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Investing for retirement

How investment teams of superannuation funds can support retirement income solutions

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Executive summary

1. ***About this paper*** – We discuss how investment teams might best contribute to the delivery of retirement offerings from the perspective of Australian superannuation funds.
2. ***Member outcomes are primary*** – Member outcomes are the primary focus in retirement, in contrast with accumulation where portfolio outcomes (i.e. returns) dominate. The role of investments moves from being central in accumulation to a supplier of investment building blocks for use in retirement solutions that are tailored to meet individual retiree needs. *See Section 2.*
3. ***Managing member outcomes versus pooled portfolios*** – There is an important distinction between the management of individual member outcomes and management of pooled investment portfolios. Responsibility for outcomes delivered to retirees sits with the organisation at large, possibly led by a retirement segment. Meanwhile, the investment team is responsible for portfolios that pool the assets of many retirees. This dichotomy matters. For example, while access to liquidity is needed by individual retirees, liquidity management for portfolios depends on associated net flows, which may be positive or negative. Risk management is a further area where the member and portfolio perspectives differ.
4. ***Many differences between retirement and accumulation*** – We identify and discuss eight differences in retirement versus accumulation, including: (1) objectives; (2) importance of member differences; (3) longevity uncertainty enters the picture; (4) shift from inflows to outflows; (5) other member assets and income streams become relevant; (6) zero tax environment; (7) significance of inflation risk; and, (8) investment risk and its measurement. *See Section 3.*
5. ***Two portfolios should suffice*** – The two primary roles for investments within retirement solutions include: (a) generating returns in support of higher income, and (b) providing a source of capital that may be accessed as required. Two portfolios may hence suffice as core building blocks. First is a growth portfolio aimed at return generation. Second is a capital stable portfolio that acts as a reliable source of accessible funds, notably for use in 'contingency accounts' to satisfy precautionary saving motives. While these two portfolios are all that is really required, we also discuss whether more traditional defensive and balanced portfolios might also play a role. *See Section 4, Section 5.3 and Appendix 2.*
6. ***Dedicated retirement investment teams*** – In many cases, it will be best to establish a dedicated retirement investment team that sits within the investment function but works closely with the retirement segment. However, this may depend on the overall organisational structure. *See Section 5.1.*
7. ***Segregated portfolios*** – Segregated portfolios for retirement and accumulation are likely to provide benefits that significantly out-weight any efficiency losses. The largest gains should arise from managing towards differing objectives and risks, accounting for differences in taxation and expected returns, and addressing a heightened need to manage inflation exposure in retirement. *See Section 5.2.*
8. ***Performance assessment –*** Assessment of retirement income strategies should be forward-looking and focused on member outcomes, while bearing in mind that investment performance is only one contributor to member outcomes. Although historical performance testing for the return-focused components of retirement solutions is possible, the unintended consequences may be heightened relative to accumulation. In particular, benchmarking against commonly available indices may hamper the capacity to tailor portfolios towards the needs of retirees. *See Section 5.4 and Appendix 1.*
9. ***Investment teams can assist in many ways*** – Investment teams are well-placed to assist in developing retirement income strategies in many ways, such as joining working groups and supplying technical expertise. We encourage investment teams to get involved. *See Section 2 and Section 6.*

1. Introduction

The superannuation industry is transitioning its focus towards retirement, and is being pushed by both the Government and the regulators to get a move-on. Against this background, we provide some thoughts on how investment teams of superannuation (super) funds might contribute to their organisation's retirement income strategies (RIS) as they are developed in response to the Retirement Income Covenant (RIC). Investment teams have an important role to play as a supplier of both investment solutions and technical expertise. However, the role they need to play differs in nature to that performed in the accumulation phase. This may call for some reorganisation of the investment function and the portfolios that it delivers.

Traditionally, the main role for super fund investment teams is as the 'return factory' that supports members to build wealth in the accumulation phase. Once a member retires, the primary objective changes from wealth accumulation to converting wealth into an income stream[1]. ***The main focus thus shifts from delivering portfolio outcomes to delivering member outcomes.*** Further, the responsibility for delivering member outcomes in retirement typically resides with the overall organisation, perhaps led by a retirement function or segment. The primary role of the investment team becomes generation of investment outcomes (i.e. return streams) that assist in the delivery of income to retirees, coupled with a source of capital that members can flexibly access as required.

Furthermore, retirement is far more complex than accumulation. In accumulation, building wealth is an overarching and common goal. All members benefit if returns are higher. In retirement, members can differ widely in their needs, wants and personal circumstances. Catering for these differences requires the ability to deliver more tailored solutions, as well as more developed capabilities to guide and support members.

Another important distinction is between management of member outcomes and management of pooled portfolios. Member outcomes need to be managed at the individual member level, or at least the member cohort level. Meanwhile, the mandate of investment teams is typically to manage pooled portfolios comprised of many members. This distinction impacts on how various issues related to member outcomes translate through into portfolio construction. A prime example is liquidity. Individual members need liquidity as they may be selling assets to generate income or fund other spending. Ultimately all the member's funds will be withdrawn. Meanwhile, investment teams are managing a perpetual pool with its own cash flow profile that depends on a range of aspects, including the balance of members entering the retirement pool as they retire versus those withdrawing for income generation or other reasons as well as any switching activity. It is by no means a forgone conclusion that retirement portfolios will necessarily be in outflow.

In short, the investment function shifts from being the principal activity with the one aim of maximising returns, to being one element contributing to the provision of outcomes to members with differing needs through delivering returns via pooled investment portfolios. The investment function thus needs to be structured to best assist the retirement efforts of the organisation at large.

We discuss what all this means for investment teams under four main headings:

- ***Role for investment teams within the RIS*** – We highlight how investments need to work in conjunction with income streams and a drawdown strategy, provide sources of flexibly accessible funds, and dovetail with member-facing functions. We also provide some suggestions for how the investment team might assist with RIS development and management, and point out some distinctions between 'fiduciary-style' funds and platforms.
- ***Retirement differs from accumulation*** – We identify and discuss eight differences in retirement. These include: (1) objectives; (2) importance of member differences; (3) longevity uncertainty

[1] Generating income is not necessarily the only objective in retirement. Indeed, the RIC requires super fund trustees to also consider flexible access to funds, which may be used to satisfy other needs.

enters the picture; (4) shift from inflows to outflows; (5) other member assets and income streams become relevant; (6) zero tax environment; (7) significance of inflation risk; and, (8) investment risk and its measurement.

- ***Role of investments within retirement solutions*** – We discuss the roles that investments play within retirement solutions – the mechanism by which assets are converted into income. We identify the two main elements as the generation of returns to increase wealth in support of higher income, and providing a source of stable capital that may be accessed as required. Meanwhile, the contribution to managing risk becomes more limited, with the retirement function taking the primary responsibility for managing income risk as part of forming retirement solutions designed to deliver personalised outcomes to members.

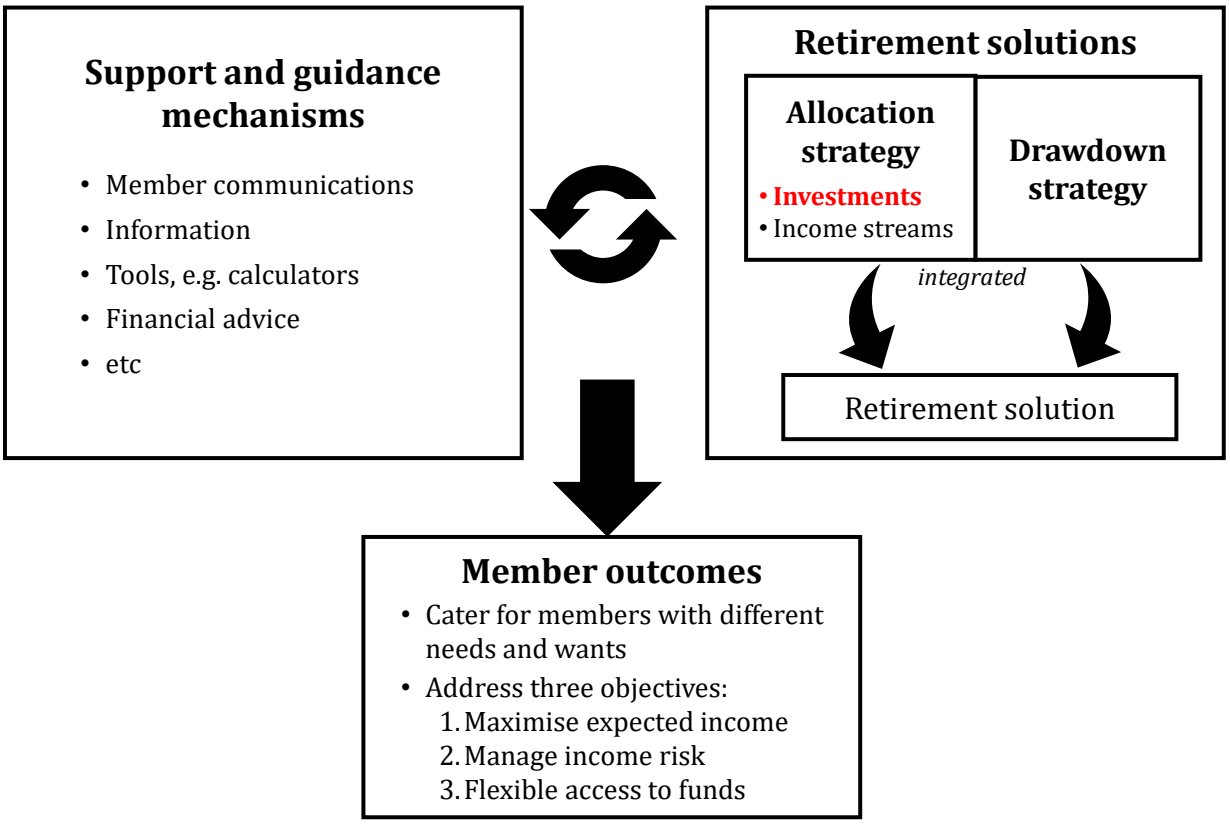
- ***Investment models for retirement*** – We discuss how the investment function and portfolios might be structured for retirement; and offer some thoughts on performance evaluation. We offer three main suggestions:
  - A dedicated retirement investment team should be established that ideally sits within the investment function while working closely with the retirement segment.
  - Segregated portfolios should be run for retirement and accumulation.
  - The investment team should supply a small number of portfolios that can be used as 'building blocks' to be used flexibly in constructing retirement solutions. We see two portfolios as core and all that is really required: a growth portfolio aimed at return generation, and a capital stable portfolio as a reliable source of accessible funds. A key purpose for the latter would be for use in 'contingency accounts' that satisfy precautionary saving motives.

We address some related matters in appendices. Appendix 1 discusses the possibility of the Your Future Your Super performance test (YFYS test) being applied to retirement, and the issues that might arise if this were to occur. Appendix 2 outlines how accepting more investment risk in pursuit of higher returns impacts on the distribution of income.

2. Role for investments within retirement income strategies

Figure 1 below describes what is involved in a RIS, which is a comprehensive strategy to help members achieve their financial goals in retirement. The two core components of RIS are the set of retirement solutions offered (right box) and the support and guidance mechanisms provided to members (left box). The retirement solution component comprises a joint strategy to allocate and draw down on assets to generate income. The overall aim of the RIS (bottom box) is to assist retired members with differing needs and wants in balancing the three objectives as set out in the RIC. These objectives may be paraphrased as: (1) maximising expected income, (2) managing income risk, and (3) providing flexible access to funds. The primary role of investment teams within the RIS is to invest the assets, as highlighted in red font in Figure 1. Thus the investment function is just one element within a much larger structure that is directed at delivering member outcomes, in particular income during retirement.

Figure 1: Components of retirement income strategies (RIS)



The responsibility for the overall RIS – and hence the delivery of member outcomes – is spread across the organisation. A retirement function, segment or executive may be appointed to lead these efforts. The primary role of the investment team is to generate investment outcomes (i.e. return streams) that assist in the delivery of member outcomes in retirement. In doing so, the investment portfolio needs to operate in conjunction with four other elements of the RIS:

- **Any income streams available to the member** – The investment portfolio can be required to work in unison with lifetime income streams (i.e. annuities) and the Age Pension for those members who are eligible. We discuss how the presence of other income streams impacts on the role that the investments are expected to play within a retirement solution further below.

- **Drawdown strategies** – The investment portfolio will be drawn down over time to 'shape up' income after accounting for other sources of income. The nature of the drawdown strategy impacts on when the assets will be needed and in what magnitude, with related implications for investment horizon and liquidity management.

- **Flexible access to funds** – Investment portfolios are central to delivering on this third RIC objective as they form the primary source of accessible funds within retirement solutions. Accessible funds in retirement have traditionally taken the form of an account-based pension. Members may have various motivations for desiring flexible access to funds, including: (1) meeting unplanned spending needs not covered by regular income, i.e. precautionary savings motives; (2) providing for bequests, including reversionary benefits; (3) supporting potential access to aged care; and, (4) having the capacity to respond to change or opportunities. Each of these motivations can imply investing in a different manner.

- **Support and guidance** – The requirement to provide members with support and guidance creates a need for investment teams to interact with member-facing functions. The aim of this engagement should be to connect the design of investment options to member needs and wants, including ensuring that the investment offerings are understandable and attractive to members.

Need to engage regularly with other functions

The connection between investments and the other RIS elements as described above heightens the need for investment teams to engage with other functions within the organisation, especially those responsible for retirement solution design and member engagement. Indeed, the involvement of investment teams in RIS development and management could be viewed as an opportunity to contribute more broadly. In addition to investing the assets to support the fund's RIS, there are other ways that the investment team might support the retirement efforts:

- **Join working groups** – The investment team might join working groups or task forces for development of aspects of the organisation's RIS. This is an opportunity to both supply expertise and build a better understanding of how the investment function fits within the overall RIS.
- **Providing modelling inputs** – The investment team may be a logical supplier of the return and inflation assumptions to be used in simulation of outcomes arising from retirement solutions. Simulation analysis is needed for solution design, assessment and communication.
- **Assisting with risk management** – Investment teams are used to dealing with certain aspects of risk, including risk measurement, hedging and liquidity management. They could assist in framing up the risk management processes surrounding retirement solutions.
- **Complex product offerings** – Investment teams may have technical expertise that could assist with the development and analysis of complex products, e.g. certain lifetime income streams.
- **Modelling capability** – Investment teams typically contain staff with quantitative skills that could advise or support the organisation's modelling efforts more broadly. They may assist with development of complex business cases, especially where return uncertainty is relevant.

The role of investments can vary between super funds that operate under a 'fiduciary-style' model versus a 'platform' model. We discuss this distinction and its implications in the break-out box over the page. We implicitly have in mind fiduciary-style super funds in writing this paper.

Operating models and application to 'choice' platforms

One of our central themes is that the design of retirement solutions – and hence responsibility for member outcomes – resides outside of the investment team. The discussion in this paper is largely framed around fiduciary-style funds, where trustees actively make decisions over the products and solutions offered to members, while directly providing members with various services and possibly guidance to help them achieve better outcomes. Activities that are representative of this operating model include provision of default options, lifecycle strategies, internal advice offerings and member-focused calculators and education tools. Importantly, the trustee would be aiming to design retirement solutions that can be supplied directly to the member, potentially accompanied by the provision of guidance. Funds of this nature are prevalent in the profit-for-member sector but can also be found in the for-profit sector.

An alternative operating model is the provision of a 'choice platform'. Platforms are used by financial advisers to construct tailored client solutions (which could include tailored portfolios or integrated retirement solutions). Platforms but may also service direct (i.e. unadvised) members. Self-managed super funds (SMSFs) often invest through platforms, albeit not exclusively. Responsibility for retirement solution design under the choice platform model thus resides with financial adviser and/or the member themselves.

The focus of choice platforms in supporting retirees will be the provision of component product elements rather than integrated retirement solutions. This means platforms face different issues to the fiduciary-style funds. In the context of this paper, a key consideration is whether the investment choice menu contains a sufficient range of investment choices to account for the specific needs of retirees. Our discussion in Section 5.3 around structuring of retirement portfolios might offer some guidance here. Although not directly relevant to investments, further considerations include whether the choice platform provides access to income stream products, as well as adequate decision support tools such as retirement models and product information. In any event, the focal point is whether the suite of products and services offered provides the support that financial advisers and self-directed retirees require to effectively construct retirement solutions.

3. How retirement differs from accumulation

Although the purpose of superannuation is delivering income in retirement, to date the management of investments in support of wealth accumulation has dominated proceedings. Super fund investments and member communications have been largely framed around balances and returns, with a few exceptions[2]. Focusing on asset values and returns may suffice during the accumulation phase, given that maximising the account balance at retirement also maximises potential income in retirement. Retirement, however, is a different game. We list eight ways in which retirement differs from accumulation in Figure 2, and then discuss each thereafter.

Figure 2: Ways in which managing assets in retirement differs to accumulation

	Accumulation	Retirement
1. Objectives	Return-focused, including: • Real return targets • Benchmark-relative, e.g. YFYS • Peer-relative • Volatility, e.g. member concerns over fluctuation in their balance	RIC objectives: • Maximising expected income • Managing income risk • Providing flexible access to funds (Note: Relevance for retirement of return-focused objectives is an open question.)
2. Member needs and wants	Maximising wealth accumulated at retirement is a common and overarching need across members	Member personal circumstances vary widely, result in differing needs and wants (i.e. heterogeneity abounds).
3. Key uncertainties	Investment returns	Investment returns and longevity, i.e. how long the member might live. Longevity uncertainty implies a stochastic horizon.
4. Flows and accessibility	• Inflows from contributions • Funds largely inaccessible by member, but switching allowed between provider and products	• Outflows from drawdowns • Funds accessible at call by member • Switching remains allowed
5. Relevance of other member assets and income streams	Suffices for trustees to manage superannuation assets in isolation of other member assets.	Assets outside of super and available income steams (including the Age Pension) important for retirement solution design, which may influence how investments should be managed and used.
6. Tax environment	Headline tax rates of 15% on income and 10% on capital gains.	Tax free environment. Full franking credit rebates are available.
7. Significance of inflation	Inflation viewed through lens of impact on asset values and returns. Latitude to manage inflation risk reduced by existence of relative return objectives, e.g. the YFYS performance test.	Need to manage inflation risk heightened under potential for inflation to directly impact on capacity of assets to generate real income. More latitude to manage inflation risk due to (current) absence of relative return objectives in retirement.
8. Investment risk and its measurement	Return volatility focus tends to dominate. Suffices to use measures such as standard deviation, tracking error (YFYS test and peer risk), factor exposures, and so on.	Possibility of sustained real loss of capital and drawdown risk should become the focal point. Return volatility and tracking error becomes much less relevant.

[2] For instance, attempts have been made to reframe member communications around retirement income projections. Another notable exception is the asset/liability management approach – also known as liability-driven investing (LDI) – that was adopted by QSuper in designing its MySuper offering and is used by defined benefit funds.

Discussion

1. Objectives

The RIC requires fund trustees to assist members in balancing the three objectives of maximising expected income, managing income risk, and providing flexible access to funds. These overarching objectives establish a different context for the management of investments relative to accumulation, during which investment teams are required to address a suite of return-focused objectives including real return targets, benchmark-relative performance (most notably the Your-Future-Your-Super or YFYS performance test), peer comparisons and managing portfolio volatility (which is reflected in the standard risk measure, and disliked by members). In essence, objectives shift from being portfolio focused in accumulation to member outcomes focused in retirement.

The relevance of the return-focused objectives as they are typically framed for accumulation to retirement is an open question. These objectives are indirectly connected with the RIC objectives based around income, to the extent that higher returns translate into higher income. Real return targets may thus still hold relevance, as they link to expected income. Relative return objectives such as the YFYS test and peer comparisons are currently of minor relevance in retirement. However, this could change if they are imputed into the assessment of retirement solutions. Appendix 1 discusses the possibility of the YFYS test being applied in retirement and the issues that may arise. We outline how volatility is poorly connected with income objectives under point 8; while recognising that it may be of concern to members and hence not completely irrelevant.

2. Member needs and wants

In accumulation, the main dimension along which members may be distinguished is tolerance for taking investment risk in search of higher returns. In retirement, member differences matter much more and span many dimensions. Key personal attributes that impact on member needs and wants, and hence the retirement solution that is suitable for a member, include: age; total financial assets (both inside and outside of superannuation); homeownership; partnered status; and income preferences, i.e. desired type of income stream, and income risk tolerance. While tolerance for taking investment risk may remain a consideration for some members, it becomes one part of a much broader picture. The main implication is that the investment options made available in retirement should be structured to be flexibly incorporated into a diverse range of retirement solutions designed by the retirement function or segment to cater for retirees with differing needs and wants.

3. Key uncertainties

In addition to investment risk, longevity risk enters the fray during retirement, i.e. it is unknown how long a member will live. The implication is that the horizon becomes stochastic due to uncertainty over the time frame that income is needed and the assets should last. The addition of longevity uncertainty mainly impacts on the design of drawdown strategies and the need for lifetime income streams, which provide longevity insurance through access to 'mortality credits'[3]. Nevertheless, the need to manage longevity risk for individual members can also feed back into how the assets should be invested, which we discuss further below.

4. Flows and accessibility

In accumulation, members make contributions and are unable to access their funds apart from in exceptional circumstances. Members also have the ability to switch, an option that is only used by a small minority. Eventually, they may transfer their funds into the retirement phase after reaching preservation age. In retirement, member accounts move into drawdown and may be accessed at any time, either directly or through switching decisions. Reasons for members accessing their funds as a lump sum are many and varied, but include large expenditures (e.g. mortgage reduction, home

[3] Mortality credits involve the assets of those who die being used to sustain income for those who survive, thus providing longevity insurance. This insurance is supported by pooling that may be provided by an insurance company or through group pooling between members.

renovations, health), assisting family members, funding entry into aged care and transfers to beneficiaries upon death.

At the member level, the shift from inflows to outflows has two main effects that can impact on what members need from their investment portfolios. First, the sequence of returns matters more for member portfolios in drawdown[4], with poor returns earlier in retirement leading to a faster erosion of the balance[5]. Second, once members retire and cease earning income they lose the ability and flexibility to make further contributions. This can lower their risk capacity, and potentially also their risk tolerance[6]. Either way, these effects suggest placing more emphasis on risk management within retirement portfolio, in particular guarding against losses that are large and sustained.

At the total portfolio level, differences in the drivers of cash flows in retirement relative to accumulation can have implications for portfolio liquidity and treasury management. However, the combined impacts of member flows at the total portfolio level present a complex dynamic that may differ across funds. Where accumulation and retirement portfolios are managed separately[7], relative net cash flows for each portfolio will reflect the balance of:

(a) Drawdowns in retirement versus contributions in accumulation;
(b) Extent that members use their ability to access funds (i.e. take lump sums) in retirement;
(c) Switching activity, either between funds or between investment options;
(d) Members shifting from accumulation into retirement, which amount to an outflow for accumulation portfolios and an inflow for retirement portfolios; and
(e) Any funds remaining upon death to be paid out.

While it may feel natural to assume retirement portfolios are in outflow, this need not be the case. For instance, member demographics and switching between funds may be influential. Indeed, it is entirely possible that some funds will be seeing inflows into their retirement portfolios and outflows from their accumulation portfolios due to the transfer of members from accumulation to retirement.

5. **Relevance of other member assets and income streams**

In theory, the member's total portfolio should be the focal point. In accumulation, the loss of efficiency in failing to adopt a total portfolio view is (probably) acceptable. It is hence possible for accumulation portfolios to be managed in isolation. In retirement, other assets and income streams that the member has available, including the Age Pension, become quite relevant for member outcomes and hence retirement solution design. The investments in the member's retirement account with their super fund need to work in tandem with these other assets and income streams in delivering income, and satisfy member requirements for flexible access to funds[8]. The main investment implication is that portfolios should be designed to work with any other assets or income streams available to the member, rather than just deliver returns in isolation.

6. **Tax environment**

Retirement is a tax-free environment, as compared to headline tax rates of 15% on income and 10% on capital gains[9] in accumulation. This can impact on investments in various ways. Franking credits become relatively more valuable in retirement than accumulation, particularly to the extent that

[4] Sequencing risk might be viewed as an interaction between investment risk and portfolio flows, noting that the sequence of returns does not matter to wealth accumulation in the absence of flows.
[5] This is particularly the case where income is drawn as a fixed amount (e.g. to reach the ASFA Comfortable income standard) as against a given percentage (e.g. the minimum drawdown rules), as drawing a fixed amount results in a higher percentage of the balance being taken after poor investment returns.
[6] Risk capacity refers to the *ability* to bear risk. It differs from risk aversion, which is the *willingness* to bear risk. It is debatable whether risk aversion increases at older ages, or remains a consistent personal attribute. It is generally believed that retired members have lower risk tolerance, although the evidence in the academic literature is mixed.
[7] Managing accumulation and retirement assets as a single pool changes the situation, and may support liquidity sharing.
[8] Retired members who own their own home or have large assets outside of super may not need the trustee to provide them with flexible access to funds.
[9] The effective tax rate on capital gains can be even lower than 10% due to deferral of gains realisation, tax loss harvesting and effective tax parcel management.

they are not priced by the market and hence provide a 'return bonus'[10]. Income is also no longer penalised relative to capital gains in retirement. Finally, investment risk is magnified in a zero-tax environment as gains and losses are no longer being muted by capital gains tax. As tax alters the expected returns and risk across assets, it can also impact on portfolio construction.

7. Significance of inflation

Inflation can have a negative impact on member outcomes where it leads to a reduction in the real value of assets invested, and thus the real balance at retirement and the resulting spending power derived from the retirement income generated. Hence inflation risk matters in both accumulation and retirement. However, the lens that is applied to inflation risk and its relative significance differs.

In accumulation, inflation risk is typically viewed through the lens of the implications for asset values and returns. Meanwhile, the presence of other objectives such as benchmark-relative (e.g. YFYS test) and peer-relative performance can impact on the latitude to manage inflation risk. Indeed, these objectives may create a disincentive to mitigate inflation risk to the extent that it reduces returns or generates tracking error. During retirement, the fact that the assets are being directly used to generate income adjusts the lens through which inflation is viewed. The need to manage inflation risk becomes heightened under the reframing around income, coupled with and absence of other detracting objectives. The specific exposure to be hedged is inflation in the cost of living for retirees.

Two points are worth noting. First, inflation matters to the extent that it impacts on the real value of the assets and thus the capacity to generate real income. If the value of the investments keeps up with inflation, then income is not impaired[11]. The consequence that the investment team needs to take responsibility for managing (i.e. hedging) inflation risk. Second, the Age Pension provides an inflation protected income stream for eligible members, being indexed to the maximum of the CPI and average weekly earnings. This reduces the potential impact of inflation at the retirement solution level, and thus takes some load off the investment team to manage inflation at the margin.

8. Investment risk and its measurement

The shift in focus of from generating returns in accumulation to generating income in retirement leads to differences in how investment risk may be viewed and measured. A volatility focus can suffice in accumulation given the focus on managing returns – even though the relevance of volatility can be debated when investing for the long term[12]. Risk measures based around return volatility such as standard deviation, covariance, tracking error and factor models can thus provide adequate toolkit, even if they do not cover all dimensions of risk.

Focusing on return volatility becomes more tenuous in retirement where the main concern is generation of retirement income over a long horizon. Indeed, members could be better off with more volatile yet higher-returning assets as they can boost potential retirement income (see Appendix 2). Of primary importance is the failure to generate adequate returns over the long run. Also relevant is the risk of suffering losses due to sequencing risk effects for portfolios in drawdown, and the possibility that losses could induce some members to switch to defensive options at an inappropriate time. To address these concerns, the risk toolkit should support analysis of potential for sustained loss of capital and drawdown risk[13]. Simulation and scenario analysis may be used to gauge the risk

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[10] The Australian Tax Office reports an average franking credit rebate yield of 1.38% in September 2023 (estimated average of 1.34% since June 1998). The extent to which franking credits are offset by lower expected returns is unresolved in the academic literature, and depends on the extent to which franking is priced by the marginal investor. It is generally accepted that franking credits are not fully priced, meaning some portion should flow through into higher returns for retirees.

[11] Investments that are often identified as inflation hedges – such as infrastructure, property and inflation-linked bonds – typically offer inflation-hedged cash flows. Such assets remain exposed to volatility in prices and returns from changes in discount rates (may tend to rise with inflation) or economic exposures (e.g. property, some infrastructure assets).

[12] Volatility largely speaks to potential for return fluctuations over single period intervals. For discussion of the shortcomings of volatility-focused measures when investing for the long term, see Warren, G. (2021). "Investment Risk for Long-Term Investors", available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3820435.

[13] See Geboers, H., Depaire, B. and Annaert, J., 2023. "A review on drawdown risk measures and their implications for risk management", *Journal of Economic Surveys*, 37(3), 865-889.

of sustained losses over long horizons, as well as the implications for income[14]. Drawdown risk measures might be directed at revealing the potential duration and magnitude of negative returns, thus informing exposure to sequencing risk and better connecting to any concerns by retirees over reduction in their balance than might be done by focusing on volatility alone.

Nevertheless, some volatility-based measures may still have some limited use in retirement. In particular, tracking error may be of relevance to the investment team to the extent that relative performance versus benchmarks or peers is used in evaluating their performance. While arguably not as effective as analysing drawdown risk, volatility may also shed light on exposure to sequencing risk and concerns over fluctuation in balances. We discuss performance evaluation further below, including within Appendix 1 where the extension of the YFYS test to retirement is considered.

4. Role for investments within retirement income solutions

We now drill deeper into what retirement solutions might entail and connect this through to the roles that investments might be expected to play within these solutions. As a point of departure, we present results from an academic study by Butt, Khemka and Warren (2022)[15]. Their analysis provides a sense for how investments may be used within differing retirement solutions, and the need to design the investment componentry so it can be used flexibly. The study creates 'cameos' for 14 members distinguished by balance at retirement, homeownership status, income objective and (income) risk tolerance[16]. 'Optimal'[17] asset allocations to four assets are formed, including a growth portfolio, a defensive portfolio, an immediate real life annuity that pays guaranteed real income for as long as the member survives, and a deferred real life annuity where the real income payments commence at age 85. The analysis incorporates the Age Pension and related supplements. Figure 3 reports optimal asset allocations at retirement for the seven member types with low risk tolerance.

Figure 3: How 'optimal' asset allocation can vary across member types

Cameo member			Optimal asset allocation with annuities					Optimal asset allocation without annuities		
Initial Balance	Home-owner?	Income objective	Growth portfolio	Defensive portfolio	Immediate life annuity	Deferred life annuity	Total	Growth assets	Defensive assets	Total
$200,000	No	Target: AM+rent	100%	-	-	-	100%	100%	-	100%
$200,000	Yes	Target: AM	90%	-	-	10%	100%	100%	-	100%
$500,000	No	Target: AC+rent	100%	-	-	-	100%	100%	-	100%
$500,000	Yes	Target: AC	32%	-	64%	4%	100%	53%	47%	100%
$500,000	Yes	Optimise	56%	-	42%	2%	100%	100%	-	100%
$800,000	Yes	Target: AC	76%	-	14%	10%	100%	45%	55%	100%
$800,000	Yes	Optimise	71%	-	20%	9%	100%	100%	-	100%

Notes: AM = ASFA modest; AC = ASFA comfortable. Results are for members with low risk tolerance.
Source: Butt, Khemka and Warren (2022)

The roles being played by investments within the solutions presented in Figure 3 are reflected in the variation in asset allocations across members, and the analysis with and without annuities. Where annuities are available, the optimal allocations contain a mix of the growth portfolio and annuities *without any exposure to the defensive portfolio*. In this case, the primary role of the investments is to generate higher returns to boost potential income. Meanwhile, annuities are used for the defensive exposure (in conjunction with the Age Pension), and crowding out the need for traditional defensive

[14] See Warren (2021, *op cit.)* for a discussion of risk measurement over long horizons.
[15] Butt, A., Khemka, G. and Warren, G.J., 2022. Heterogeneity in optimal investment and drawdown strategies in retirement. *Pacific-Basin Finance Journal*, 74, p.101798.
[16] Risk tolerance is captured in this study through parameterisation under two different types of utility function to capture income target and income optimisation objectives respectively, which are used to evaluate the distribution of income.
[17] Dynamic programming is applied in estimating both asset allocation and drawdowns.

investments. Under the set-up, fixed income is being dominated by annuities which offer a form of fixed income exposure combined with longevity insurance through access to mortality credits that guarantee a level of income for life. Exposure to the defensive portfolio can emerge, however, under an income target objective where it assists to 'lock-in' the target. For instance, this happens for the 4th and 6th members when annuities are unavailable (see right-hand side of Figure 3), in which case some exposure to the defensive portfolio reduces risk of shortfall versus the income target[18]. The message is that a key role to be played by investment teams is to generate returns, while income risk is largely managed through lifetime income streams and the Age Pension.

Although not considered by Butt et al. (2022), another use for defensive assets could be to limit the volatility of returns and thus the retirement account balance. While managing short-term volatility can be 'sub-optimal' from the perspective of utility maximisation, it might nevertheless be done in recognition that a 100% growth portfolio could be unpalatable to some members. The desire of members to limit volatility could be motivated by behavioural considerations such as narrow framing around the retirement account or myopic loss aversion, and could arise notwithstanding the presence of defensive exposure through annuities or the Age Pension. Adding some defensive exposure into the mix may help members accept a retirement solution, or avert the possibility of over-reacting to market declines by going too defensive at an inappropriate time.

A further consideration not captured by the analysis of Butt et al. (2022) – who optimise income – is the third RIC objective of providing flexible access to funds. Meeting this objective requires investing so that accessible assets are available when they are needed. Here the motivation for providing flexible access to funds matters. Precautionary motives suggest investing defensively to ensure that the capital is not only there when it is needed, but also that it is relatively secure in value. (This role is a prime motivation for our proposal below to establish a capital stable portfolio.) Meanwhile, motivations related to bequests or saving to cover possible aged care costs might be better met through some growth exposure in order to build-up capital over the long run. Managing flexibly accessible funds is the other key role for investment teams.

To summarise, there are two main ways that investments might contribute to retirement solutions:

1) **Generating returns** – Delivering better compound returns with the aim of boosting potential income is the main role that investments play in retirement solutions. Higher potential income may be expressed in allowing either (a) more income to be affordably drawn, or (b) a given level of income to be sustained over a longer period. Appendix 2 discusses how greater growth exposure manifests in higher expected income and income risk. Higher expected returns might also be sought to support a bequest or entry into aged care later in life for some members.

2) **Investing for capital stability** – There are three reasons why a stable source of capital can be desirable within retirement solutions. The first and most important is to provide a reliable source of accessible funds, probably as a form of precautionary savings. Second is to underpin the delivery of a highly reliable (albeit lower) income stream. However, the need here may be limited if annuities and the Age Pension are being used for the defensive exposure. Third is they could also be used to reduce portfolio volatility to a level that is tolerable for the member (although this might also be done through traditional defensive portfolios[19]). Provision of a stable source of capital might be best done through a portfolio that is explicitly designed for this purpose.

The notion that the investments perform two main roles within retirement solutions raises the idea that it may suffice for the investment team to deliver two portfolios as building blocks for retirement solutions. We discuss this issue further in Section 5.3, including addressing whether there may be call to also provide a broader range of retirement investment portfolios including balanced funds.

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[18] Butt et al. (2022) also find that defensive assets enter the mix over time following poor investment returns when deferred life annuities are being used. In this case, de-risking helps ensure that income is sustained through until the arrival of income from the deferred life annuity. This is another manifestation of using defensive assets to secure an income target.
[19] Traditional fixed income orientated portfolios are exposed to risk of real capital loss, as seen in the market sell-off of 2022. A further complexity is the correlation with any growth portfolio where a form of balanced fund is being considered.

5. Investment models for retirement

We now address five issues that relate to how investments for retirement might be structured:

Section 5.1: Structuring the investment function – We suggest establishing a dedicated retirement investment team that sits within the investment team, and has either a close working relationship with the retirement segment or dual reporting lines.

Section 5.2: Shared versus segregated portfolios for retirement and accumulation – We see a strong case for maintaining segregated portfolios for retirement and accumulation.

Section 5.3: Structuring of retirement portfolios – We propose supplying two primary portfolios for use in retirement solutions: a return-seeking 'growth' portfolio to boost income potential, and a 'capital stable' portfolio that aims to at least maintain the real value of the assets. We also discuss the potential for defensive portfolios and traditional balanced portfolios to play a role.

Section 5.4: Performance evaluation – We offer preliminary thoughts on what is a fraught topic. We sketch out possible performance evaluation techniques that might be applied to growth portfolios, capital stable portfolios, defensive portfolios and balanced portfolios in retirement. Appendix 1 expands on the possible application of the YFYS test to retirement.

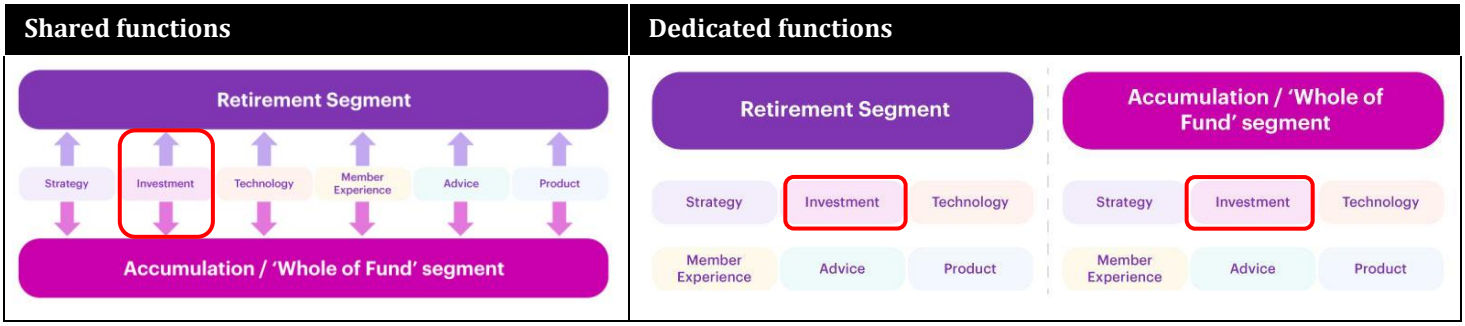
Breakout box: Liability-driven investing – We discuss the application of liability-driven investing (or asset-liability management) to managing retirement portfolios in a break-out box at the end of this section, outlining its shortcomings. This is for readers who are interested in this topic.

5.1 Structuring the investment function

An overarching question is how the investment function is best structured to most effectively perform its role within the RIS. The nub of the issue is where the retirement investment team sits within the organisational structure. A range of possibilities exist, and the answer will depend on the organisation's circumstances and its broader operating model. Our feeling is that the appropriate structure in most cases would entail a specialist retirement investment team sitting within the broader investment team that works closely with the retirement function or segment, in particular those responsible for retirement solutions design.

To set the scene, Figure 4 is taken from Callil (2023) and depicts the 'shared functions' versus 'dedicated functions' model for the retirement segment. Under shared functions, the investment team is a provider of investment portfolios that are used in retirement solutions. Under dedicated functions, the retirement segment would have its own investment team. A specialist retirement investment team with dual reporting lines would represent something of a hybrid model. Under a hybrid model, the retirement investment team could be physically located within either the investment team or the retirement segment, or have team members that span both. Hard reporting lines seem conceptually preferable, but may be challenging in practice.

Figure 4: Two structures for the retirement segment



Source: WTW, see Reimagining the retirement segment - WTW (wtwco.com)

A central trade-off is between capturing scale benefits and having access to dedicated retirement expertise. The case for a single investment function is underpinned by the significant scale economies for many investment activities, including asset and manager selection, modelling, transaction management and operational support. Two different investment teams would double up on some of these activities. Further, two teams could deliver significantly different performance outcomes that may confuse. On the other hand, there are advantages in the retirement segment having access to its own specialist investment professionals that are fully committed to retirement. It would help ensure that the investments are managed in accordance with the objectives and requirements of retirement solutions, and give the retirement segment ready access to expertise given that it is tied to the segment itself. An issue is whether the retirement investment team needs to sit within the retirement segment in order to effectively satisfy its objectives, or whether they may be able to do so while sitting within the investment function.

There is no definitive answer on which of the models of shared functions, dedicated functions or some hybrid is better. Our view is that the better model may entail the retirement investment team sitting within the investment function but having a close working relationship with (and possibly additional reporting lines into) the retirement segment – regardless of the model adopted by broader organisation in other areas. Having a dedicated retirement team within investments would retain the scale economies, while ensuring that the retirement investments are overseen by a team with specialist skills and the responsibility to ensure that they dovetail into retirement solutions. Specialists within the retirement investments team might also be given broader responsibilities beyond managing retirement portfolios, such as involvement in retirement solution modelling or design of lifetime income products.

5.2 Shared or segregated portfolios for retirement and accumulation

This section addresses whether retirement and accumulation portfolios should be segregated, i.e. structured and managed as separate portfolios. Our view is that the differences between retirement and accumulation identified earlier are significant enough to support a strong case for retirement and accumulation portfolios to be managed separately.

Williams (2019)[20] directly addresses the issue of segregation. We refer readers to her paper for a detailed discussion of the technical details of implementing segregation, and focus here on the rationale for segregation as against maintaining shared portfolios. Some of the more notable reasons that Willams lists for segregation of retirement and accumulation portfolios include:

- Tax related benefits:
  - Preserve or tilt towards franking credits
  - Reduce withholding tax leakage on pension portfolios
  - Target capital gains tax efficiency for accumulation portfolios
  - Participate in off-market share buybacks
  - Increase the pension income tax exemption available to the fund
- Fund a retirement bonus for members transferring from accumulation to pension phase
- Choose strategies that better match pension member risk preferences, e.g. protection against investment market downside and inflation risk
- Target absolute rather than benchmark-relative returns for pension members

Consolidating the list above with our prior discussion of the differences between accumulation and retirement, we see three overarching reasons for running segregated retirement portfolios:

[20] Williams, R. (2019), "Should superannuation funds segregate their assets", *Journal of Superannuation Management*, 11(2), https://rainmaker-s3-media.s3-ap-southeast-2.amazonaws.com/prod/media/library/FS_Super/FS_Super_Should_Superannuation_Funds_Segregate_Their_Assets.pdf?8d81e.

(a) **Objectives and risk** – Objectives and the risks to achieving those objectives differ sufficiently between retirement and accumulation and thus motivate segregated portfolios. In particular, managing to support retirement income over long periods establishes the need to focus on long-term compound returns, avoiding sustained loss of capital, and managing drawdowns to both limit sequencing risk[21] and cater for retirees who are particularly averse to fluctuations in their account balance. While these objectives also apply in accumulation to some extent, the existence of additional objectives related to benchmark-relative and peer-relative returns sets up a major point of difference. In particular, tracking error and the risk of failing the YFYS performance test is an overriding consideration in accumulation. The opportunity currently presents to manage retirement portfolios towards supporting member outcomes without being overly concerned about shorter-term relative performance, and possibly adopting a more long-term mindset as a consequence. (This benefit could be lost if the YFYS test was applied to retirement products: see discussion in Appendix 1.)

(b) **Taxation and return modelling** – The change in tax environment not only impacts on the type of investment that may be preferred, but also on modelling of expected returns. The need to account for the value of franking credits to retirees is particularly notable.

(c) **Need for inflation hedging** – The heightened need and latitude to manage inflation risk in retirement relative to accumulation adds to the case for segregation.

The role of **liquidity**, however, is not straightforward. There is no doubt that the cash flow profiles of accumulation and retirement portfolios may differ thus leading to differing need for liquidity. The general presumption is that a keener focus on liquidity and treasury management is required for retirement portfolios as they are more likely to be in outflow and also offer immediate access to funds. However, as discussed in Section 3 under point 4, the assumption that retirement portfolios will be in outflow may not hold and needs to be analysed on a fund-by-fund basis. Another consideration is that pooling of accumulation and retirement assets might provide opportunities for liquidity sharing. While such pooling can raise issues of member equity and cross-subsidisation where the liquidity needs and its implications for optimal portfolio management differ greatly between accumulation and retirement members, it could also have some mutual benefits by insulating both portfolios from the liquidity effects of members transferring from accumulation to retirement. The idea that retirement portfolios need to be managed separately for liquidity reasons and should be much more liquid thus cannot be treated as a universal principle.

The major advantages of retaining shared portfolios for both accumulation and retirement relates to potential for greater efficiencies in portfolio management functions from lower costs and scale advantages. The shared portfolio structure might entail common underlying portfolios that feed into both accumulation and retirement options operating under their own legal and tax frameworks.

On balance, the uplift from segregated portfolios that explicitly cater for retirement and accumulation should significantly outweigh any efficiency gains from shared portfolios. Accumulation and retirement seem sufficiently different to suggest that there is considerable benefit in applying differing portfolio construction approaches at various levels, including the overall portfolio, broader growth and defensive sub-portfolios and individual asset class portfolios. Another consideration is that the *type* of portfolios that are supplied by investment teams should differ in retirement and accumulation. As raised earlier and discussed in Section 5.3, in retirement the investment team might set out to supply portfolio 'building blocks' to be used in retirement solutions in a flexible manner, rather than the balanced portfolios that are often the focus in accumulation. Finally, any loss in scale from managing two portfolios could be minimised to the extent that both accumulation and retirement portfolios should be able to share existing capabilities in areas such as

[21] Concern with performance versus investment benchmarks and peers may remain in retirement, given established performance evaluation frameworks and the desire to have some form of externally-focused assessment of super funds. However, this does not in itself provide sufficient reason to run shared portfolios.

internal asset management capabilities, manager selection, transaction management and operational support.

5.3 Structuring of retirement portfolios

In accumulation, the investment team manages a range of investment options, which includes pre-mixed or balanced portfolios where the team determines the asset allocation in line with the stated investment objectives. In retirement, the investments should ideally be structured so they can be incorporated into retirement solutions for members with differing needs and wants. We see the best way for this to be achieved is for the investment team to supply a small number of investment portfolios that may be flexibly used as 'building blocks' by the designer of retirement solutions. A minimal number of investment portfolios would also help limit costs and deliver scale benefits[22].

Following on from the discussion of Section 4, two portfolios – a growth portfolio and a capital stable portfolio – could play the two main roles required from the investments within retirement solutions. The growth portfolio would provide return generation to support higher potential income. The capital stable portfolio would provide a source of secure capital, and should be particularly useful for meeting precautionary savings motives under the flexible access to funds objective. The investment team might also provide a third 'traditional' defensive portfolio instead of, or in parallel with, a capital stable portfolio if deemed appropriate[23]. All these portfolios might be managed as separate 'retirement' portfolios that are purposefully designed to meet the needs of retirees.

One consequence of providing growth, capital stable and perhaps traditional defensive portfolios is that the high level 'growth versus defensive' asset allocation decision is taken out of the hands of the investment team and given to the designer of the retirement solution. The investment team would still be making asset allocation and selection decisions within each portfolio.

The question arises of whether balanced portfolios might be supplied to be either used within retirement solutions, such as for an account-based pension component, or to be offered as retirement options on a choice menu. We discuss this possibility towards the end of the section, although we consider supplying pre-made balanced portfolios as a second-best solution to supplying retirement-dedicated sub-portfolios as building blocks for forming up retirement solutions.

Growth portfolio

The primary objective of the growth portfolio would be to maximise *compound* real returns to boost real wealth and hence potential income. Limiting drawdown risk would be a secondary consideration, with a view to reducing member exposure to sequencing risk while recognising the aversion of many members to large and sustained reductions in their account balance. In doing so, it would be important to consider the extent to which expected returns are sacrificed in order to limit investment-related drawdown risk. The role of the growth portfolio in providing high returns to boost income occurs in the context where *exposure to income risk is managed at the retirement solution (i.e. member outcomes) level* by the designer of retirement solutions. At the solution level, the impact of investment risk on income risk can be managed through various mechanisms:

- Allocation to lifetime income streams;
- Allocation to defensive assets in the form of either a capital stable or defensive portfolio;
- Manipulating the drawdown strategy to mitigate the impact of volatility in asset value; and,
- Access to the Age Pension, which is an influential defensive exposure for many members.

Furthermore, sacrificing returns to limit the risk of shorter-term loss can actually *increase* the probability of generating lower income over the long run, as discussed in-depth by Warren (2021,

[22] One issue that we do not address is sustainable investing, and whether the retirement portfolios are managed toward sustainable goals; or if separate sustainable versions of the retirement portfolios should also be offered.
[23] One reason to supply a defensive portfolio might be to form traditional balanced portfolios to either supply account-based pensions in a familiar format, or to underpin the formation of investment-linked annuities.

op cit.). The challenge at hand in managing a growth portfolio is not to limit volatility, but rather boost the distribution of potential income. This is best achieved through maximising returns, while using other mechanisms to manage risk and preparing members to expect some capital volatility.

As a return-seeking portfolio, the growth portfolio may be viewed and managed as the retirement counterpart of 'high growth' options in accumulation. We suggest the following guiding principles for managing growth portfolios for retirement[24]:

1. Set the primary objective as maximising compound expected returns over the long term.
2. Take opportunities to reduce drawdown risk providing that the sacrifice to expected returns is modest. For example, more defensive 'mid-risk' assets such as property, infrastructure, hedge funds and possibly credit might be included if they offer competitive real returns[25]. Dynamic strategies might also help manage risk, if the investment team has the required skill to manage risk in this manner without putting returns at risk.
3. Assets that hedge inflation risk might be favoured, to the extent that they limit income risk over the long run. This opens up the prospect of a greater role for assets with cash flows that offer some inflation protection such as infrastructure and property, providing that they offer competitive expected real returns.
4. Access to franking credits might be favoured, on the assumption that franking is not fully priced into the market and hence acts as a 'return bonus' for retirees.

Capital stable portfolio

The primary objective of the capital stable portfolio would be to avoid reductions in the real value of the capital invested over the short term *and* the long term. Seeking higher returns where safe to do so provides a secondary objective. Essentially, the capital stable portfolio would aim to emulate a real risk-free asset as closely as possible. It would thus be quite different to traditional defensive portfolios, which tend to carry significant duration and inflation exposure through nominal bonds as well as potentially credit risk … although such portfolios can offer higher expected returns.

The main role of the capital stable portfolio within a retirement solution would be to provide flexible access to funds of a relatively stable value, in particular to satisfy any precautionary savings motives. It could act as the vehicle for a 'contingency fund' as discussed in the Conexus Institute submission to the Treasury retirement consultation[26], and referred to in the Appendix of the related Treasury discussion paper[27] as a 'capital reserve'. Where used for this purpose, a reasonable level of liquidity may be needed to the extent that net outflows could occur due to correlated drawdowns across members. In addition, a capital stable portfolio might be used rather than a more traditional defensive portfolio to help underwrite a given level of real income, or in combination with the growth portfolio to form balanced funds (as discussed below).

One approach to managing capital stable portfolios might be to first identify the minimum risk asset, and then consider seeking higher real returns subject to limiting the risk of real loss of capital to acceptable levels. In theory, short duration inflation-linked government securities (e.g. 1-year maturity) would be the minimum risk asset in this context. However, the instruments may not be readily available. Short duration nominal fixed income securities might be viewed as having limited risk to the extent that their returns can be expected to equal or exceed inflation over the longer run[28].

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[24] Many of these principles also apply to accumulation portfolios, albeit to a lesser degree to the extent that tracking error and peer risk objectives are at play.
[25] Hedging strategies, such as options, often come up poorly on this criteria as they entail a significant sacrifice to long-term returns if maintained as a constant feature of the portfolio.
[26] See Essay #9 on page 57 of the Conexus Institute's *Retirement in superannuation: Submission* dated 9 February 2024, https://theconexusinstitute.org.au/wp-content/uploads/2024/03/Submission-Treasury-consultation-on-retirement-The-Conexus-Institute-FINAL.pdf.
[27] *Retirement phase of superannuation: Discussion paper*, December 2023, https://treasury.gov.au/consultation/c2023-441613.
[28] This criterion would be met if the central bank manages cash rates to be positive in real terms.

Longer-term inflation-linked securities can be highly risky due to their exposure to fluctuations in capital values as yields change, and thus do not reliably provide stability of capital over shorter horizons[29]. Nominal long-term bonds are even riskier as they carry both inflation and capital value risk. Thus capital stable portfolios are likely to look quite different to traditional defensive asset portfolios that tend to have significant exposure to nominal bonds.

Defensive portfolios

A traditional defensive portfolio might also be supplied as an investment building block for use by the designer of retirement solutions. However, the call for such portfolios in a retirement setting may be limited for two reasons:

- Traditional defensive assets tend to be dominated by lifetime income streams that pay guaranteed income for life (i.e. annuities), as indicated by Figure 3 and the related discussion. If the member requires defensive exposure, they are probably better off allocating to an annuity that pay income for life than investing in a defensive portfolio that can be run down to a zero value at some stage over the course of retirement.

- Traditional defensive portfolios carry significant fixed income exposure and hence tend to be quite exposed to inflation risk. This renders them as potentially more risky for underwriting a given level of real income than capital stable portfolios, which are arguably more suitable as a reliable form of defensive exposure and a superior vehicle for precautionary savings.

Nevertheless, defensive portfolios can offer some advantages. They have potential to deliver higher expected returns than capital stable portfolios, and hence may underpin higher expected income even though they may be more exposed to risk. Opportunities to enhance the expected returns of defensive portfolios include adding duration, credit exposure or defensive alternatives (e.g. hedge funds). A defensive portfolio might also be a better diversifier of the investment risk within a growth portfolio than a capital stable portfolio providing that the stock-bond correlation is negative – although the correlation is known to vary over time and tends to be regime-specific. Another advantage of defensive portfolios is that they are familiar and investment teams will have the infrastructure in place for their management. They are hence more straightforward to deliver than capital stable portfolios, which may meet some resistance due to being an unfamiliar concept.

Balanced portfolios

A further issue is whether retirement versions of the balanced or 'pre-mixed' portfolios as offered in accumulation might be supplied. Such portfolios might be deployed in two ways. First, they could be incorporated directly into retirement solutions as the return-seeking component instead of growth portfolios, e.g. in the form of an account-based pension. Second, a series of balanced portfolios with differing growth and defensive exposure might be offered as investment options on a choice menu for retirees to use in forming their own retirement solutions. Reasons why supplying balanced funds might hold some attraction is that the format is familiar to members and may thus assist in framing of the investments; and super funds are configured operationally to offer this type of product[30].

Balanced portfolios could be formed for provision to members through four approaches:

- *Combining growth and capital stable retirement portfolios* – In this case, the capital stable portfolio would play the role of a 'risk-free' asset that reduces volatility but also returns for the overall portfolio. The advantage of using a capital stable portfolio as proposed above is that the risk-reducing component of the portfolio would be implicitly managed to limit inflation risk exposure.

[29] Long-term inflation-linked bonds provide certain real cash flows to maturity but their prices are highly exposed to changes in yields, i.e. discount rate risk.
[30] These two reasons might be stronger for choice platforms than fiduciary-style funds.

- *Combining growth and defensive retirement portfolios* – This approach could be more appropriate where the defensive portfolio either offers a significant return premium over the capital stable portfolio, or the stock-bond correlation is clearly within a negative regime.
- *Investment team provides dedicated retirement balanced portfolios for retirement* – The investment team delivers balanced portfolios for explicit use in retirement solutions.
- *Redeploy the balanced portfolios available as accumulation options* – Repurposing accumulation options may offer some cost and scale benefits, but would probably be sub-optimal relative to using portfolios that are explicitly designed for use in retirement solutions.

The first two approaches require blending of sub-portfolios, and could be overseen by either the investment team or the designer of retirement solutions. The third and fourth forms entail giving the investment team a mandate to deliver balanced portfolios as an extension of the role they currently play in accumulation.

In any event, we consider the use of balanced portfolios within retirement solutions as a second best solution relative to supplying investment building blocks that can be used flexibly to form tailored retirement solutions. As mentioned above, income risk is better managed at the retirement solution level, perhaps by accessing defensive exposure through either lifetime income streams or access to the Age Pension (as per earlier discussion of the findings by Butt et al., 2022). Adding defensive assets to growth exposure only dilutes their effectiveness in performing this wealth generation role. Refer to Appendix 2 for an indication of how defensive assets might contribute to a less attractive distribution for expected income.

One reason for using balanced portfolios rather than growth portfolios for the return-seeking component may be to address member concern over volatility in returns and hence their balance. While we recognise this possibility, we suggest a preferable approach may to manage investor concerns over volatility through solution design and communications. For example, framing could be used to emphasise that the overall solution is designed to be resilient to investment risk through mechanisms such as the 'locking in' of a level of income (through an annuity and the Age Pension) and that some funds have been set aside 'just in case' (e.g. via a contingency account)[31]. In effect, we are arguing that investor tolerance for return volatility should be managed at the overall retirement solution level, rather than through the investment portfolios delivered by the investment team.

5.4 Performance evaluation

The shift in focus from assessing portfolio outcomes in accumulation to assessing member outcomes in retirement requires a shift in perspective with respect to performance evaluation. While evaluation of portfolio performance may still be applied in retirement, it needs to be viewed as one component of a much broader assessment of RIS conducted under a member outcomes lens[32].

RIS assessment is discussed in two Conexus thought pieces[33]. In the first piece, we propose assessing RIS through the combination of a qualitative checklist that evaluates the extent to which trustees are taking all the steps required to assist members to achieve their retirement goals, coupled with quantitative modelling of the forward-looking distribution of income and balances to assess the extent to which projected outcomes are meeting member objectives. The second piece outlines how the quantitative component might operate. These two thought pieces emphasise the need for

[31] Other forms of framing include focusing communications on projected income rather than returns and balances in member communications.

[32] Member outcomes assessment is the primary mechanism through which APRA will be assessing RIS. The draft Prudential Standard SPS 515 Strategic Planning and Member Outcomes states: "An RSE licensee's business plan must be informed by an annual review of the appropriateness of the RSE licensee's retirement income strategy."

[33] See Assessing-retirement-strategies-Final-20221104.pdf (theconexusinstitute.org.au) and Quantitative-Assessement-of-RIS-Conexus-Institute-20230622.pdf (theconexusinstitute.org.au).

forward-looking (i.e. ex-ante) assessment, given that retirement is experienced over an extended period of time thus making it impractical to wait for realised outcomes to gauge success.

The investment team may interface with RIS assessment in two ways. First, the investment team might be able to contribute technical skills to the development of the forward-looking assessment frameworks, especially the quantitative component given that simulating the distribution of future member outcomes needs to incorporate simulated investment returns.

Second, assessment of realised investment performance may form part of the RIS assessment framework as a component of the assessment checklist. In this regard, it is highly possible that some form of backward-looking performance evaluation of the market-exposed components of retirement solutions could be applied by APRA under the YFYS test, which we discuss further in Appendix 1.

The most difficult element of performance evaluation is developing appropriate benchmarks. We offer some thoughts below for the four retirement portfolios mentioned earlier, noting that these ideas are preliminary and require further investigation:

- **Growth portfolios** – Given the primary objective of growth portfolios would be to maximise compound expected return, performance evaluation might be against a representative benchmark of growth assets with high expected returns. One possibility could be benchmarking against equity markets, perhaps based around a target mix of Australian and global equities. Another alternative may be to benchmark against a more diversified reference portfolio of growth assets like that seen in "high growth" options used in accumulation, while probably excluding any fixed income component. Such benchmarks could accommodate a YFYS test (see Appendix 1).

- **Capital stable portfolios** – The objectives of a capital stable portfolio motivate the use of two benchmarks for performance evaluation. The first would be a real return of zero to align with the primary objective of maintaining the real value of capital. This would be a counterpart to the CPI-plus objectives used in accumulation. The second benchmark might be short duration government securities. Here the ideal benchmark would be short duration inflation-linked government bonds (e.g. one-year), or some proxy. Given that the securities may not be available in practice, an alternative might be to benchmark against nominal short-term government securities.

- **Defensive portfolios** – Traditional defensive portfolios might be benchmarked against a model defensive portfolio that applies a strategic asset allocation and passive indices. This would represent a form of 'reference' portfolio designed to deliver the required defensive portfolio attributes at low cost.

- **Balanced portfolios** – If balanced portfolios are formed by combining growth and capital stable portfolios, performance could be benchmarked against a weighted average of the returns versus the benchmarks for the two sub-portfolios. Where more traditional balanced portfolios are used, performance evaluation might be conducted in a similar manner to that applied to balanced funds in accumulation.

We conclude by raising an issue that we leave for future consideration. Performance evaluation in retirement should accommodate the ability to tailor portfolios towards the needs of retired members, including limiting the risk of sustained loss, managing drawdown risk, hedging inflation risk and capturing franking credits. Imposing readily available market benchmarks would make it harder for investment teams to construct portfolios that allow for these features without taking on tracking error risk. While adjusting benchmarks for differing tax status in retirement is relatively straightforward, accommodating the management of risks related to sustained loss, drawdown and inflation is problematic.

Liability-driven investing (LDI) as an alternative approach

One approach sometimes advocated for retirement involves LDI, also known as asset-liability management. This approach treats income as a liability to be funded by the assets. LDI may be framed by expressing the present value of income as a liability and treating it as a 'negative asset', possibly applying mean-variance techniques to manage the 'funding ratio' and deficit risk. Another approach entails cash flow matching through managing the assets so they can be deployed in funding income as needed. Nobel Laurette Robert Merton is a notable advocate of applying LDI in retirement[34].

One advantage of adopting an LDI lens relates to framing. An LDI approach places attention squarely on the fact the assets are intended to fund income. It also makes it apparent that the 'closest thing' (a phrase we use intentionally) to a risk-free asset is one that guarantees an amount of income at a future point in time[35]. Notwithstanding the framing benefits, LDI has two significant and related shortcomings as a paradigm for management of retirement portfolios by investment teams.

First is that LDI concepts apply at the individual member level rather than the portfolio level. As raised in Section 1, investment teams are typically mandated to manage investment pools comprised of many members that are perpetual in nature and have their own cash flow profile as members enter and leave the pool. In short, the investment team is typically charged with delivering investment outcomes while the management of the 'liability' sits with the designer of retirement solutions. If LDI is going to implemented, it needs to be done at the retirement solution level with the investment team fully integrated into the retirement function. Most investment teams comprise investment specialists and are not currently structured in this way.

Second, the retirement liability is not only stochastic but also complex and particularly hard to define in defined contribution (DC) settings where some important drivers are idiosyncratic to the member, relative to (say) defined benefit (DB) settings involving a pool of assets and liabilities[36]. Various issues make it difficult to estimate the present value of the liability and relate it to the assets[37].

- Uncertain mortality makes cash flow matching tricky: the horizon is uncertain, so there exists no true risk-free asset. Further, idiosyncratic longevity risk (i.e. how long an individual will live) is much greater than longevity risk for member pools, only increasing its importance in DC versus DB settings. Such problems should be analysed through a hedging rather than net present value lens.
- Members have discretion over income that is drawn, which they may adjust in response to realised returns or changes in income needs. This means that the 'liability' has dynamic drivers and is difficult to model. There is no set spending plan to discount.
- A further complication is that the Age Pension forms part of the available asset mix, and its value is conditional on asset returns through its impact on account balance.

In our view, these features render an LDI approach as second best to modelling out (i.e. simulating) the distribution of investment returns and hence income over the course of retirement. This approach supports managing income risk allowing for the potential to adjust drawdowns and possibly the investment mix as appropriate (i.e. conditionally).

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[34] For example, see Merton, R.C., 2014. "The crisis in retirement planning", *Harvard Business Review*, 92(7/8), pp.43-50.

[35] For this reason, Merton and Muralidhar have proposed the issuance of 'SeLFIES' as a security that underwrites a guaranteed real income stream over a specific time horizon. See Merton, R.C. and Muralidhar, A., 2020. "SeLFIES: A New Pension Bond and Currency for Retirement", available at SSRN 3548319.

[36] The issue is not the stochastic nature of the liability *per se*, noting it can be possible to allow for a stochastic liability in LDI modelling. For example, under mean-variance formulations of LDI, the liability may be treated like a negative asset that has its own volatility and correlation with the asset, e.g. see Waring, M.B. and Whitney, D., 2009, "An asset–liability version of the Capital Asset Pricing Model with a multi-period two-fund theorem", *Journal of Portfolio Management*, 35(4), pp.111-130. Macro factor model formulations are also possible, e.g. modelling assets and liabilities as exposures to inflation, interest rates, etc. These approaches can be effective in a defined benefit (DB) setting. In a defined contribution setting, the nature of drivers of the liability, including its member-idiosyncratic nature, renders LDI difficult to apply.

[37] For discussion of the difficulties of applying LDI in retirement, see Idzorek, T. and Blanchett D. either in "LDI Misapplied: Income Portfolios and Liability-Driven Investing", *Morningstar Investment Management*, September 2017 or "LDI for Individual Portfolios", *Journal of Investing*, 28(1), 2019, 31-54.

6. In closing: Investment teams should get involved in the retirement effort

Developing RIS is a major challenge facing super funds. Significant adjustments are required in business models, including the structure of the investment function and portfolios. Addressing retirement also calls for a change in mindset towards a member outcomes lens that is focused on delivering income in retirement to members who may differ in important ways. Investment teams should get involved in the transition. They could help lead the way by proactively building investment portfolios designed for use in retirement solutions. Investment teams might also make their expertise available to assist with the development and ongoing management of RIS, most notably in more technical areas such risk management, analysis of complex product offerings and modelling capabilities. An opportunity exists for investment teams to make a significant contribution to member outcomes during retirement.

We offer four key suggestions within this thought piece. First, we see merit in maintaining a single investment function but creating a team of retirement investment specialists that engages closely with the retirement segment. Second, we recommend running segregated retirement and accumulation portfolios on the basis that the differences are significant enough to make dedicated retirement portfolios a superior option over cloning accumulation portfolios. Third, we recommend that the investment team provides a small number of retirement portfolios to be used as building blocks that can be incorporated into retirement solutions designed to meet the needs of different members. In particular, we propose supplying a growth portfolio and a capital stable portfolio as the core, foundational portfolios; although also leave the door open for supplying a defensive portfolio. We see supplying portfolios that perform specific roles as preferable to delivering balanced portfolios. Fourth, investment teams have much to offer, and should get involved in helping their organisation in moving forward on its retirement journey.

Appendix 1: YFYS test and retirement portfolios

The YFYS test is a controversial legislated test that is currently applied to the majority of super fund accumulation options (by assets), assessing the performance against a tailored benchmark based on strategic asset allocation (SAA). In this Appendix, we discuss the possibility of the YFYS test being expanded to retirement portfolios, and the issues that arise.

Policymakers appear to be giving serious consideration to extending the YFYS test to retirement. John Lonsdale, Chair of APRA, recently flagged the potential for performance testing (both the YFYS test and APRA's heatmaps) to be applied to retirement-phase options[38]. The Treasury *Retirement phase of superannuation* discussion paper of December 2023 mentions the potential extension of the YFYS test to retirement as a possible policy action. While legislation would be required to extend the YFYS test, the related APRA heatmaps[39] could be more readily introduced by APRA, perhaps as an initial step towards more formally introducing performance testing into the retirement phase.

The YFYS test was originally proposed by the Productivity Commission[40], with advocates pointing to the need for an objective "bright-lines" test to protect members from the cumulative impact of long-term exposure to an underperforming fund. APRA asserts that the test has contributed to improved member outcomes through active member switching, industry consolidation and reductions in fees.

Critics of the YFYS test mostly support a test to protect disengaged members, but focus on how test design impacts on portfolio management practices in ways that could ultimately lead to worse member outcomes over time. The Conexus Institute has undertaken extensive research on this topic[41]. Among the many issues, we highlight the following:

- Failure of the test to consider the full performance outcomes that members receive, most importantly the impact of asset allocation decisions.
- Backwards-looking nature of the test, which ignores changes made by funds to improve forward-looking performance.
- The test is risk agnostic, meaning that it ignores the impact of risk management activities undertaken within an asset class or at the portfolio level.
- Benchmarking is very challenging beyond the mainstream publicly listed assets.

Fund trustees now appear to be 'managing' to the YFYS test to the extent it seems unlikely that the mainstream options of many funds will fail in the future. We see considerable risk of a significant implicit cost to members resulting from trustees focusing on passing the test rather than maximising member outcomes[42].

Issues in introducing the YFYS to retirement

While the issues highlighted above would carry over to a retirement setting*, we hold additional concerns that applying the YFYS test in retirement would hamper the capacity of funds to manage towards the specific needs of retirees.* The difficulty of specifying appropriate benchmarks and the risk-agnostic nature of the YFYS test seem particularly problematic in this regard. Imposing a return-based test constructed around benchmark indices would inhibit super funds from managing certain risks that matter in retirement, in particular drawdown risk and inflation risk. Issues related to the

[38] https://www.afr.com/policy/economy/we-re-at-an-inflection-point-big-super-is-failing-retirees-20230823-p5dyrk
[39] The APRA heatmaps are analytically similar to the YFYS test, but without the same consequences of failure.
[40] https://www.pc.gov.au/inquiries/completed/superannuation/assessment/report
[41] For a comprehensive research hub on the YFYS test, go to: https://theconexusinstitute.org.au/resources/your-future-your-super/
[42] https://theconexusinstitute.org.au/wp-content/uploads/2022/10/YFYS-Sustainable-tracking-error-re-visited-20221012-final.pdf

risk-agnostic nature of the test are currently in play for accumulation, with Treasury currently running a consultation over the YFYS test design that puts forward some proposals for risk adjustment[43]. In retirement, there is arguably much less scope for the YFYS test to be adjusted for investment risk to account for this shortcoming. Adjustments for the management of risks in retirement – such as inflation risk – is far more difficult to implement due to an absence of widely recognised risk measures. Imposing a version of the YFYS test to retirement may hence create even more difficulties in managing towards member outcomes in retirement than it has proven in accumulation.

Furthermore, retirement gives rise to some quite *difficult challenges related to applying a return-based test when the primary focus is the delivery of member outcomes in the form of retirement income*. We highlight two challenges:

1. **Generating returns is only one input into delivery of income** – While return generation has a direct link to member outcomes in accumulation, the relationship is less direct in retirement where the primary concern is the level, stability and sustainability of income (as identified in the RIC) delivered over a long period of time. An income rather than return lens is hence required to assess the extent to which a retirement solution is likely to deliver good member outcomes. Further, the long timeframes involved necessitates ex ante rather than ex post assessment[44]. Against this backdrop, the YFYS test struggles as a measure of member outcomes due to its focus on the backwards-looking level of investment performance relative to specified set of market benchmarks, rather than the future stream of potential income.

2. **Retirement solutions and all their components should be assessed** – As displayed in Figure 1, retirement solutions integrate multiple products (e.g. an account-based pension and a longevity solution), an asset allocation, and a drawdown program. There is likely to be greater tailoring of solutions to cater for differing member needs, compared with the accumulation phase where defaults reign. We expect large differences in both the retirement solutions offered to different members within a given fund, and the retirement solutions offered by different funds. In this context, the primary focus should be the solutions themselves, including how well the individual components work together to cater for differing member needs. Again, the existing YFYS test framework appears a poor match. Focusing on a narrow aspect of investment performance can only evaluate the return-generating components of retirement solutions, e.g. account-based pensions. In the same way the test is agnostic to investment risk, it is also agnostic to longevity risk so cannot be applied to longevity solutions like annuities. A return-based test also has nothing to say about the suitability of the drawdown strategy built into a retirement solution.

Overall, there is a significant mis-match between the policy problem of protecting members from poor-performing retirement solutions, and the policy tool – a backwards-looking, benchmark-focused, risk-agnostic return-based test. Simply put, the existing YFYS test is not fit-for-purpose to assess retirement solutions offered by funds, if they develop as we expect.

How the YFYS test might be applied to retirement

We can see one pathway for placing performance testing at the foundation of retirement solution assessment. It is not the pathway that we are advocating for. It looks like this. The industry lands on a less complex and reasonably standardised approach to retirement solutions under which most super funds focus on account-based pensions using investment strategies that replicate their accumulation offerings, with longevity solutions being offered as a member-choice option rather than being integrated into retirement solutions. In this case, policymakers and regulators would have a sounder case for extending performance testing to account-based pension products as the connection between performance and potential retirement income and hence member outcomes

[43] See Annual Superannuation Performance Test – design options | Treasury.gov.au.
[44] As explained in Assessing-retirement-strategies-Final-20221202-Updated.pdf (theconexusinstitute.org.au).

would be more direct (even if still far from perfect[45]). Effectively, if the industry fails to innovate by cloning accumulation products for retirement, it invites performance testing upon itself.

More likely, a returns-based performance test would amount to an ineffective way to assess retirement solutions. Indeed, the danger is that the test results are taken as an indicator of the overall solution quality, notwithstanding only one component is being assessed. Nevertheless, a variation of the YFYS test could be applied to the return-generating components of retirement solutions, and incorporated within broader RIS assessment as a checklist item. The test might be applied to account-based pensions, perhaps in the form of the growth, capital stable, defensive and/or balanced portfolios as discussed in this paper. We also reiterate that imposing a variation of the YFYS test based around common market benchmarks could hamper the ability of super funds to form tailored retirement portfolios, including management of drawdown and inflation risk, which may have unintended consequences for member outcomes.

A final suggestion is that industry incorporates YFYS-style assessment into their internal governance frameworks. This could form part of a multi-metric approach to assessment of both investment performance and the components of RIS. It would send a signal of high governance standards to regulators, hence reducing the case for the imposition of formal performance testing.

Appendix 2: Investment risk and income potential

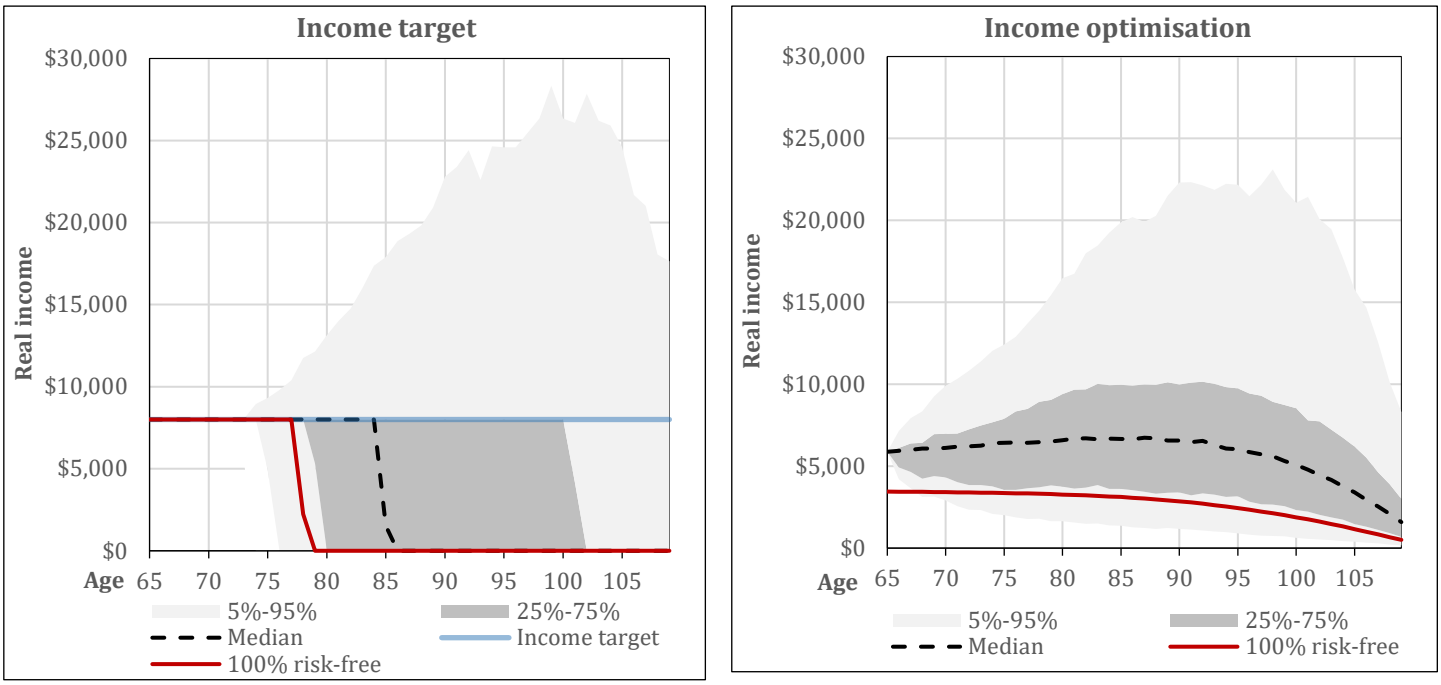
This appendix outlines how taking on investment risk by investing in higher returning but more volatile 'growth' assets plays through into income over long horizons, relative to investing in lower returning but less volatile assets. Higher returning assets can boost potential income through greater wealth accumulation in two ways. First, greater wealth can allow more income to be affordably drawn. Second, greater wealth can allow a given level of income to be sustained over a longer period. Meanwhile, investing in lower-returning but less volatile assets may help to guarantee a given level of income, but that income will most likely be lower in magnitude.

This brings us to the implications for income risk, which are nuanced. Investing in higher-return, more-volatile assets widens the distribution of income relative to investing in lower-returning, less-volatile assets. Closer examination reveals that the ***probability*** is increased of delivering income that is either greater or sustained for longer – often significantly. However, it also worsens the potential ***magnitude*** of poorer income outcomes, i.e. income has some chance of ending up much lower or being sustained over a much shorter period. In essence, the overall income distribution is elevated but the lower tail of the distribution deteriorates. See Warren (2021*, op cit*) for further discussion.

Figure 5 illustrates by comparing the distribution of income arising from investing in a growth portfolio offering a 6% real compound expected return with 15% volatility with an investment in a risk-free asset delivering a certain real return of 1%. We estimate the distribution of income extracted from a retirement balance of $100,000 under two different income objectives and hence drawdown strategies. Under an income target objective (left chart), an assumed real income target of $8,000 is drawn until the retirement savings account is exhausted, with provision for taking more income where safe to do so. Under an income optimisation objective (right chart), an 'affordable' income is drawn as a function of expected returns and the remaining balance and life expectancy. For further details on the models, refer Butt, et al. (2023)[46].

[45] For instance, the drawdown strategy would still be a factor in the income stream that is delivered.
[46] Butt, A., Khemka, G., Lim, W. and Warren, G. 2023. "Primer on Retirement Income Strategy Design and Evaluation", *Society of Actuaries Research Report*. Available at: Primer on Retirement Income Strategy Design and Evaluation | SOA.

Figure 5: Income percentiles for investing in 100% growth versus 100% risk-free



***Assumptions**: Mean compound real return of 6% for growth and 1% for risk-free; growth standard deviation of 15%; calculations for balance at retirement of $100,000; $8,000 drawn under income target until account exhausted, unless higher income can be safely drawn; 'affordable' income drawn under income optimisation reflecting expected return and remaining balance and life expectancy.*

The first point to arise from Figure 5 is that the median income for the growth portfolio well-exceeds that arising under the risk-free portfolio. Under an income target, median income is exhausted at age 86 for the growth portfolio versus age 79 for the risk-free portfolio. Under income optimisation, median income for the growth portfolio sits above that under the risk-free portfolio by a factor of around *2-times*. We also see that the bulk of income distribution for the growth portfolio sits above that generated from the risk-free portfolio, often by a substantial amount. This indicates that the growth portfolio delivers a significantly higher probability of generating more income, along with the chance of generating much greater income.

However, further examination confirms that the growth portfolio delivers worse outcomes in the lower tail. Under an income target, the 5th percentile lines indicate a 5% chance of income running out as early as age 76 for the growth portfolio, versus being sustained with certainty until age 79 for the risk-free portfolio. Under income optimisation, the 5th percentile income for the growth portfolio sits meaningfully below that for the risk-free portfolio after age 68.

The bottom line is that the member has a substantially higher likelihood of receiving a better income outcome through investing in growth assets rather than defensive assets, with potential for a very much better outcome. However, there are no guarantees. There always exists some modest risk of an even worse outcome when taking on more investment risk.