Impact of Investment Risk
on Retirement Funding

Equities are more risky than bonds and cash, right? In this note we analyse this question in the context of the impact of investment risk on the ability of superannuation investments to fund retirement incomes.

And the answer is: "it depends": in many cases the wealth creation potential from "risky assets" is critical to the level and risk of retirement income outcomes.

Summary of results

The adequacy of superannuation savings to fund retirement can be measured as the likelihood that one can draw a specified target retirement income; typical targets are the ASFA Retirement Standard[1] modest and comfortable lifestyles for couples.

Our results can be summarized:

Likelihood of funding target retirement income

- *a low risk investment strategy* is generally less likely to fund a target retirement income, ie it increases risk of an inadequate retirement
- *a typical balanced strategy* to growth assets is expected to benefit most members, even at the time of retiring
- *high growth strategies* benefit younger members and potentially provide benefits for the less adequately funded

These outcomes are not surprising, but the marketing of many retirement products suggest otherwise.

We propose a way to think about the impact of investment risk on retirement incomes as the *sustainable retirement income estimate;* the income we estimate will have a good chance[2] of being achieved in retirement. This measure incorporates the tradeoff between investment risk retirement incomes and longevity, eg;

- *increased investment risk* generally improves the sustainable retirement income
- *even at retirement*, a balanced strategy has a better likelihood of delivering a high retirement income than a low investment risk strategy, but thereafter the risk from additional growth assets generally reduces these benefits

Sustainable retirement income

This is contrary to the implication of some glide paths strategies.
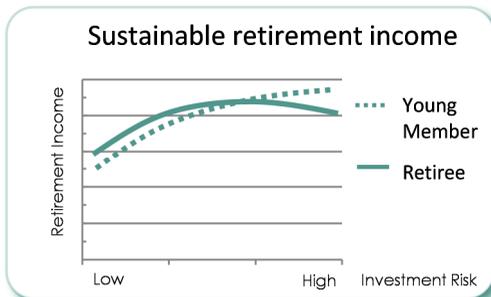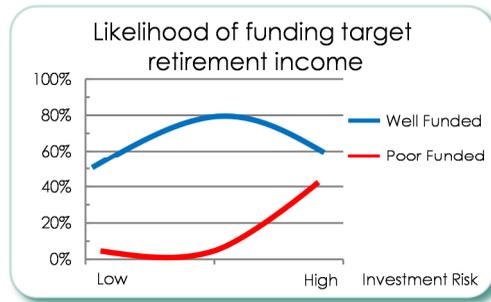
Results: For those who like more detail

To provide some typical examples that illustrate the summary, we consider first a 20 year old, then a 50 year old member with a reasonable balance and finally a member retiring at age 65. See page 4 for further details and assumptions.
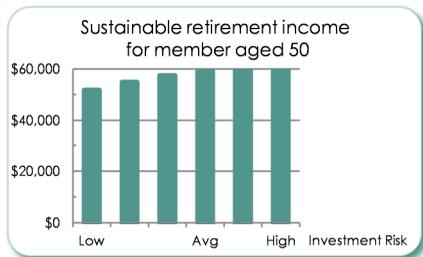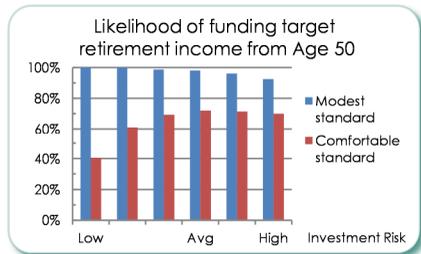
Mr Young - age 20

We assume a zero initial account balance plus contributions at the SGC rate applied to the AWE based on the member's age; hence Mr Young's retirement income is funded from future contributions and investment earnings. The sustainable retirement income for all investment strategies is between the ASFA modest and comfortable lifestyle. However, the impact of increasing investment risk on the likelihood of achieving these two standards is opposite; the
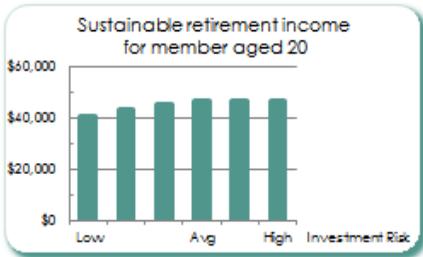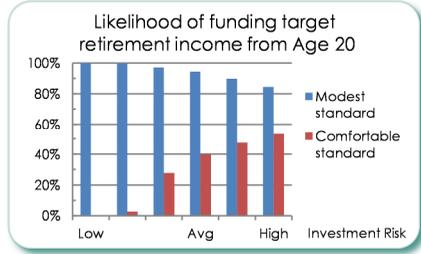
probability of achieving a comfortable standard increases from 0% probability whereas for a modest standard it decreases from almost 100%. This illustrates the summary on page 1. We believe that another way to look at this is the sustainable retirement income measure. This increases with investment risk from the lowest risk strategy and flattens at higher growth strategies. This measure is analogous to a risk adjusted outcome.

Ms Middle - age 50

To illustrate the well-funded case mentioned in the summary, Ms Middle has an account balance of $550,000 plus SGC related future contributions. Ms Middle now has a reasonable chance of achieving the ASFA comfortable lifestyle if her investment strategy from age 50 has at


least a moderate allocation to growth assets. A low risk strategy significantly increases the risk of not achieving the ASFA comfortable standard whereas higher risk investment strategies only slightly reduce the chance of retirement adequacy.
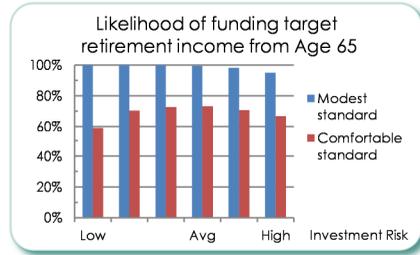
Ms Middle's sustainable retirement income further reflects this outcome as it peaks for a typical balanced strategy and is essentially flat for further increases in investment risk.

Mr Retiree - age 65

We consider a well-funded Mr Retiree who has a $950,000 account balance at retirement. We note that investment risk has a reduced impact for Mr Retiree who still benefits from some investment risk as the likelihood of achieving ASFA's comfortable

Likelihood of funding target retirement income from Age 65
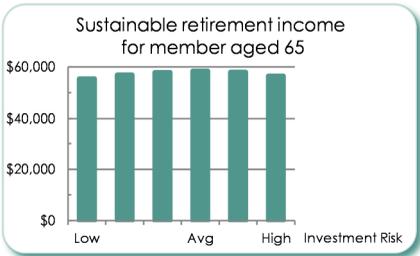
standard peaks for a balanced strategy, as

does the sustainable retirement income. However, for this reasonably well funded case, the impact from varying the investment strategy is relatively less since a fair portion of investment risk is behind Mr Retiree.

Sustainable retirement income for member aged 65

Discussion

A key point that drives these results is the need for a sufficient length of time for the higher expected return of, say, a growth investment strategy to offset the higher volatility. Put another way, in the short term, there is a reasonable probability that equities will underperform a defensive strategy, but as the investment horizon increases the probability that equities will underperform decreases. Of course, this result is dependent on investment return assumptions, including starting valuations and the impact of mean reversion. These aspects will be explored in a future paper.

Even at the date of retirement, most members still have an investment horizon that extends a couple of decades and may benefit from a moderate allocation to growth assets (unless growth assets are overly expensive). This has significant implications to glide path strategies that focus on the balance at retirement rather than retirement outcomes.

Notes

These conclusions are restricted to the specific cases and assumptions we used. The outcomes will differ for members in different circumstances.

CV Solutions does not promote any particular type of retirement product or strategy. Strategies with more complex features, such as dynamically adjusted asset allocation, glide paths or guarantees, may offer different outcomes. Some of these will be analysed in future papers.

Method

The method outlined below provides an estimate of the probability that a target retirement income can be achieved to a specified age (eg 90). This calculation utilises the calculation engine of CV Solutions' retirement income estimation system:

1. The model is stochastic. Investment risk is explicitly accounted for to determine the distribution of asset values each year based on the cash flows and the specified investment strategy in that year.
2. Any pattern of contributions, retirement income, lump sum drawdowns and bequests can be accommodated.
3. The age pension may provide part funding of the retirement income; each year we apply the Assets and Income tests to determine the Age Pension distribution.
4. Each year in retirement we determine the probability that the assets will be zero and hence the likelihood that the target retirement income can be achieved to a specified age.

Assumptions

In these examples we use the following simple assumptions, but our system allows more sophisticated approaches.

- Members are in full time employment earning the AWE for their age based on a profile reported by the Australian Bureau of Statistics.
- We utilise ASFA's Retirement Standards for target modest and comfortable retirement incomes as these are applicable for Australian couples.
- All dollar amounts are presented in today's dollars.
- The contributions are determined from the mandated SGC rates (ie they increase from 9% to 12% over the next few years).
- Retirement is at age 65 and a member is eligible for the age pension at age 67.
- All calculations are performed assuming the target retirement income is drawn from retirement to age 90.
- The member is invested in the specified investment strategy until retirement at which time the superannuation balance is converted into an allocated pension invested in the same investment strategy but paying zero tax. Different investment strategies will be investigated in future papers.
- The Age Pension Assets and Income tests assume the member has a partner and is a homeowner.
- For simplicity, we set all inflation components to be equal (ie total AWE, CPI, Age Pension, Age Pension thresholds for assets and income tests).
- Investment returns follow a random walk and are not mean reverting; we will analyse this in another paper.

About CV Solutions

CV Solutions provides services to superannuation funds for the provision of simple to understand assessments as to how each individual member is tracking to attain his or her retirement income goal.

1 The Association of Superannuation Funds of Australia Ltd Retirement Standard figures for the March Quarter 2013, http://www.superannuation.asn.au/resources/retirement-standard
2 In this discussion we use 2 in 3 as a good chance, ie a 66.67% probability.