.

6) If you die early, who do you want to benefit - your family/friends/charity or someone you don't know who happens to live longer?

Woodhall Investment Research Pty Ltd

ABN 17 141 486 160

General Advice Warning: This note has been prepared without taking account of the objectives, financial situation or needs of any particular individual. Any individual should, before acting on the information in this note, consider the appropriateness of the information, having regard to the individual's objectives, financial situation and needs and, if necessary, seek appropriate professional advice.