



Simple Ideas for a Complex Retirement: A Blueprint for an Improved Retirement Income System

Prepared by Anthony Saliba

Peer reviewed by Leigh Kobus

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Institute of Actuaries of Australia

ABN 69 000 423 656

Level 2, 50 Carrington Street, Sydney NSW Australia 2000

t +61 (0) 2 9239 6100 f +61 (0) 2 9239 6170

e actuaries@actuaries.asn.au w www.actuaries.asn.au

ABSTRACT

For at least a decade, there have been countless articles, presentations and even a Financial System Inquiry (FSI) pointing out the problems with the current state of Australia's retirement income system. The issues relating to longevity protection, financial planning, generational inequity and fiscal policy appear to be well understood by academics and practitioners alike, yet here we are in 2019 without a clear way forward.

Recent consultations show that consensus is hard to achieve within the industry and flaws in ideas are easier to find than viable solutions. Also, there appears to be a default position across the industry that more innovation is required when it comes to retirement income products. This is generally thought to mean opening up the gates to a wide array of drawdown products in an attempt to provide retirees with features they do not currently have access to. However, perhaps innovation can be achieved by taking a contrarian view and constricting rather than expanding possible retirement product sets. By taking such an approach, super trustees providing drawdown solutions may successfully move from a prescriptive to a facilitating role, as financial literacy is improved and retirees are empowered to make better-informed decisions.

Keywords – post-retirement, retirement income, framework, innovation, financial advice, account-based pensions, annuities, Age Pension, financial literacy, technology, MyRetirement

CONTACT

Anthony Saliba

Email: anthony.saliba@esg.io

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1. BACKGROUND

One of the most common arguments for change within the superannuation system is the demographic shift already taking place in Australia. As noted by the most recent FSI (1), the growing ageing population and increased longevity are expected to result in a significant reduction in the workforce participation rate. This is potentially problematic because a lower revenue base for the government will be funding an increasing Age Pension liability. Even former prime minister Paul Keating, the architect of compulsory superannuation, has recently advocated for change within the system, acknowledging that the demographics were much different in the early 1990s when the system was devised (2).

Although not perfect, the accumulation phase of the superannuation system is mature, accounting for the majority of the system's \$2.6 trillion (3) assets and growing rapidly as the super guarantee charge increases and acts over a longer time frame, producing larger super balances at the point of retirement. Additionally, Australia's pre-paid expenditure tax model (whereby superannuation tax is collected on the way in and throughout, but not on the way out) is susceptible to intergenerational equity issues (4) if tampered with in any significant way. Therefore, it is commonly acknowledged that the most pragmatic solution is to develop the drawdown phase of superannuation.

There are several areas within the drawdown phase of the system that are identified as requiring improvement. Barriers to entry restrict the types of drawdown solutions possible and, even for longevity products currently available, such as lifetime annuities, take up is low due to behavioural biases (1), amongst other things. Additionally, solutions such as variable annuities and group self-annuitisation schemes fail to gain traction due to complexity and lack of perceived value. A product may have desirable features, but if the benefits cannot be conveyed and understood, then it will not be taken up. This is exacerbated by the fact that only 20% - 40% of adult Australians have seen a financial adviser (5). It is no surprise then that an overwhelming majority of retirees take their retirement income in the form of an account-based pension, drawn at minimum rates (the default) (6). In many cases, this leads to retirees having remaining balances pass on to their estate when they die – this is at odds with the proposed enshrined primary purpose of superannuation (7), being to “provide income in retirement to substitute or supplement the Age Pension.”

The FSI recommendation aimed at addressing these issues was to require all super trustees to provide a “soft default” comprehensive income product for members' retirement (CIPR) (6). This product would ideally contain all necessary features and protections that a retiree needs, and any impediments to developing such products would be removed. The Australian Government has subsequently accepted this recommendation and Treasury has launched a consultation process on the implementation of the CIPR, or MyRetirement, product framework (8). However, the direction from Treasury to date is to open up the industry to all different types of “innovative” MyRetirement solutions and have trustees target them at member cohorts, with no compulsion along the way. This will simply not address the lack of take up issues that were described earlier.

This leads to the crux of the proposed solution: improved financial literacy when it comes to retirement. An admirable goal, sure, but not currently feasible in our

current framework, nor the one considered by Treasury so far. For instance, how can financial literacy be improved if only a minority of pre-retirees are receiving financial advice? How can an education program be rolled-out if providers offer products with varying features, each with complex product disclosure statements, making it nigh on impossible for financial advisers, let alone members, to consider all options and make an informed decision? This is where a fundamental change in thinking is required. If the desire is to provide all retirees with the building blocks to implement their retirement solutions, then let us provide those building blocks. One could argue that any retirement plan involving considerations of capital expenditure, liquidity, risk management, bequests and longevity risk can be addressed to a greater or lesser degree by existing products; account-based pensions and lifetime annuities (immediate or deferred). Could a combination of these provide a viable solution?

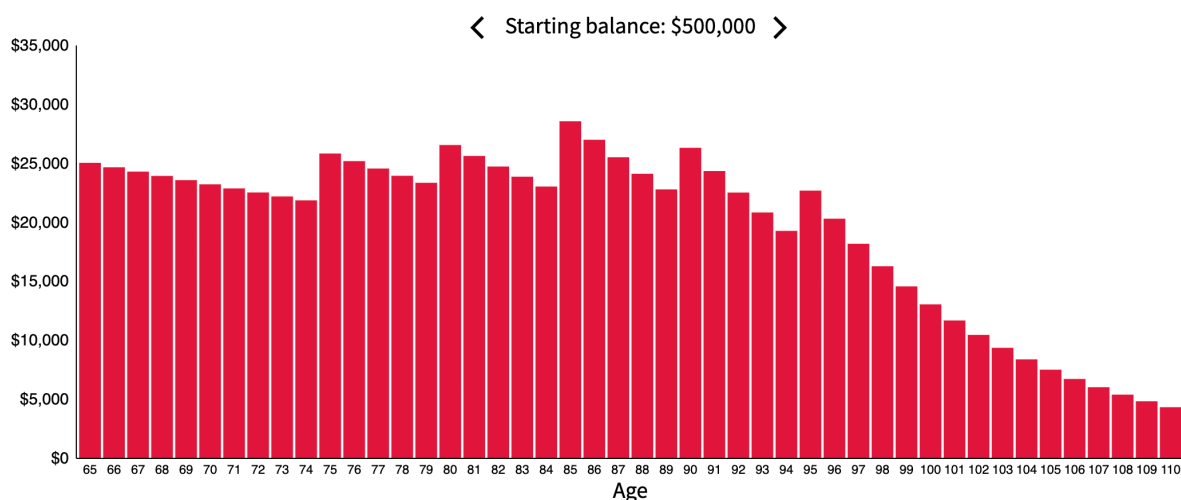
2. CONSIDERATION OF FRAMEWORK ALTERNATIVES

Before we dive into the proposed solution, a detailed look at the current defined retirement income landscape is warranted. Additionally, we will consider a couple of alternatives that have either been proposed locally or implemented to some success abroad. In this way, we will be able to objectively compare and contrast any proposed solution against alternatives. For this section, we will only consider defined contribution monies, as this is the environment with which this report is concerned.

2.1. Alternative 1: Status quo

Currently, at the point of retirement, approximately 83% of superannuation assets are converted to an income stream, with 17% taken out as a lump sum (9). Of the income streams, the overwhelming majority (up to 98% of all defined contribution assets) are account-based pensions. These are accounts that may be invested in a variety of different assets and income may be drawn down at desired rates, provided that minimum withdrawal rates are respected. For a variety of reasons, most account-based pensions are drawn down at these minimum rates, giving an income profile similar to that shown in the chart below. Note that only the income from the account-based pension is shown and no Age Pension income.

Figure 1: Typical income profile for an account-based pension drawn at minimum rates



As can be seen, due to the nature of the legislated minimum drawdown rates, the drawdown amounts can vary significantly from year to year. Also, a flat annual return assumption has been assumed for the whole projection, leading to a smooth reduction in the underlying account balance. In reality, market returns can lead to significant movements in the account balance – up or down. So, the volatility of income amounts in practice are higher than what is shown above.

The account-based pension offers no longevity protection in that once the account is depleted, there is no income or asset claim to speak of, no matter the age of the retiree. Also, if income is drawn at minimum rates, there is a good chance that, at the point of death, there is a material account balance remaining that passes on to the estate.

In terms of the small amount of longevity protection income streams currently offered, these are mostly immediate lifetime annuities. Prior to September 2004, these products were 100% Assets Test exempt. This was reduced to a 50% exemption and, in September 2007, the exemption was entirely removed. As a result of this removal of highly favourable social security treatment, take-up rates for these products have reduced significantly. Although current social security rules for these products are not necessarily worse than those covering account-based pensions, there are many arguments – some being behavioural biases – that explain the low take-up rates, such as:

- Lack of liquidity
- Lack of flexibility
- Loss aversion relating to a reduction in capital (10)
- Hyperbolic discounting
- A perception that the annuity yield does not deliver good value for money, especially when compared against the potential upside of equity market returns (see Appendix A)
- A fear of immediate death and an underestimation of our own longevity

Current annuity providers have been able to add features to their immediate lifetime annuities to address some of the arguments above, with limited success.

In addition to traditional immediate lifetime annuities, there have been some forays by providers into some more “interesting” types of annuities, such as index-linked and variable annuities. In particular, these annuities aim to address the yield and capital reduction arguments by providing exposure to market upside whilst limiting downside, often achieving this with a ratcheting mechanism built into the product. Although versions of these products have been, and continue to be, popular in some overseas markets, it is fair to say that these types of annuities have not had much success in Australia, with complexity often taking the blame. A closer analysis reveals that tax environments and commission structures often dictate the adoption of these more complex products (9).

Overall, the current environment is far from disastrous, yet suffers from some serious issues. The proposed purpose of superannuation is to provide “income in retirement to supplement or substitute the Age Pension”. If many retirees are drawing down minimum rates and leaving considerable wealth to their estate, is it fair that the considerable tax concessions within superannuation are effectively being used to increase estate wealth, and not used to provide retirement income? Also, the Age Pension is a longevity hedge provided by the taxpayer, yet empirical evidence shows that the purchase of privately-offered longevity protection is minimal.

2.2. Alternative 2: Compulsory annuitisation

The FSI's recommendations relating to the retirement income system were provided on the basis that there needs to be a shift in the provision of longevity protection from the public sector to the private sector. A simple, yet heavy-handed way to achieve this is to mandate that a proportion of all superannuation savings be annuitised at the point of retirement. Although this will force more superannuation monies to be consumed in retirement (consistent with the proposed purpose of the

system), due to the arguments against annuitisation above, this is unlikely to be popular with the Australian people and therefore not likely to be proposed by the government.

Additionally, several jurisdictions overseas have implemented such compulsion and have had some issues. For instance, the UK had compulsory annuitisation since 1921. However, after the Global Financial Crisis, with interest rates at record lows and longevity at record highs, annuities were perceived to be very poor value for money. Things eventually got to the point where compulsory annuitisation, part of the pension landscape there for almost 100 years, was actually removed in 2015. As then-Chancellor George Osborne proclaimed: “Let me be clear: No one will have to buy an annuity ... People who have worked hard and saved hard all their lives, and done the right thing, should be trusted with their own finances.” (11) That is a solid summary of the key argument against this framework alternative.

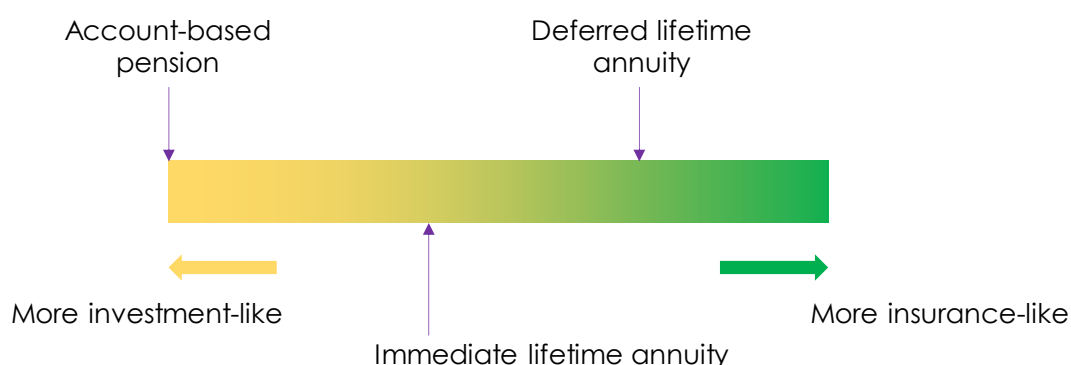
2.3. Alternative 3: Letting the market decide with legislative nudging

Recent legislative changes and Treasury consultations tend to suggest that Alternative 3 is the direction we are heading in and will soon become the new status quo. Since the FSI, legislation has been passed to remove barriers to entry for innovative retirement income products. For instance, deferred lifetime annuities are now provided the same tax concessions as immediate annuities. In addition, group self-annuitisation schemes – a type of non-guaranteed pooled income product – are now catered for in the social security legislation.

The intention from the government is clear: remove the restrictions so that providers can design retirement income products with features that retirees are not currently getting.

In many ways, this progress is welcomed. Deferred lifetime annuities, for instance, act more like a true insurance against longevity than their immediate annuity counterparts. This is due to the larger mortality credits that fund the underlying income (see Appendix A). This allows longevity protection to be provided for a smaller capital outlay, provided a sufficient deferral period.

Figure 2: Spectrum of investment to insurance features in retirement income products



In addition to removing product barriers, recent Treasury consultations suggest that a “retirement income covenant” will be introduced that will “require trustees to consider the retirement income needs and preferences of their members” (11). As part of this, the goal is to provide members with greater choice in how they take

their superannuation benefits in retirement. Reduced personal advice requirements for trustees and favourable social security treatment for longevity products are potential levers that can be pulled to try and increase the take-up of these new products.

As a result of the above, it is possible that we end up in a situation where there are many retirement income providers, each offering their own suite of products with unique features. These features may include capital protection, income ratcheting, death and withdrawal benefits, exposure to equity performance and mortality risk pooling. This may not sound like such a negative at first, however this paper will explore the second and third order impacts of such a diverse retirement income framework and why it is suboptimal.

2.4. Summary of alternatives

A summary of the three framework alternatives is provided in the table below.

Table 1: Summary of three framework alternatives

Alternative	Benefits	Drawbacks
Alternative 1: Status quo	▪ Familiar ▪ Allows for choice ▪ Relatively simple (only one popular product)	▪ Uncertainty of drawdown approach ▪ Lack of longevity protection outside the Age Pension ▪ Super assets often end up passing on to the estate and not used as income
Alternative 2: Compulsory annuitisation	▪ Privately-offered longevity protection ▪ Simple (only one product)	▪ Does not allow for choice ▪ Lack of perceived value
Alternative 3: Letting the market decide with legislative nudging	▪ Allows for choice (all trustees have to offer a MyRetirement product) ▪ Privately-offered longevity protection encouraged	▪ Lack of perceived value in longevity products ▪ Complex (many products to choose from) ▪ Hard to compare products ▪ Expensive for trustees to implement ▪ High risk of legacy products

3. PROPOSED SOLUTION

The above framework alternatives each have their own strengths and weaknesses. Alternatives 1 and 2 have serious flaws that have been criticised extensively by the industry. Alternative 3 has the potential to be a viable retirement income framework and it is therefore no surprise that Treasury seems to be slowly moving towards this approach during the multi-year consultation process embarked on since the FSI recommendations were accepted. However, I am proposing some important differences to Alternative 3 that will propel it from a theoretically sound framework to an extremely efficient and practical one.

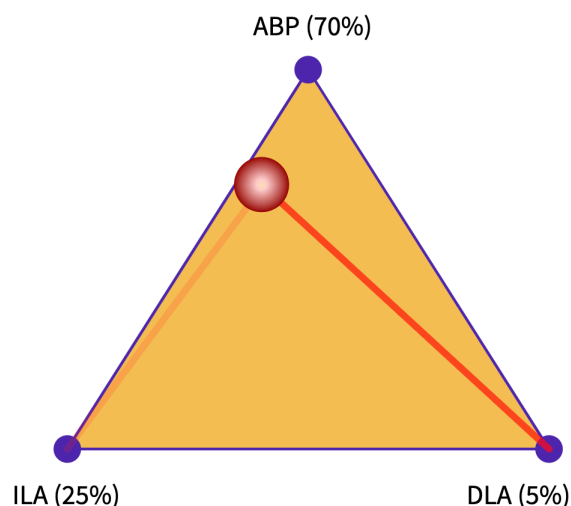
It is important to note that this proposed framework does borrow on the idea of the retirement income covenant and it is within this covenant – and the associated MyRetirement products – in which changes are proposed. It does not suggest any changes to the status quo for any retirees that wish to purchase bespoke retirement income products, outside of the MyRetirement suite.

3.1. Introduction

Suppose a complying MyRetirement product was simply a packaged and adjustable combination of a plain account-based pension (ABP) and an immediate lifetime annuity (ILA), and that every provider had to offer such a combination. There would be no compulsion for a retiree to elect any lifetime annuity proportion, but the option would be there. This provides the retiree with two simple building blocks to construct a workable solution for them. At first, this solution may seem overly restrictive, particularly at a time when the industry is abuzz with the opportunity to develop all kinds of innovative retirement income products. However, these restrictive product rules, in addition to being incredibly simple, enable standardisation, which is necessary for unlocking several important benefits; namely familiarity, rapid digitisation, reduced costs and vastly greater system integrity.

Let us extend this further by allowing for deferred lifetime annuities as a third building block. As mentioned in the previous section, a deferred lifetime annuity (DLA) is similar to its immediate counterpart but may be thought of as even more of an insurance product than an investment one. Therefore, for a DLA, less of an initial capital outlay is required to achieve the same level of longevity protection as an ILA. This makes the DLA a useful addition to the retirement income toolbox and should be included within the MyRetirement options.

To summarise, all trustees should be able to provide their members with a retirement income solution with varying amounts of ABP, ILA and DLA. This should not be delivered as a mix of a disparate products, each with their own detailed product disclosure statements, but rather as a seamless solution for the retiree. Figure 3 below visually describes the range of permissible combinations.

Figure 3: Triangle showing how a MyRetirement solution can be packaged

Although all combinations in the triangle would be possible, in reality however, it would be unlikely that combinations in the bottom half of the triangle would be selected as this would result in only a small ABP allocation – the only product building block that provides sufficient flexibility.

3.2. Throughout accumulation

The MyRetirement solution described above should not only be introduced to retirees as they consider their options close to retirement. Regular superannuation member statements provide an excellent opportunity to familiarise members to the concept, via an appropriate retirement income projection. This is perfectly consistent with Recommendation 37 of the FSI (6), which was accepted by the Federal Government and is reproduced below for reference:

Excerpt 1: Recommendation 37 of the 2014 FSI

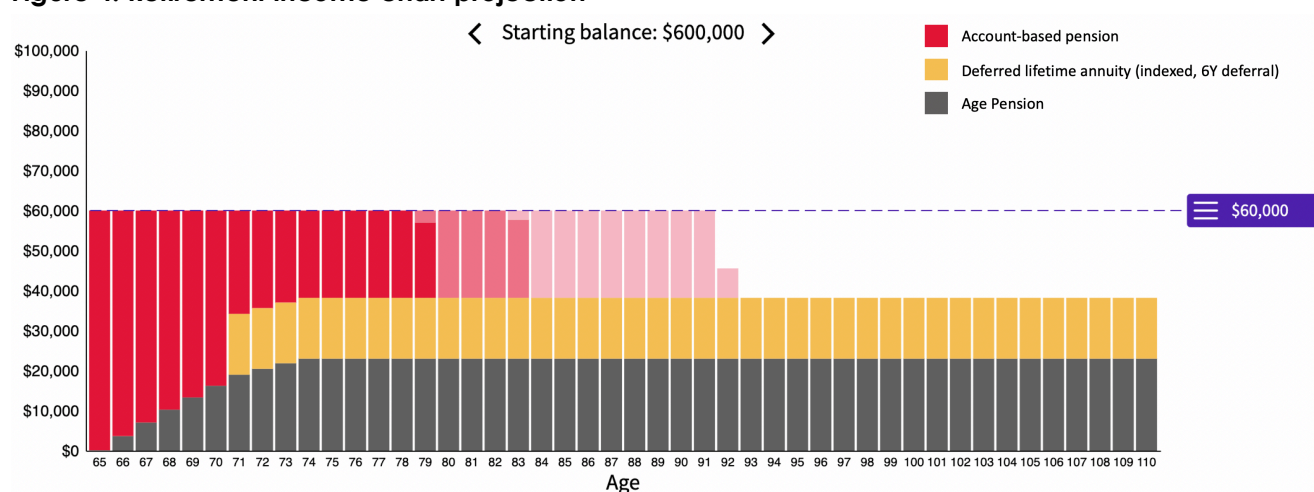
Publish retirement income projections on member statements from defined contribution superannuation schemes using Australian Securities and Investments Commission (ASIC) regulatory guidance. Facilitate access to consolidated superannuation information from the Australian Taxation Office to use with ASIC's and superannuation funds' retirement income projection calculators.

The proposed framework can nicely accommodate the requirement for trustees to have retirement income projections on member statements. The default projection should be a MyRetirement product projection. Since the MyRetirement product options proposed are very simple, it would actually be possible to have consistent-looking projections across the industry. So, every year when a member gets their statement, they are presented with a projection that will look very similar to the ultimate projection they will be presented with at retirement when they need to make a decision. The trustee can, based on the data they have/collect about each member, construct a particular calibration of the MyRetirement product that they believe is most appropriate for that member. The calibration should be able to be edited by the member, but the default position is proposed by the trustee. This can be achieved through the use of utility functions such as MDUF (12), however it is important that the member is not presented with any information about the utility

function or any associated complex algorithms. Of course, if a member would like to know how a particular calibration was determined for them, that information should be made available, but the default position should be to abstract that complex detail away from the member for the sake of simplicity.

As for what the income chart may look like, consider the below example. An annual net real income projection is shown from ages 65 to 110. Varying shades of red are used to illustrate the market risk within the account-based pension. The dark shade represents what would occur in a poor market scenario (as this is most likely to be reached or exceeded), the medium shade; an average market scenario and the lightest shade; a strong market scenario. These scenarios may be selected stochastically or deterministically using realistic assumptions about the underlying fund return distribution and using certain percentiles. For example, 5th, 50th and 95th percentiles are used below, however there is no need to use statistical language in the chart.

Figure 4: Retirement income chart projection



The above visualisation can help to illustrate the trade-off between different product building blocks. For example, the account-based pension can be depleted at age 79 (or earlier) or at age 92 (or later), depending on market performance. The deferred lifetime annuity, on the other hand, provides regular income for life, once it commences, irrespective of market performance. This is a more intuitive approach to comparing the products as opposed to using an average income measure with a risk score (which has been proposed by Treasury in the Retirement Income Disclosure Consultation Paper (11)). In addition, access to capital also needs to be considered and this can be done in a similar way to income above.

The above chart can be either provided statically or, preferably, dynamically with an allowance for different drawdown levels, strategies and building block compositions. Combining this idea with standardised product building blocks would then allow this chart to be rolled out consistently across the industry as it would be able to handle all product combinations and strategies. (A centralised comparison tool is an objective mentioned in the Retirement Income Disclosure Consultation Paper.) This consistency would give financial advisers the ability to compare and contrast all MyRetirement solutions across all providers. Also, having a standardised income chart would reduce technology costs to trustees as they would be implementing industry standards and not bespoke advice tools and Age Pension calculators to handle their own complex products. These benefits – and the others mentioned in Section 5 – would simply not be possible with an unrestricted product set.

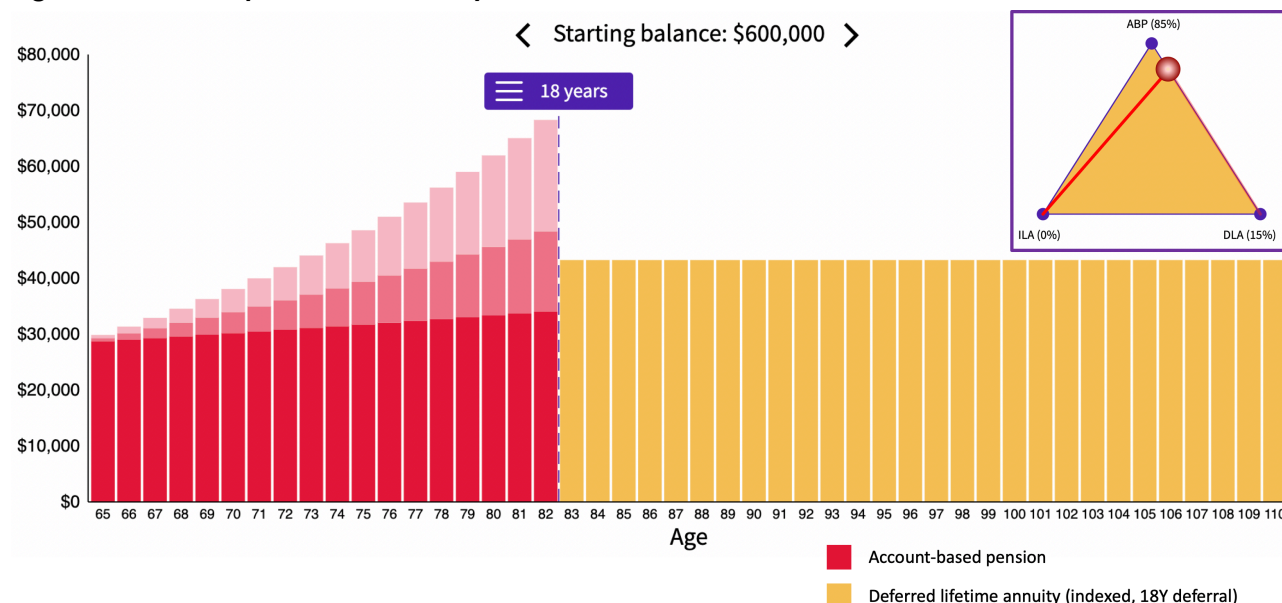
3.3. Financial advice

At the point of retirement, or at least when a member is planning for their upcoming retirement, the same income projection that was used during accumulation can be used to help determine the most appropriate solution. In this way, the member is not overwhelmed by new information and can actually approach the situation from a position of familiarity and confidence. This is important because, although the product building blocks are limited, there are a large variety of combinations and withdrawal strategies that may be selected. For instance, one strategy may be 80% account-based pension, 20% immediate lifetime annuity and 0% deferred lifetime annuity. In fact, if whole percentages were to be assigned to each of the three underlying building blocks, then there is a total of 5,151 combinations. Also, at this point, an Age Pension projection should be included as this can form a significant part of the total retirement income for many retirees. It is important that these projections are as useful and accurate as possible, as the goal is to lock in a “set and forget” strategy that is not susceptible to cognitive decline later in retirement.

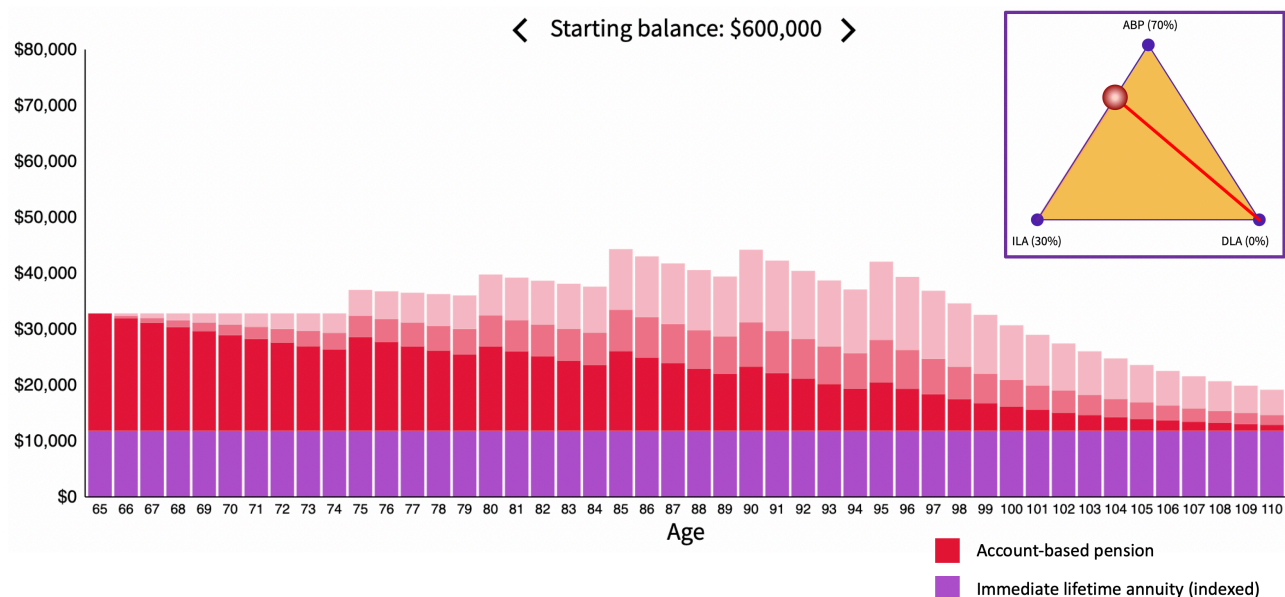
To demonstrate how these income projections may look – and how useful they can be when contrasting various options – below are three different projections, consistent with the visualisation shown above, each showing one of the three sample MyRetirement products suggested by Treasury: the cut, the stack and the wrap. To be consistent with the blueprint, these have been presented as simple calibrations of the one standardised product, with the same three underlying building blocks. Hopefully you can appreciate how a retiree may select one calibration over another based on their own preferences. Note that although the Age Pension should be shown in actual advice tools, it has been purposefully omitted below to focus attention on the MyRetirement calibrations themselves.

The cut

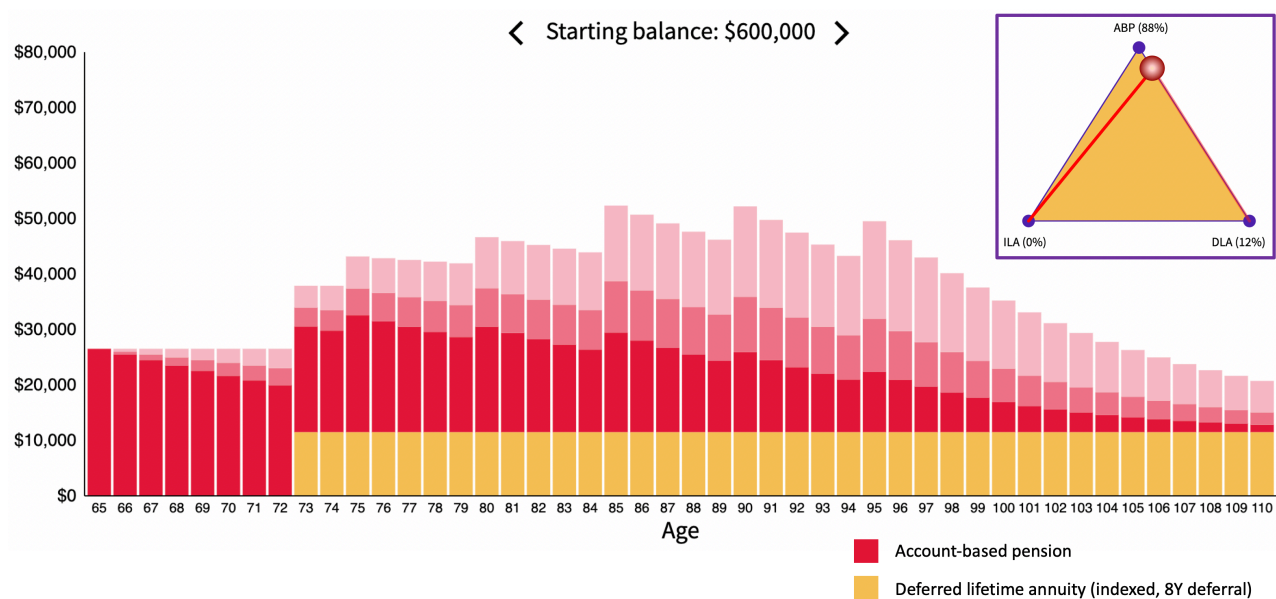
Figure 5: An example of “the cut” MyRetirement solution



The benefit of “the cut” solution, is that flexibility and access to capital are available in the early years of retirement, whilst only a small proportion of the starting superannuation balance (in this case 15%) is put into a deferred lifetime annuity to provide a stable income should the retiree live well beyond their life expectancy.

The stack**Figure 6: An example of “the stack” MyRetirement solution**

“The stack” solution combines an account-based pension with a larger investment in a longevity solution than “the cut” (in this case it is 30% allocated to an immediate lifetime annuity). The account-based pension is drawn down at minimum rates and still exhibits the volatile income profile that we have seen before. The benefit of the immediate annuity is that the realised yield increases much quicker than if the income was deferred. This would be appropriate for people very concerned with loss of capital in the event of early death.

The wrap**Figure 7: An example of “the wrap” MyRetirement solution**

“The wrap” solution is similar to “the stack” but, by deferring the income in the annuity, a smaller allocation to longevity protection is required. This allows for a larger account-based pension allocation – and therefore flexibility and liquidity.

3.4. Why only account-based pensions and lifetime annuities?

So far, we have not explicitly addressed why the blueprint is proposing using only account-based pensions and lifetime annuities (both immediate and deferred) as building blocks. Firstly, including account-based pensions is effectively non-negotiable; they make up the overwhelming majority of current drawdown products and they provide the most flexibility of all products. As for why traditional lifetime annuities have been chosen as the other building blocks, there are several reasons for this:

- They offer longevity protection via a risk pooling mechanism
- They are established products, having been in existence for several decades in Australia
- They are simple (income is flat or indexed and is paid for life)
- They are guaranteed by an insurance company

In many ways, account-based pensions and lifetime annuities represent the two extremes of the retirement income product spectrum in that one provides ultimate flexibility and the other provides true guaranteed income for life. For this reason, they complement each other well in a packaged retirement income solution.

Although other, less common, products such as group self-annuitisation schemes and index-linked annuities also offer attractive features, they have yet to see the traction of lifetime annuities. This may change over time and, as we will see later, there is room to incorporate more building blocks into the framework as it matures.

4. THE IMPORTANCE OF DISPLAYING A RANGE OF OUTCOMES

Before we explore each of the benefits of the proposed blueprint, it is important to understand why extending the accumulation approach of using average historical returns is extremely inappropriate for retirement income projections. Up until this point, it has simply been stated that a range of outcomes should be presented for this purpose.

4.1. Temporal diversification

The superannuation industry often uses average annual returns to help provide accumulation members with expectations of future performance and what that means for their super balance at retirement. This is quite an effective technique as annual returns are simple enough to understand. Additionally, since the investment horizon within accumulation is generally so large, even though the expected returns may not be realised in the short term, it is often argued that over a long enough period of time, it is more likely that the realised annualised return will get closer to the expected return. This is due to the fact that, if the annual returns are independent, the standard deviation of annualised returns diminishes over time and therefore the distribution of annualised returns will converge to the expected return as the investment horizon increases.

Figure 8: Convergence of annualised returns over time

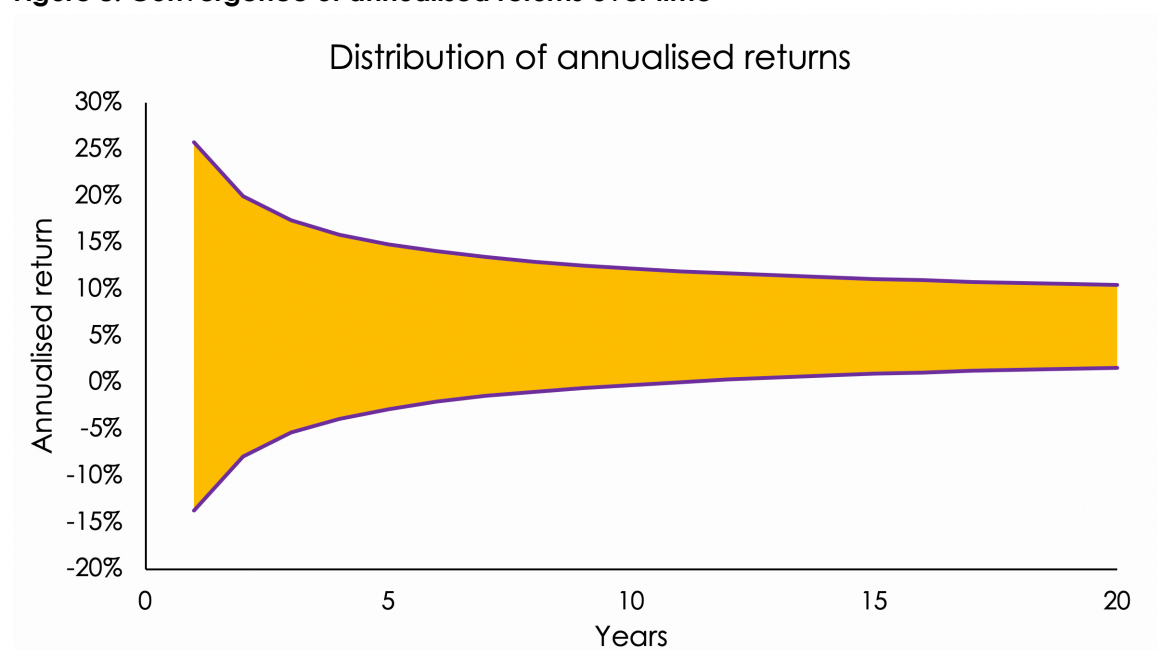


Figure 8 above shows a 90% confidence interval of annualised returns over time, assuming an investment with a normally distributed expected return of 6% p.a. and a standard deviation of 12% p.a. The convergence of the distribution of annualised returns as the investment horizon lengthens is clear. Although this definitely does not mean that the range of terminal wealth outcomes converges (in fact the opposite is true), temporal diversification is commonly used to support the use of a single expected return in accumulation projections.

4.2. Uncle points and ensemble probabilities

Whether or not the use of single estimates is appropriate or not in the accumulation environment, they are definitely not in the decumulation environment. This is due – at least in part – to the existence of uncle points in retirement. An uncle point refers to the maximum amount of pain, or loss, that a trader is willing to incur before getting out of a trading position. In other words, it is the point at which a trader is unwilling to incur any further losses and decides to throw in the towel and get out of his or her trade.

During accumulation, there actually is no true uncle point. Even if a member was to experience poor returns due to their fund underperforming significantly, there will always be an account balance and that balance will continue to be topped up with regular superannuation guarantee contributions. This can lead to a certain amount of apathy and a fall-back to the temporal diversification argument: “I’ll just leave my superannuation to earn the long-term average returns.” Although, as we know, retirement outcomes can be vastly different due to the paths experienced during accumulation.

In retirement, on the other hand, two of the largest considerations are access to capital and the provision of income. Therefore, for a simple account-based pension, for example, the uncle point can be considered as the point at which the account balance is totally depleted. At this point, there is no capital left to access and no income to draw down. This can be thought of as an absorbing state as it cannot be recovered from and therefore the point at which this occurs is of considerable interest to the retiree. This is why retirement plans need to explicitly model and consider these scenarios rather than simply relying on “best estimate” assumptions supplemented with no-context risk measures.

Extending this notion of path-dependency, Appendix B describes the differences between ensemble and time probabilities. This distinction becomes very important for retirement income planning where there is a risk of conflating conventionally understood probabilities (ensemble probability) with path-dependent probabilities (time probability). Making decisions based on the long-term returns of the market would be ill-advised. Even if the forecasts of investment experts were true, retirees will not obtain the returns of the market since they are drawing down capital and therefore their exposure will eventually reduce over time. Further, unexpected events such as market crashes and health episodes may result in changes to drawdown patterns, so even a simple modelling of drawdowns in the presence of deterministic long-term return assumptions will prove inaccurate.

Finally, since retirees can only live once and therefore cannot repeat their experiences multiple times to obtain some sort of average, it is clearly the time probability, rather than the ensemble probability, that is of interest. There is no use planning for the “average retiree outcome” when all it takes is a unique extreme event to render the average useless. It is for these reasons that worst case or, “sufficiently poor” scenarios, in addition to best estimate scenarios, (both from a market risk and longevity risk perspective) need to be considered in retirement planning. In this way, no matter what transpires, the retirement plan set at the beginning of retirement can handle all outcomes and provide peace of mind.

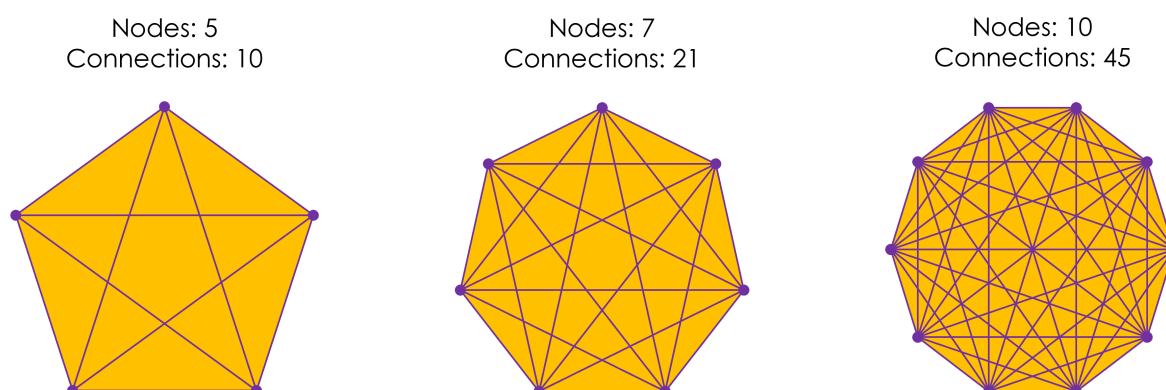
5. BENEFITS OF PROPOSED APPROACH

Applying the proposed blueprint to MyRetirement solutions means that concessions will need to be made in terms of product design. This is because tailoring of a MyRetirement solution to suit a member's needs has to be a simple process but allowing for a very wide array of retirement income product features makes this inherently complex. Having said that, the Murray Inquiry identified simple product mixes as being candidate solutions that could improve outcomes for retirees and so it can be argued that a simple framework can also be a successful one, particularly for the "non-advised" sector where the MyRetirement framework should be making the most impact. Simplicity of MyRetirement product design will extend benefits logically to many areas within the retirement income space, including financial literacy, cost of advice, product approval and product comparison. Promoting product complexity under the guise of innovation will actually have adverse impacts on each of these areas, which may unfortunately result in further public disengagement with superannuation.

5.1. The network effect

Firstly, standardisation would lead to familiarity. By applying constant messaging, which could start as early as secondary school, the simple notion that there are only two ways (account-based pensions and lifetime annuities) for superannuitants to receive their savings as income could be more easily conveyed than the status quo. There would be no advertisements from providers boasting of differentiating product features, as all super trustees would be essentially offering the same underlying products as a packaged commodity. Furthermore, members in the accumulation phase would be provided with the same retirement income projections every year in their member statements, regardless of the fund they are in. This would mean that any Australian with a super fund that understood their own statement would understand any member statement from any fund – a remarkably stronger position than the one we find ourselves in today. It naturally follows that the sharing of understanding amongst the public would be much more likely in such an environment, again assisting with the financial literacy push via the network effect.

Figure 9: The impact of increasing the number of nodes (users) in a network

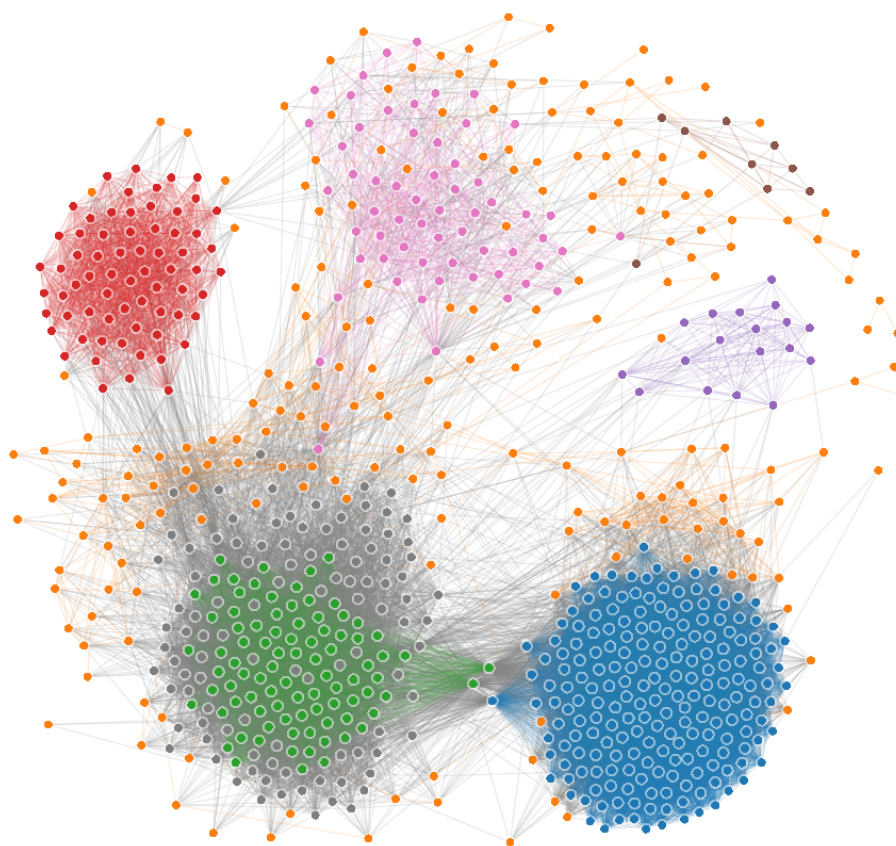


A network effect (also called network externality or demand-side economies of scale) is the effect described in economics and business that an additional user of a good or service has on the value of that product to others. When a network effect is present, the value of a product or service increases according to the number of

others using it (11). As more retirees are added to such a standardised retirement income system, we can see how this increases the value of the system to other retirees, as financial literacy propagates throughout the network. To be fair, significant benefits will only be realised once a critical mass of retirees is added to the system. Therefore, an important question to ask is how can users be attracted to the system prior to reaching critical mass? The Government has the ability to employ extrinsic motivations, such as tax concessions, to early adopters, however a more natural strategy and preferred approach would be to build the system in such a way that it has enough initial value without network effects. This can be achieved with intuitive member communications, streamlined software and high-quality financial advice. Then, as the number of users increases, the system becomes even more valuable and is able to attract a wider user base.

By comparison, there is less likelihood that a non-standardised retirement income system will successfully attract a critical mass of users. As different providers launch their own bespoke products, this will in fact create pockets of ecosystems within the entire retirement income framework, leading to network centrality; a phenomenon in which some nodes exhibit more influence within the network than others. A crude example of this is shown in Figure 10 below where the red nodes exhibit strong influence on each other, yet little to no influence on the blue nodes. These two clumps of nodes may be thought of as retirement income providers offering two unique products that are not easily comparable. Therefore, customers of each provider cannot relate to each other in a simple way and an opportunity to leverage the network effect has been lost.

Figure 10: A disparate network exhibiting centrality



5.2. True mass-customisation

Using adjustable product building blocks to deliver a single holistic solution would enable a MyRetirement product to be both customised to individuals *and* mass-produced, two of the cornerstones of mass-customisation; the goal set out for such products by Treasury (8).

Returning to the member statement example, perhaps in the first member statement from a super fund, an individual is provided with a retirement income projection resulting from an arbitrary combination of account-based pension and immediate lifetime annuity. The statement may be interactive if viewed online and allow the member to adjust the proportion of each product building block. The next statement could then show an updated projection using the same proportion that the member selected previously, and this process is repeated every year throughout accumulation until the point of retirement, at which point the income options available should be understood and financial advice may not even be necessary. Super members may switch funds and, due to the commoditised nature of this solution, receive the exact same projections presented to them by their previous fund.

An alternative to this definition of mass-customisation is mentioned on page 15 of Treasury's discussion paper into the retirement income framework, which refers to a CIPR, or MyRetirement product, being "designed to be in the best interests of the majority of the members of a fund" (8). This is not consistent with the true definition of mass-customisation as it clearly is lacking in flexibility and almost guarantees that some members will be provided with sub-optimal outcomes. In short, it allows for mass-production but not customisation. If true mass-customisation is pursued, there would actually be no need for trustees to construct and offer more than one MyRetirement solution; there is only one solution but it may be calibrated in a number of ways to cater for all members of a fund.

5.3. Software advantages

The proposed approach will also result in reduced costs for trustees. Rather than requiring every trustee to build several MyRetirement solutions, which would require bespoke software development and testing for each product, as well as financial planner training, trustees would only have to build their MyRetirement capability once, to a detailed specification provided by the Government. This would be similar to the SuperStream changes relating to data quality and standardised formats (12).

To illustrate how this may practically work, let us introduce some example design specifics. As mentioned, it is proposed that a MyRetirement product is simply a combination of an account-based pension, immediate lifetime annuity and deferred lifetime annuity. The proportions of each component may be dialled up or down to suit an individual's need. Therefore, a MyRetirement product could be totally defined within a closed set of parameters, such as:

- Account-based pension (ABP) proportion
 - Asset allocation within account-based pension
 - Drawdown strategy (minimum or level amount, for example)
 - Payment frequency

- Immediate lifetime annuity (ILA) proportion
 - Payment frequency
 - Indexation
- Deferred lifetime annuity (DLA) proportion
 - Deferment period
 - Payment frequency
 - Indexation

This set of parameters, although constrained, could allow for a range of different MyRetirement solutions. For example, one trustee might offer a “stack” solution as a soft default, which only allows their members to adjust the immediate lifetime annuity proportion and the asset allocation within the account-based pension. This would allow a retiring member with a \$400,000 superannuation balance to select an option with \$300,000 invested in a balanced account-based pension and the remaining \$100,000 invested in an immediate lifetime annuity. Similarly, a member with the same balance might opt for no immediate lifetime annuity and all \$400,000 invested in an account-based pension. Another trustee might offer a “cut” solution as a soft default, which only allows their members to adjust the deferred lifetime annuity proportion, the deferment period and the asset allocation within the account-based pension. The choice will always be the member's but the options for longevity protection will be available to everyone.

One of the great benefits of defining permissible MyRetirement solutions in this way is that this information can be simply expressed in an open-standard format, such as JSON (JavaScript Object Notation), that can be easily transmitted across the internet (see Listing 1 below for an example). This would allow for the standardisation of advice tools and social security calculators, significantly reducing the burden on trustees to provide these necessary services.

Listing 1: Example MyRetirement solution calibration in JSON format

```

1  {
2    "ABP": {
3      "proportion": 0.75,
4      "assetAllocation": {
5        "equity": 0.4,
6        "property": 0.2,
7        "fixedIncome": 0.3,
8        "cash": 0.1
9      },
10     "drawdownStrategy": "minimum",
11     "paymentFrequency": "monthly"
12   },
13   "ILA": {
14     "proportion": 0.15,
15     "paymentFrequency": "monthly",
16     "indexation": false
17   },
18   "DLA": {
19     "proportion": 0.1,
20     "paymentFrequency": "monthly",
21     "defermentPeriod": "20 years",
22     "indexation": false
23   }
24 }
```

The calibration above follows the extremely simple and standardised blueprint specification introduced in this paper. Now imagine what the equivalent calibrations would look like if there was no specification and complex retirement income products were developed by multiple providers. Not only would it become impossible to compare products in an equitable way but the sheer amount of input data combinations would make back-end processes like pricing, hedging and monthly valuations all the more complex and prone to error.

Also consider the many legacy retirement products that currently exist due to a lack of take-up and the potential cost of administering legacy products resulting from unsuccessful MyRetirement solutions. It would not be simple for legacy books of business to be acquired by other providers if the products are not comparable. However, with a standardised specification, it would actually be trivial to absorb MyRetirement books and this will prove extremely useful in a superannuation industry experiencing significant consolidation. For multi-decade products like these, the need for legacy product contingencies cannot be understated.

Applying the approach above will not be possible without some form of advice to assist members with adjusting the MyRetirement solution to their needs – at least at first. This is where technology can play a large role. Since MyRetirement solutions would be defined within a closed set of parameters, low-cost universal advice tools could be used to assist advisers (or trained retirement income specialists) to communicate the trade-offs involved with tailoring their solution. The calculations required to be implemented by these tools would not be trivial, but this is not an impossible task. By streamlining the tools, we avoid the likely alternative scenario of having trustees, planners and software houses developing their own tools which display outcomes differently and have disparate assumptions embedded in them. It also avoids the issue of enforcing overly-simplistic assumptions via class orders, something which has happened in the past in an effort to promote consistency.

Another second order impact of this digitisation of the framework relates to social security rules and equity. One of the common reasons that government agencies provide for creating simple rules within superannuation is to reduce the trustee administrative burden, even though simple rules are less precise. For instance, the recently-legislated means test rules for lifetime income streams put forward by the Department of Social Services (15) were constructed with simplicity in mind, as they can be calculated for any complying product in the same way, with only the purchase price and retiree age at purchase being the required inputs. In reality, this creates inequity between different longevity products (17) since they possess varying degrees of insurance within them, which arguably should not be means tested. For example, under the hood, lifetime annuity payments consist of repayment of initial premium, interest and mortality credits (see Appendix A). The mortality credits are funded by other members of the pool and not the retiree's starting capital. Immediate and deferred lifetime annuities have varying emergences of mortality credits.

Nuances like these make fair social security rules inherently difficult to achieve. Under the proposed approach, a centralised body could be responsible for calculating fair and accurate means tests no matter how complicated and all trustees could simply access this calculation via an application programming interface (API), removing the need for every trustee to develop their own bespoke calculation. This API-approach could extend to advice tools and the member

statement example described earlier, reducing the strength of the “trustee burden” argument. The implication of this for the Government is, of course, that future changes required to the system could be made with simple parameter recalibrations and this could be handled “behind the scenes” without requiring each trustee to roll out and test their own suite of changes.

5.4. Simple product comparisons

Simplified and standardised disclosure for retirement products is a sensible goal for the Australian retirement income system – and this is exactly what Treasury are aiming for, according to the Retirement Income Disclosure Consultation Paper (11). This is because complex disclosure can make it difficult to compare solutions and can lead to people making suboptimal decisions. However, it could be argued that the effectiveness of any standardised disclosure metrics will be proportional to the standardisation of product sets that fall under the retirement income covenant. This is because, if a wide array of different retirement products were allowed, then it would be more likely that each of the features of those products may not be accurately represented by those standardised metrics. It would also be extremely difficult to compare features across products if only simple metrics are used. That leaves two logical alternatives to solve the problem:

- A. Increase the complexity of the standardised metrics to adequately capture the features of all possible permissible products
- B. Reduce the scope of permissible products to simple combinations of account-based pensions and longevity products (e.g. immediate and deferred lifetime annuities)

It naturally follows that option B should be pursued, as this gives us both simple products and simple disclosure. This is entirely consistent with the blueprint proposed in this paper.

Furthermore, option A will inevitably result in a world of complex products assessed by simple metrics, leading to higher potential for mis-selling and product providers “gaming” the metrics by adjusting their product features.

6. IMPORTANT DESIGN CONSIDERATIONS

Should the proposed blueprint be adopted, there are some important considerations that would need to be addressed in the construction of the framework.

6.1. Advice tools and projections

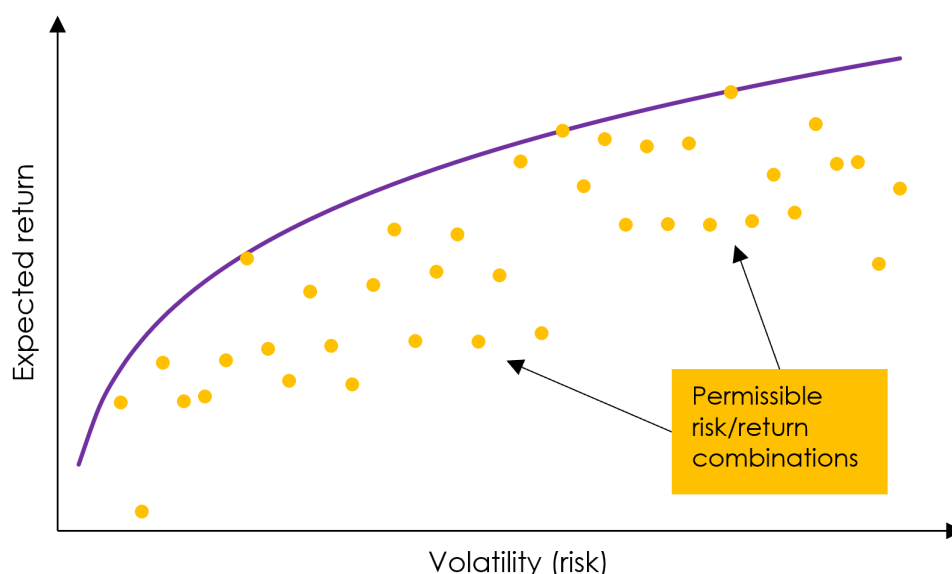
Given the standardised nature of the proposed blueprint, it is possible that retirement projections may be delivered as intra-fund advice. In fact, since a universal specification would be provided, the advice could actually be considered inter-fund in that the projection is not specific to the member's current fund.

To facilitate such advice, strict procedures around advice records and audit trails need to be set up. Due to the software-heavy nature of the blueprint, every calibration shown to a member within an advice session can be recorded and timestamped. This information can be tied to a member's tax file number and moved to a destination fund – much like SuperStream data – so that this information is not lost should a member change funds (or have their fund acquired). A minimum level of information should be required to be shown to members and, in this way, it would be possible to provide trustees and advisers with sufficient protection in the case of disputes. Extending this idea to its logical conclusion, it would actually be possible for an industry regulator to tap into this member-linked advice data and conduct regular audits throughout the industry and these audits can be mass-automated – a highly desirable position to be in.

In regards to projections shown within the advice framework, access to capital over time should be shown in a chart, in a similar way to income and presented alongside income in any prescribed reporting. That would mean showing three hypothetical capital access schedules corresponding to the same 5th, 50th and 95th percentile scenarios shown in the income charts. Again, simple product building blocks would allow for very simple capital access schedules. Otherwise, complex product features may not be fully captured within the capital access chart and this may undermine the effectiveness of this information and provide an excuse to not pay it much attention, even though access to capital is typically a highly desired objective.

6.2. Industry-wide assumptions

Any approach for demonstrating income variation, whether an income chart or a risk metric, requires agreed-upon modelling assumptions, the most subjective of which being the volatility and return assumptions for the account-based pension. Modelling assumptions need to be consistent across the industry, otherwise there will be pressure for providers to push their assumptions toward higher return and lower volatility. For this reason, I propose using an industry-wide efficient frontier that sets the limits of expected return for a given volatility. For example, an investment option with an annual volatility of 10%, will not be able to have an expected return greater than 6% p.a. A provider may be able to select a return/volatility combination on or below the efficient frontier, but not above. The efficient frontier may be reset at regular intervals to allow for changes in market conditions, although this may not be necessary if long term economic views are taken. An example efficient frontier is illustrated in Figure 11 below.

Figure 11: Efficient frontier

6.3. Lack of differentiation

One may argue that under this proposed framework, product providers and trustees will have little to differentiate themselves on other than fees, annuity rates and the quality of their communications to members. However, as has been described earlier, the bells and whistles, often labelled as innovation, are not what is required for a largely unengaged population. Ironically, the innovation in this case is starting at the opposite end of the spectrum; with simplicity and transparency for MyRetirement offers in an attempt to reduce the information asymmetry that plagues the industry. (A similar argument was successfully made during the Super System Review (12) in 2010 that introduced the no frills MySuper product for accumulation members.) As for providers potentially entering into a rate war on annuities, APRA will, as it does now, ensure they are well capitalised and key stakeholders will have to agree to the associated cost of capital and any profit volatility that an aggressive investment strategy creates. This may lead to a small group of annuity providers that can offer the best rates and these can be white-labelled into super trustees' MyRetirement solutions.

To be clear, this solution is targeted at all Australians (advised and unadvised), but it is assumed that non-advised pre-retirees will obtain the most value out of it, as this cohort is currently the least engaged. Although product providers would be required to offer the MyRetirement solution, they can continue to produce and distribute other products to their advised clients, with any features that they deem appropriate. Arguably, these products will eventually have a greater chance of success if financial literacy improves across the board.

6.4. Desirable product features

The immediate and deferred lifetime annuity building blocks have specifically been labelled as vanilla. That is, no death or withdrawal benefits and no joint or reversionary options. It is proposed that, initially, only vanilla annuities are used, as this makes associated modelling and product comparisons much simpler. Over time, this may change as financial literacy around these products improves.

6.5. Adding building blocks to the system

Another criticism of this blueprint may be that it is very rigid about the permissible building blocks; there can only be account-based pensions, immediate lifetime annuities and deferred lifetime annuities. Proponents of variable annuities and group self-annuitisation schemes may believe that retirees are not being given the opportunity to invest in those solutions with their unique product features. However, for the reasons mentioned in this paper, it is clear that the benefits extracted from this standardised blueprint are dependent on simplicity. That is, compromising on simplicity and allowing for a whole host of product building blocks will negate many of the benefits. That being said, there is no reason why the MyRetirement specifications cannot be extended once the framework becomes more mature and is ready for additional building blocks (and only then). In fact, increasing the number of product building blocks is something that the system can handle and would not pose a large burden to trustees and associated advice and financial literacy tools (see Appendix C).

As mentioned earlier, there is also no reason why trustees cannot offer other retirement income products outside of the MyRetirement framework.

7. SUMMARY AND CONCLUSION

The retirement income system stands at a fork in the road, with the decisions made now having the potential to impact the retirement landscape for decades, for better or for worse. Encouraging complexity to achieve innovation is not the solution. The last thing our system needs is a raft of legacy products that were not taken up due to a lack of engagement, complexity or, even worse, shut down due to high operational costs. The cornerstones of the most successful businesses in the world today are simplicity and technology, and there is no reason why our retirement income system cannot aspire to be successful in both pursuits.

Since the proposed purpose of superannuation is to provide “income in retirement to supplement or substitute the Age Pension”, then our decumulation framework needs to facilitate this. At its heart, the Age Pension is a regular income for life. Immediate and deferred lifetime annuities are more than capable of providing such income. The missing pieces to our system are not more retirement income products, but the more subtle and harder to conceptualise goals of improved financial literacy and the leveraging of the latest technology. To quote Henry Hazlitt from his popular 1946 book “Economics in One Lesson”: *“The art of economics consists in looking not merely at the immediate but at the longer effects of any act or policy; it consists in tracing the consequences of that policy not merely for one group but for all groups.”*

Simple and constrained product building blocks for complying MyRetirement offerings will enable the rapid digitisation of the industry, resulting in improved financial literacy via the network effect and reduced costs for providers and, in turn, retirees. The framework could evolve as it matures, taking advantage of standardised data across the industry and adding to the suite of features as necessary. The full benefits of this proposed framework will not be reaped in the short-term. However, if short-term gain was the objective, we may not have had our world-class superannuation system to begin with.

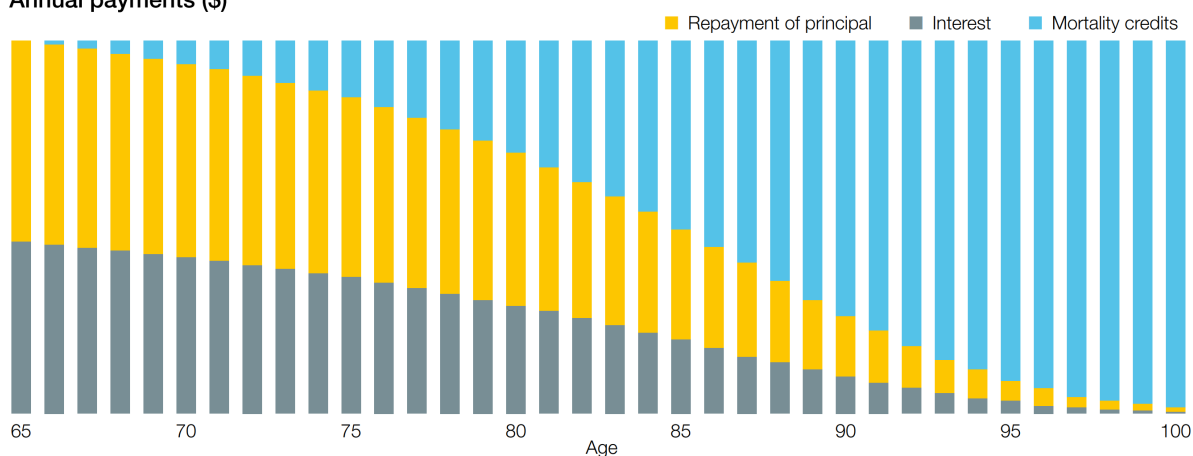
APPENDIX A MORTALITY CREDITS

Annuities are often associated with low returns. This makes sense, since annuities are generally defensive products with guaranteed income payments. For the payments to be guaranteed, the insurers providing them need to ensure their own solvency to a sufficient degree as dictated by APRA. This can be done by either investing the annuitants' premium very defensively and not having to hold much capital, or by slightly dialling up the risk in the assets backing the annuity liability to improve the annuitants' yield and simply holding more capital for this luxury. The latter approach more closely reflects the strategies of the currently active annuity providers in Australia. In any case, the portfolios would definitely be considered defensive by most standards and the annuity rates offered reflect this. However, a lifetime annuity is not simply a product where principal and investment growth are returned to the annuitant (like a simple bond is). Professor Babbel in the recent "Retire Smarter" series (17) explains that there is a third component that contributes to the income paid to the annuitant. This component is known as the "mortality credit" component and effectively represents the unrepaid principal contributed by those annuitants who are no longer alive to receive payments. This is not a new concept; however, the chart below provides a good illustration of how the mortality credits emerge over time.

Figure 12: Chart showing the importance of mortality credits in longevity products

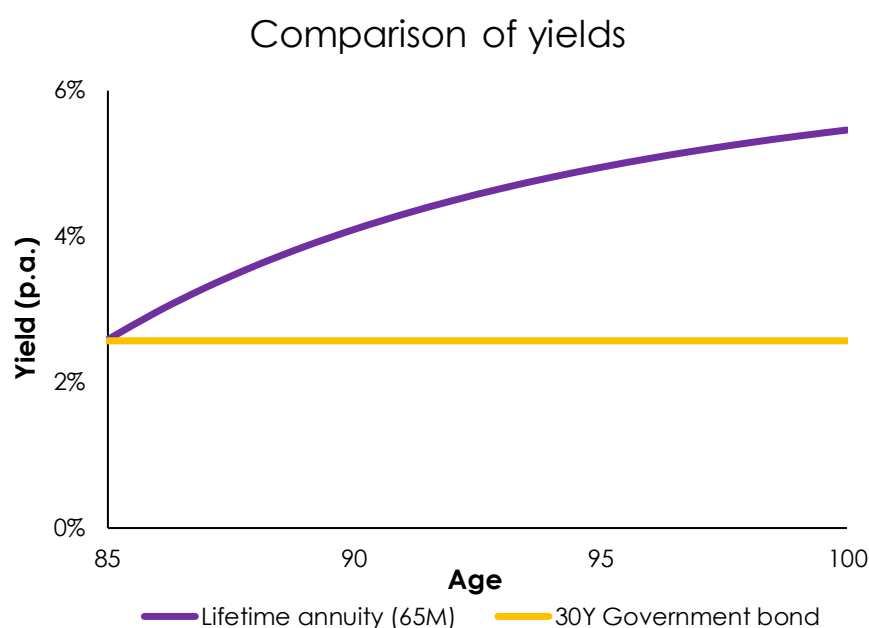
Composition of lifetime annuity payments

Annual payments (\$)



Source: *Retire Smarter*, Dr David F. Babbel and CommInsure (2017)

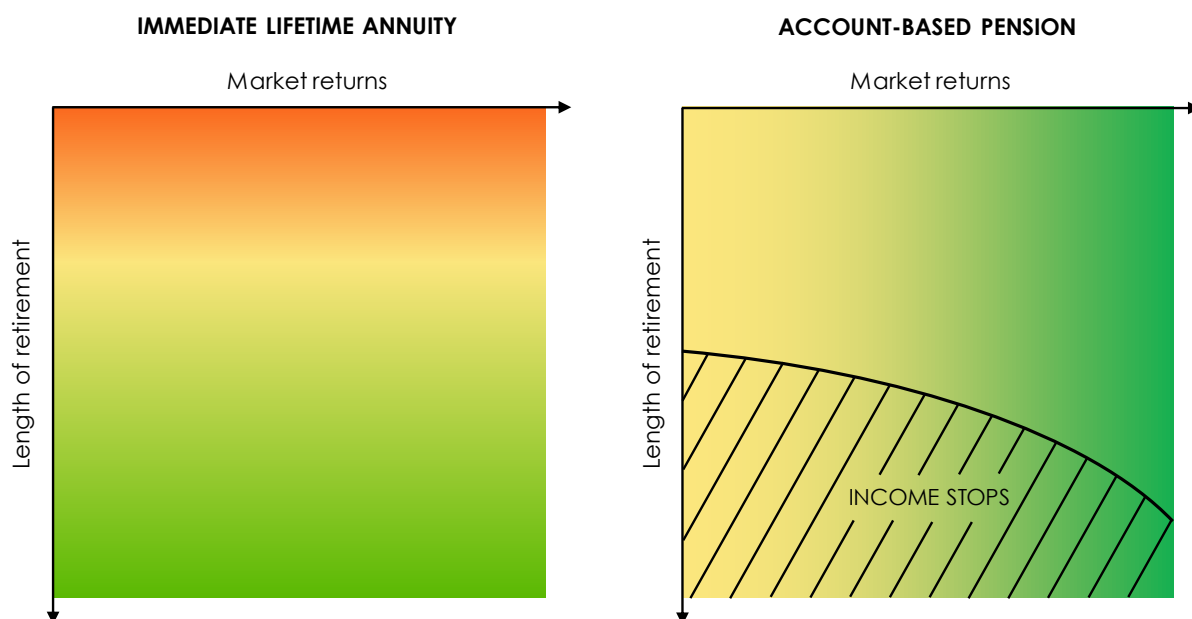
Mortality credits contribute very little to the annuity payments at first, but then increase exponentially. In fact, for annuitants alive past their life expectancy, the implied yield on their annuity can be significantly higher than the underlying assets alone would suggest. This phenomenon is due entirely to the existence of the mortality credits and is illustrated in the chart below.

Figure 13: Chart showing yields for a lifetime annuity and a long-term Government bond¹

The chart above shows the realised yield for a male who purchased a vanilla immediate lifetime annuity at age 65 and survives to age 100. If the individual was to die at any particular age shown, the realised yield would be the same. For comparison, the current 30-year Australian Government bond yield is also shown. The chart intentionally begins at age 85 since the realised yield will obviously be very low (and in fact negative) for the early years as the payments commence. It can be seen that, should the annuitant survive to their life expectancy (approximately age 90 for a 65 year old male), the realised yield is around 4% p.a., significantly higher than the 30-year Australian Government bond yield of 2.6% p.a. This is a very good result considering the annuity carries no market risk and can be effectively considered to be a risk-free asset in the customers' hands. Should the annuitant survive five more years to age 95 (where greater than 25% of his cohort is expected to still be alive), the realised yield is approximately double the 30-year Australian Government bond yield. These results are only made possible by mortality credits.

To really highlight the importance of the mortality credits, let us now consider a comparison with a "self-annuitising" strategy, where income at the same level as the annuity payments is drawn from an account-based pension until exhaustion. For a fair comparison, the account-based pension is assumed to be invested similarly to the assets backing the annuity – that is, defensively. The annuity, as we know, has an increasing yield the longer the annuitant is alive and this yield is independent of the defensive portfolio performance. The yield of the account-based pension, however, does not depend on the length of retirement, but simply the market performance. The difference between the two income products can be seen in the yield comparison heat maps below, where red represents a large negative yield and green a large positive one.

¹ Data as at 17 April 2019 and annuity rates sourced from Challenger Life Company

Figure 14: Comparison of realised yields in the presence of market risk and longevity risk

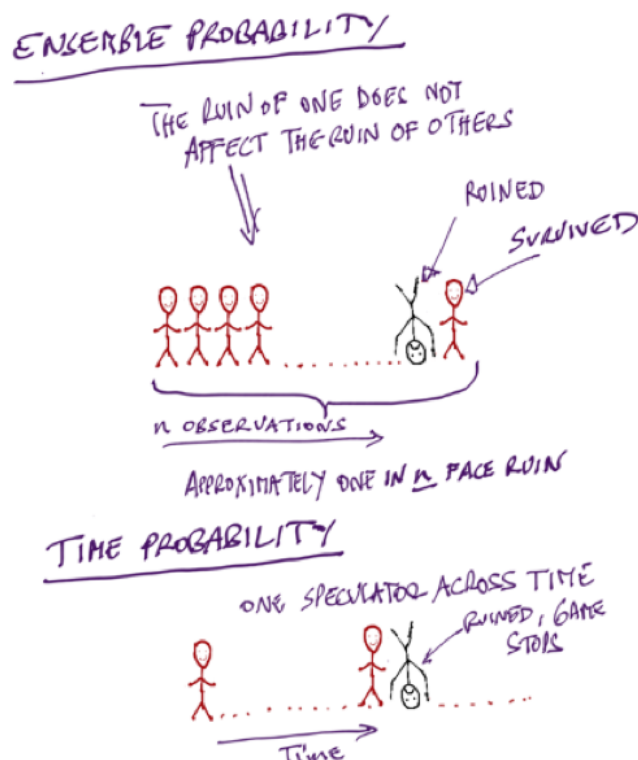
As expected, the realised yields for each product are only sensitive to one dimension; either market risk or longevity risk, but not both. This supports the argument that including a pooling product with mortality credits like a lifetime annuity into a retirement income solution can help provide diversification across different risk types. Furthermore, even though the realised yields for the account-based pension do not change with the length of retirement, there comes a point where the account balance is depleted and income is no longer provided. This region has been detailed in the right heatmap. The lifetime annuity obviously does not have this weakness as it is guaranteed for life.

One region of concern may be the red area in the left heatmap. This area represents the negative yield experienced upon early death for immediate lifetime annuitants. However, it is important to stress that a balanced MyRetirement solution would not allocate 100% to an annuity. So, although the yield would be poor for this component, an early death would probably mean a significant proportion of account-based pension balance passes onto the retiree's estate. Also, if a lifetime annuity is included in a MyRetirement solution, the guaranteed income allows the retiree to dial up the risk within the account-based pension and potentially generate greater returns. All of these subtle considerations need to be understood and this strengthens the argument for standardised retirement income projections.

APPENDIX B ENSEMBLE PROBABILITY VERSUS TIME PROBABILITY

It is very important to understand when it is appropriate to be considering an ensemble probability and when it is appropriate to be considering a time probability. To define the two alternatives, let us consider the following example, which is adopted from Nassim Taleb's 2018 book, "Skin in the Game" (18).

Figure 15: Ensemble probability and time probability (Source: Skin in the Game, Taleb)



Consider a scenario where one hundred gamblers go to a casino, to gamble a certain set amount. Some may lose, some may win, and we can infer at the end of the day what the payout percentage is. That is, calculate the average return simply by counting the money left with the people who return. Now assume that gambler number 19 goes bust. Will gambler number 20 be affected? No. Further, if the same experiment is repeated over and over, you will be expected to have approximately the same payout ratio over that time window.

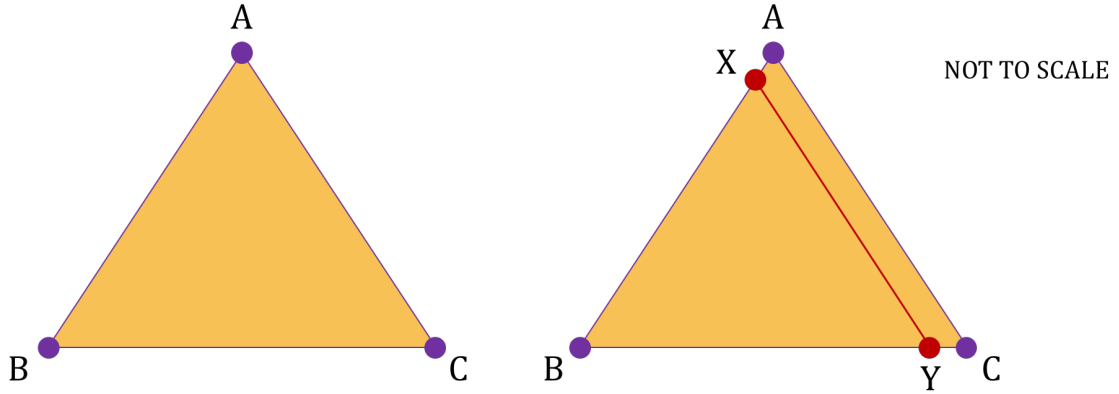
Now consider a second case in this thought experiment. One person goes to the same casino a hundred days in a row, starting with the same set amount. On day 19, that person goes bust. Will there be a day 20? No. The gambler has hit an uncle point (see Section 4.2) and the game is over. In fact, you can safely calculate that the gambler has a 100% probability of eventually going bust. The same cannot be said for any of the individual gamblers in the first experiment.

The probabilities of success from the collection of gamblers does not apply to the individual in the second experiment. The first is known as ensemble probability and the second one, time probability (since one is concerned with a collection of people and the other with a single person through time).

APPENDIX C THE NUMBER OF PERMISSIBLE SOLUTIONS AND SCALABILITY

There are many ways to combine product building blocks to arrive at a holistic retirement income solution. In this paper, three building blocks are proposed and this is represented visually below.

Figure 16: Visual representation of three product building blocks



Consider the left triangle. If we are 100% invested in building block A, then we are located at the very top node, with barycentric coordinates $A(1,0,0)$. Now consider the right triangle. If we wish to have no exposure to building block B, then we exist on the line AC. If we are only allowed discrete integer % weightings for each building block $\{0\%, 1\%, \dots, 100\%\}$, then there are 101 possible solutions on this line, specifically:

$$\{(1,0,0), (0.99,0,0.01), (0.98,0,0.02), \dots, (0,0,1)\}$$

If we now wish to have strictly 1% exposure to building block B, then we exist on the slightly smaller line XY, which now harbours only 100 possible solutions. Following this approach, we can derive a formula for the total number of permissible combinations for k discrete weightings as follows:

$$\begin{aligned} S(k) &= k + (k-1) + \dots + 1 \\ &= \frac{k}{2}(1+k) \end{aligned}$$

It is left as an exercise for the reader to prove for the general case that the total number S of permissible combinations of n building blocks (instead of three) is:

$$S(n, k) = \frac{k}{2}[1 + k + (n-3)(k-1)] \quad \text{for } n \geq 3$$

In the case where there are six building blocks and 0.1% weighting increments, this leaves us with an incredible 2,003,001 possible combinations. Importantly though, for a fixed k , the number of total permissible combinations scales proportionally with n . In computer science notation we write this as:

$$S(n, k) \in O(n)$$

This implies that the system is scalable, since adding more building blocks to the system will not increase the number of combinations exponentially and the computing power required to model the additional building blocks would therefore not be extreme.

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