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Retirement income in Australia: Part III – Private resources





Australian Government Australian Research Council **CEPAR research brief, November 2018**













Summary of brief

Superannuation is an integral part of Australia's retirement income system: It forms the second and third pillars of the retirement income system, benefiting households and the wider economy. But it continues to evolve. Policymakers are looking at ways to improve efficiency and are developing measures for a retirement income framework in which individuals will be better able to manage risks in retirement.

It represents one of the largest such accumulations in the world and is expected to get larger: Funds under management have grown to \$2.7t or 150% of GDP; projections see these grow to 200% of GDP by 2035. It complements housing assets which are larger in value but represent an illiquid form of saving.

Recent reviews are coming to a head: Attention has moved away from superannuation tax issues. Instead, challenges relating to market structure, product offer, and consumer behaviour during both accumulation and decumulation phases of super are taking centre stage. So far, the system has resulted in high fees during accumulation and low risk intermediation in retirement.

Competitive structures can inhibit competition and innovation: Industry funds enjoy default status under the industrial relations system while retail funds dominate the *choice* sector, historically controlled by the big five financial services firms. Low competition in both sectors can result in inferior outcomes for members.

Consumers find it difficult to make choices: Three strategies may help: (1) supporting choice by regulated information provision and improving financial skills; (2) guiding choice with the right advice at the right time; and (3) intervening in the absence of choice with well-designed defaults. Current ways of providing information are found to be lacking, financial advice continues to be conflicted, and defaults are not always well-designed.

Balances have grown but women continue to face a superannuation gender gap: Super balances have grown to an average of \$214,000 at age 60-64 in 2016 (median of \$68,000). Women's superannuation balances are 64% lower than men's, but the gap has almost halved over the decade. Of concern are lower balances of single women, but the system compensates this via the Age Pension (on average, women receive \$2,000 p.a. more). The solution is to close the gap in working life, but parental leave contributions are poorly targeted.

Raising compulsory contributions to 12% will increase retirement incomes: The vast majority would see higher retirement incomes, enjoy a diversification of assets away from housing, and greater liquidity in retirement. But younger, low-earning renters are likely to experience greater financial stress as a result.

Accumulation structures are part of a live debate: Super accumulation receives considerable attention, and there is a high-profile debate about how to improve defaults and lower costs.

Decumulation policy is also evolving: Current settings fail to turn assets into income, leaving retirement risks with consumers, who appear to hold on to assets as a form of self-insurance. The solutions include: (1) encouraging private market provision of risk-pooled products (e.g., aligning tax-and-benefit and regulatory rules); (2) intervention in the market to directly provide products or supporting instruments (e.g., tail end insurance or longevity bonds); and (3) enhancing the decumulation information and choice architecture (e.g., targeting education, information, compulsion, incentives, and defaults for those that don't choose).

Policymakers have been reluctant to embrace decumulation defaults: A policy is under development to require fund trustees to offer risk-pooling products to members. There is a danger that the inefficiencies that have plagued the accumulation phase could also translate to inefficiencies in the retirement product market. The preferred option is to prescribe a standard product that combines the flexibility of an account-based pension with the insurance of a deferred annuity. Policies decided in the next few years will determine the future of superannuation decumulation in Australia, which is leading the world in policy that attempts to combine flexibility and paternalism.

Summary of featured CEPAR research

Why do people start a Self-Managed Super Fund? The idea to start an SMSF usually originates in advice people are given. A key driver is the desire to manage investments but many delegate this to advisers (Box 1).

Low financial literacy – effects and interventions: Financial literacy is highest among older, educated men, and higher in Australia than in some other countries. It has implications for saving and investment outcomes (Box 2).

Presenting and framing financial information: Research suggests that common presentation formats used in Australia for financial investments – such as 'the frequency of negative returns' to illustrate investment risk – are most problematic for individuals making decisions (Box 3).

How likely are we to follow bad financial advice? Financial literacy was found to protect people against bad advice – but only slightly, and not with complex topics. Many people are unlikely to recognise and ignore bad advice from someone who gained their trust in a previous interaction (Box 4).

Financial behaviour and the power of defaults: Under a third of people move out of a default. Active choice was more likely among high-earning, older men and those who had less trust in a fund (Box 5).

Drawdowns of superannuation in practice: People draw down their assets surprisingly slowly. Half draw on their account-based pensions at the minimum rate and nearly a third draw a constant dollar amount (Box 6).

Designing default decumulation products: There are ten domains that need to be resolved when designing a default, including how opt outs operate, which product mix comprises the default, how much of a balance is defaulted, and how prices and fees are set and regulated (Box 7).

What is the optimal way to annuitise? Modelling suggests that it would be optimal to annuitise 38% of one's wealth in the absence of the Age Pension, and 18% for someone with \$500,000 if the Age Pension is factored in. The optimal risk-pooling share would be lower still if well-priced deferred annuities are used (Box 8 and 9).

How long do people think they'll live? One reason why people don't annuitise is because they underestimate their longevity. They are pessimistic about reaching ages 75-80, but optimistic about reaching 90+ (Box 10).

How to make annuities more attractive? Tailoring annuities to different types of people could mean more attractive pricing. Research also suggests that people are more willing to pay for an annuity after being provided with timely, balanced information, and the opportunity to learn about the key features (Box 11).

How to estimate longevity risk? A series of forecasting models that track causes of death, forecast mortality in multiple populations simultaneously, and contain other technical innovations, have made predicting cohort-level changes in mortality easier for insurers (Box 12).

How should insurers cope with mortality risk? There are several strategies for handling mortality risk that have been the subject of CEPAR research: (1) reinsurance; (2) insurance-linked securities; (3) and holding reserve capital above the regulated level. The research investigates trade-offs between different strategies (Box 13).

Product design innovations: New retirement income products such as long term care annuities and guarantees may provide the combination of security and flexibility individuals seek in retirement (Box 14).

How do different countries tax pensions? Almost everywhere, some departure from the standard personal income tax treatment of saving is accorded to pension saving. For Australia, taxing contributions and earnings instead of benefits inflates the size of its perceived tax expenditures (Box 15).

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1. Introduction

Older Australians are increasingly relying on private retirement income. In 2016, about 65% of total gross income of those aged 65+ came from private sources; 43% of this age group relied on non-public-pension income as the main income source; and 28% received no pension at all. All these numbers are up from a decade ago (from 59%, 35%, 20%, respectively; ABS 2018a). Much of this extra retirement income has come from what is known as the second pillar of the retirement income system: the Superannuation Guarantee.

The Superannuation Guarantee is a mandated employer contribution to a superannuation fund. It has attracted extensive policy attention and recent developments mean that it continues to be closely watched by pension researchers and policymakers in Australia and overseas. So, what are the key features of its design, outcomes, and remaining flaws?

This series of three CEPAR research briefs takes stock of the current state, and projected future, of Australia's retirement income system, presenting the latest data and highlighting relevant research. Brief 1 described the demographic context, system structure, and overall trends in retirement resources. Brief 2 focused on the public element of retirement income provision, primarily the Age Pension. Here, Brief 3 covers private retirement income provision, focusing on superannuation. This is done by first looking at providers (i.e., industry structure) and members (i.e., financial behaviour), then investigating the accumulation (i.e., balances, contributions, and leakages) and decumulation (e.g., products) stages, as well as touching on issues related to housing, taxation, and public sector superannuation. What becomes apparent is that Australia's superannuation system is of considerable benefit to households and the wider economy. But it continues to evolve. Its competitive environment is changing and policymakers are looking at ways to improve efficiency and developing measures for a retirement income framework in which individuals will be better able to manage risks in retirement.



MORE PEOPLE, CONTRIBUTIONS, AND ASSETS

Note: Definition of worker in Figure 1A has changed over time as indicated by different series. The most recent numbers are based on 'employees in main job'. APRA applied a change in accounting standards to sum of assets include as part of Super, which increased these in 2016 by about \$180b or 10% of GDP. Source: Author's compilation of Swoboda (2014), ABS (2014a, 2014b, 2018b, 2018c), APRA (2005, various years), Treasury (various years), Murray (2014), Cooper (2010), Deloitte (2013, 2015), Rice Warner (2014a), Knox (1995).

2. Overview of superannuation

Superannuation has been a key pillar of Australia's retirement income system since it became mandatory for all workers in 1992. The mandatory part of the scheme is known as the Superannuation Guarantee (SG) and was phased in to reach a contribution rate of 9% of wages by 2003. A previously legislated increase in this rate was delayed so it is now 9.5% and is scheduled to rise to 12% between 2021 and 2025 (Figure 1B).

Coverage of superannuation increased steadily over the 20th century as more private schemes and industry funds were introduced, reaching over 50% of employees in the early 1980s and then growing rapidly in the 1990s due to compulsory super (Figure 1A). The agreement between the Government and the Council of Trade Unions as part of the 1985 *Prices and Income Accord* that established industry award-based super, as well as other landmark legislation in the 1980s, paved the way for the Superannuation Guarantee. Employee coverage is now at approximately 90%. The 10% missing out are likely to have low hours. In addition, self-employed workers may miss out on super.

The superannuation asset pool has grown substantially to reach over \$2.7 trillion or around 150% of GDP in 2018, one of the largest such accumulations in the world. The scheme's size has outstripped expectations. For example, the Treasury's 2010 Intergenerational report projected that it wouldn't reach 140% of GDP until 2050.

Impacts beyond the retirement income system: Some positive, some negative

Aside from providing retirement income, superannuation may bring with it positive macroeconomic externalities, such as increasing national savings (net of any crowding out of savings that would have existed regardless; Connolly 2007) and financial stability. For example, whereas gross savings as a proportion of GDP dropped on average between the 1990s and the 2010s in OECD (21.4% to 21.2%) and G7 countries (21.4% to 20.3%), Australia's rate increased (21.1% to 22.7%; World Bank 2018). Some argue that such funded pensions can also trigger greater sophistication in financial markets and product design (Piggott and Sane 2012) and increase financial market depth and liquidity that reduces the cost of capital as well providing a buffer against external shocks (Gruen and Solding 2011). Superannuation also allows households to diversify their portfolio away from housing (i.e., the two may be substitutes), which is volatile and illiquid, and the Age Pension, which may be subject to political and fiscal risk.

Yet, the design of the scheme may also come with negative social outcomes. It may involve forcing poor and credit constrained households to save against their best interests. And since superannuation is an earnings-related scheme it can transfer lifecycle shocks and inequalities in working life into retirement. Indeed, inequality could be exacerbated because compound interest can make small gaps between rich and poor and between men and women into large gaps over time. The design may be susceptible to rent-seeking behaviour if consumers and regulators are unable to adequately discipline the market. Poor design can also mean that too much risk (e.g., investment, inflation, longevity) is pushed onto individuals who have limited capacity to access risk-pooling products or make appropriate choices, especially at advanced ages, and where advice may be conflicted.

Policy scrutiny of superannuation has escalated along with its size

Policy reviews and reforms have been plentiful in super as illustrated in Figure 2. Reforms have stemmed from several tensions, including between (1) public support for savings through the tax system and fiscal sustainability (e.g., changing tax advantages); (2) the separation of superannuation tax from the personal income tax schedule and desire for progressivity (e.g., Low Income Superannuation Tax Offset, s.293 taxes); (3) public support for savings and private desire for bequests (e.g., offering tax advantages alongside minimum withdrawals and surrender values; contribution and transfer caps); (4) compulsion alongside complexity, resulting in disengaged consumers, inadequate choice architecture, and opportunities for rent-seeking from providers (e.g., introducing defaults, information disclosure, financial advice regulation, prudential regulation and intervention); (5) flexibility and paternalism (e.g., treatment of lump sums versus income streams).

While tax issues have recently become secondary, challenges relating to market structure, product offer, and consumer behaviour during both accumulation and decumulation phases of super are taking centre stage. The existing settings appear to result in high fees during accumulation and low risk intermediation in decumulation.

The confusion related to some of these tensions culminated in a move to enshrine in legislation the purpose of superannuation as "*providing income in retirement to substitute or supplement the Age Pension*". However, at the time of writing the related bill had been stuck in the Senate for two years.

Reviews of superannuation have focused on specific challenges. For example, the Cooper Review in 2010 looked at choice architecture and ushered in a default accumulation product, but allocation to a default fund is based on employed choice and industrial relations setting rather than considerations of fund performance. The Productivity Commission's latest review (2018) has reopened the debate about how the relatively uncompetitive environment (see Section 3) has generated high fees and poor performance (see Section 5). And the Murray Financial System Inquiry (FSI) emphasised what was noted in CEPAR's submissions to that enquiry: that superannuation lacked appropriate decumulation structures and products (see Section 6).

Various review processes in place are coming to a head so policy reforms and refinements can be expected to continue. The size of the system is such that even small problems can no longer be ignored.



2 Superannuation policy over time

3. Supply side: Size and structure of super industry

The \$2.7 trillion in superannuation assets, worth about 150% of GDP, is about 20% of household sector savings, up from 12% in 1992 (RBA 2018). It lags residential land and dwellings which make up 55% of household assets. It is the fourth largest such accumulation in the world in absolute terms and seventh largest in the OECD as a share of GDP (OECD 2017). About \$1.7t is in funds regulated by the Australian Prudential Regulation Authority (APRA) and about \$750b is in Self-Managed Superannuation Funds (SMSFs) regulated by the Australian Tax Office (ATO). There are also some public sector funds formally exempt from APRA regulations

that come under control of State or Commonwealth governments. Balance of life office funds are included in the sum and relate to assets underlying income stream liabilities. These made up only about \$50b in funds.

Growth of super has happened alongside significant changes to the structure of the industry. These have included: (1) consolidation toward fewer larger funds; (2) changes in the asset and member shares between corporate, public, industry, and retail funds, with industry funds taking greater market share; (3) a growing dominance of big players in the retail sector, with significant signs of a recent reversal; (4) introduction of MySuper accumulation defaults for those who do not wish to choose their super fund or asset allocation; and (5) the movement of high balance members into SMSFs.

STRUCTURE OF SUPERANNUATION INDUSTRY



Sectoral trends: Industry vs Retail

Large super funds can be split into four main types – industry, retail, corporate and public sector – with the most common being industry and retail (Figures 3B; 3C; 3E). There is a further distinction between for-profit (retail) funds and not-for-profit (industry, corporate and public sector) funds. Industry funds enjoy default status under

the Australian industrial relations agreements known as awards. Retail funds, controlled by Australia's five large financial services firms, dominate the *choice* sector, open to individuals and employers not bound by the awards system. The difference between these has blurred over time, with many industry funds now open to the public and most retail funds now offering lower-cost default products.

A divide still exists between the two fund types, one that is embedded in the larger political debate. The Australian Labor party's connection with trade unions and industry funds, as well as the Coalition's connection to the banks and retail funds, have made the super industry fertile soil for partisan dispute. The conversation was reopened by two recent inquiries. The Productivity Commission's (2018) interim report on the efficiency of the retirement savings system pointed out the weaker average performance of retail compared to industry funds, even adjusted for differences in underlying assets (see Section 5). The Royal Commission (Hayne 2018) revealed misconduct which implicated banks and large retail funds to a greater degree. Both reviews identified issues in all sectors, not just in retail. Industry funds have just overtaken retail funds in market share of funds under management – though this could just be part of the long term trend where industry funds enjoy the default status in Australia's industrial relations system.

Consolidation among super funds has been considerable and has been encouraged by the regulator. The number of 'large funds' (with more than five members) decreased from 5,000 in 1995 to 226 in 2018 (Figure 3D). One driver is that many smaller corporate funds outsourced their superannuation to master trusts in the retail sector. The other is the general pursuit of economies of scale and lower fees (see Section 5). But despite these consolidation trends, there are still over 100 funds with less than \$1 billion in assets.

Is there enough competition in the market?

Industry funds dominate in the award-based superannuation segment of the market. The introduction of *choice of fund* legislation in 2006, which allowed people to choose their super fund, helped to make this segment somewhat contestable, but most people stay with the default which can reduce fund incentives to improve.

Within the retail sector, Australia's big four banks and one wealth management firm have dominated access to customers and controlled the value chain while enjoying economies of scale.

That is, when people make decisions about financial products, including super, they tend to go to their bank or financial adviser. The banks have the branch network, private banking, customer relationships, and owned advice-based distribution that have allowed them to control access to these customers. And the one large wealth management firm made use of owned *and* aligned advice-based channels to control access to customers. Indeed, until recently, the big players were able to control each segment of the market across the value chain (e.g., retail asset management, retail super, platforms that *wrap* multiple financial services, master trusts used by corporate funds, and aligned and owned distribution). Smaller players operated within specialist segments. This made it more likely that individuals remained with the offer of a single financial institution over their lifecycle without testing the market for alternatives.

But there are significant signs in the retail sector that these structures are changing, with banks selling off their wealth management arms and insurance businesses, and new players entering the market. It remains to be seen how this will affect competition, innovation, and outcomes for members, which in the past have been poor.

MySuper: A default product for accumulation phase

One recent attempt to tackle this challenge is MySuper (first proposed by Cooper 2010). This has been to ensure that if individuals end up in a default fund and don't make a choice about their investment allocation, their super at least accumulates in a simple, low cost, and comparable product with an appropriate investment mix.

Since most APRA regulated super funds offer a MySuper account, there are over 100 such products with regulated fees, simple features and one of two investment strategies -a diversified investment profile or a lifecycle investment profile. The former is a split of growth and defensive investments, while the latter is dynamic and updates toward

safer assets with age (thus taking account of changes in risk profile of older people). MySuper account holders are usually younger and with lower account balances than those in the choice sector (Figure 4A).

There was nearly \$700 billion in assets in MySuper accounts in 2018, the majority of which was in industry funds. In June of 2017, about 64% of their assets and 86% of industry accounts were MySuper defaults. Retail funds are, by definition, focused on the retail choice sector and in 2017 only 18% of assets and 31% of accounts were in MySuper (APRA various years; Figure 4B).



MYSUPER ACCOUNTS AND ASSETS

Source: APRA (various years).

Self-Managed Super Funds: Important for those with high balances

Those with higher account balances who want more choice have gravitated toward Self-Managed Super Funds (SMSFs). These consist of a relatively small number of accounts (about 600,000 accounts benefiting 1.1m members), but they hold almost a third of all assets (Figures 3B-3C). In 2016, the average and median SMSFs held \$600,000, or about \$360,000 per member, and a third of SMSFs had balances of over \$1m (ATO 2018). Some of the high balances are the result of a measure in 2007 that for a short period of time allowed people to transfer a large amount of funds into the tax-advantaged environment of super beyond what may be required for retirement income. This has caused concern about the use of super for estate management purposes ever since.

SMSFs are regulated by the ATO and can have up to four members, increasing to six from July 2019. These members are also fund trustees or directors (if there is a corporate trustee). SMSFs allow individuals to directly control the assets they buy and sell, and in some cases, borrow additional money to make investments. On the other hand, these investment vehicles have high set up costs and can be administratively burdensome, so are favoured by people with higher contributions and balances (Figures 5A-5D).

Recent auditing requirements have eased, from annual to every three years (for funds that have a good record of lodging and compliance). This may reduce the administrative burden, but it also may just delay and complicate the discovery of fraud or other problems.

SMSF members show a keener interest in their accounts (see Section 4). For example, over a third of SMSF members check their account balance daily and spend over seven hours on average per month on it (Vanguard 2015). As Section 5 shows, this attention has not translated to higher average performance, but for those with large account balances, the reduced operating costs and desire for control remain an attraction (Box 1).

One worry is the extent to which the self-management required of such products will become a problem at advanced ages, when the probability of cognitive decline is greater (Chomik et al. 2018). Indeed, this may become a future challenge to the retirement income system – as the trends in super coincide with the trends toward an older population.



INCOME AND CONTRIBUTIONS OF SMSFs

Note: Figure 5C includes both accumulation and pension phases. Figures for SMSFs include small APRA funds. Figures for institutional funds only include APRA-regulated funds. Sources: Figure 5B from ATO (2017). Figures 5C and 5D adapted from PC (2018), original source: APRA (various years).

Box 1 CEPAR research spotlight Why do people start a Self-Managed Super Fund?

CEPAR Associate Investigator Susan Thorp and colleagues surveyed SMSF members to understand the motivations and strategies for managing their super (Bird et al. 2018). For most people the idea to start an SMSF originated from their accountant, financial planner or friend; and the key drivers included the desire to be involved in the management and investment choices of their super and ability to minimise tax (Figure 6).

Yet many SMSF members have only partially satisfied these goals. The authors note that SMSFs vary so widely that it is hard to pin down any clear relationship between elements of SMSFs and overall member satisfaction.

Thorp and her colleagues also asked individuals what they found to be the most frustrating aspect of having an SMSF. While 21% of respondents reported that nothing was frustrating, 23% suggested that compliance and administration were the most difficult parts of running an SMSF.

It is also interesting to note that while most respondents expressed the benefit of having control of their investments, the majority delegated much of their operational and investment tasks to financial advisers and other professionals.

mportant factors	Unimportant factors
Can choose investments myself	Can purchase artwork and other collectibles in SMSF
Can manage fund myself	Previous fund was a poor communicator
Can minimise tax	Previous fund takes too little risk
Can have a better transition to retirement	Can borrow in SMSF
Can choose individual equities	Was entering retirement
 Can invest in a wider variety of assets 	 Advised to set up SMSF by family/friend

Governance and regulatory structure: Fragmented and complex

Regulation of superannuation in Australia is managed by APRA, ATO and ASIC (Australian Securities and Investments Commission). Two thirds of super funds are regulated by APRA (Australian Prudential Regulation Authority), which is responsible for issuing Registrable Superannuation Entities (RSE) licenses. In doing so, APRA is obliged to ensure that trustees can manage a fund in the best interest of its members. RSEs that deal in financial products or advice must also hold an AFS license as issued by ASIC, who oversee consumer issues such as information disclosure requirements. Those that are not under the purview of APRA are some public sector schemes and SMSFs, the latter of which are exempt based on the belief that there is no divergence in the interests of the members and trustees (Hanrahan 2018). SMSFs are therefore regulated by the ATO to ensure members comply with tax and superannuation law.

These multiple bodies, alongside government departments (e.g., Treasury with its tax policies, and Department of Social Services with Age Pension means testing policies), mean that no single agency is responsible for how well the superannuation system aligns with its purpose of providing retirement income (see Section 6).

The legal environment in which super fund trustees operates is also complex, as they are subject to the ordinary principles of trusts – such as the duty to not obtain an unauthorised benefit from the trust – and additional legislation that prescribes covenants to be included in trust deeds as part of the fund's governing rules. APRA and ASIC issue material guiding trustees on how to comply with the legislation, as well as codes of practices, though these are often not legally binding.

The *Stronger Super Reform* package of 2011-12 included legislation to tighten governance and regulation in the industry. But problems still exist, as illustrated in a review by the Productivity Commission (2018). APRA and ASIC's regulatory jurisdictions overlap in many places – such as in strategic conduct regulation – which can lead to poor accountability on behalf of both organisations. Also, the punishments and remedies available to them for the same issue sometimes deviate (Hanrahan 2018).

One area of contention has been regulations that affect the 'independence' of trustees. For example, the Murray Financial System Inquiry recommended that the majority of director trustees be independent (including an independent chair). Attempts to legislate such a change have not passed parliament. It would have affected funds that follow the 'equal representation' model, where half the board is made up of directors nominated by employees and half by employers.

The idea of independence as defined in this debate is intuitively appealing, yet, as pointed out by the Productivity Commission (2012a, 2012b), it is not based on evidence. Boards that include employee and employer stakeholders tend to also have lower fees and agency costs, though it is difficult to link this directly to governance (Bryan et al. 2009). There are other governance challenges. For example, research suggests that some boards lack adequate expertise and training, feel unconfident with relevant financial decisions, and can suffer from bias about their own abilities (Russell Investments 2010; Mercer 2014; Gupta et al. 2008).

A recent review by the Productivity Commission (2018) also placed emphasis on the need for reform in the regulation of governance practices. Evidence suggests that many fund boards don't comply with their regulatory obligations and/or do so in a rudimentary manner, not fully considering the best options for their members.

Further consolidation is an example. Members would benefit from fewer underperforming funds, but since mergers may lead to board members or fund employees losing their job, they could be disincentivised to merge. Furthermore, many fund directors have related-party affiliations and may not act with complete independence which can in turn affect performance (Liu and Ooi 2018).

The Productivity Commission's set of proposed amendments include an increase in independent board directors, a tightening of what 'independent' means, more transparency in disclosures surrounding objectives, performance and director skills/experience, a requirement for trustees to have a third party evaluate board performance, and greater powers for regulators to facilitate mergers.

4. Demand side: Financial behaviour

On the other side of the superannuation coin are the fund members. The inception of the Australian superannuation system was predicated on the fact that people are subject to behavioural biases and make poor choices or no choices at all. Most are uninterested and disengaged from what is happening with their super.

Disengagement manifests in multiple accounts and higher fees

One manifestation of disengagement is that there are more than three times as many accounts as there are workers because most individuals have not consolidated the different accounts started with different employers. This is despite the higher fees and multiple insurance covers that result from multiple accounts.

Ten million, a third of all accounts, are duplicates, reducing balances by \$2.6 billion per year due to fees and insurance (PC 2018). Figures 7A and 7B show the persistence and high penalty of having multiple accounts. One direct response was making it easier to consolidate accounts by banning exit fees. Another was giving the ATO the power and resources to intervene directly and transfer funds from inactive accounts (without a contribution in the past 12 months and a balance of less than \$6,000) into members' active accounts. But member disengagement is a systemic and enduring weakness in the superannuation system.



Note: The apparent consolidation in accounts at later ages shown in Figure 7A may be a combination of actual consolidation at retirement and because some of those cohorts have already retired and had less time under the Superannuation Guarantee. Projections in 7B are based on an individual with a full career and a starting salary of \$50,000 at age 21, retiring at 67 and paying an average insurance premium (\$347). Source: PC (2018).

Three broad strategies may help with disengagement and poor decision making in super: (1) supporting choice by improving skills and 'regulated' information provision; (2) guiding choice with the right advice at the right time; and (3) intervening in the absence of choice with well-designed defaults.

Raising capacity to choose

Unlike in other countries, where a defined benefit pension is more common, most Australians, including those relying on accumulation defaults, still need the basic financial skills to understand how their super savings will translate into a retirement lifestyle; whether they should voluntarily top up their savings; when they should retire and begin drawing down on the retirement assets; and how they should do so once they start.

For some, the capacity to make financial decisions may be lacking (Box 2) or the information they are provided about products too complex (Box 3). To support such decisions will require a combination of raising financial literacy, simplifying the decisions through choice architecture, and adequate and timely information (including reframing superannuation in terms of income not assets), and providing access to unbiased, affordable advice.

Box 2 CEPAR research spotlight Low financial literacy – effects and interventions

Raising the capacity of individuals through financial literacy is one strategy for improving decision making.

Partner Investigator Olivia S. Mitchell has conducted extensive research in the area as well as reviews of the international literature (e.g., Lusardi and Mitchell 2014; Mitchell and Lusardi 2015). She finds that the financially literate plan more, save more, and invest more in the stock market. And the evidence suggests that causality flows from financial literacy through to behaviour. Mitchell and her colleagues (Lusardi et al. 2017) estimate that 30 to 40% of retirement wealth inequality is accounted for by financial knowledge.

Improving literacy related to retirement is challenging since horizons are long and decisions often once-off. And for some, it's rational not to invest in financial skills acquisition - e.g., if their investment stakes are low (Lusardi et al. 2011). But improving the financial knowledge of the least educated is shown to increase their wellbeing and reduce wealth inequality.

A good start is adequately measuring financial literacy. Mitchell led the development of a set of three standardised questions, now used internationally, which test understanding of: interest rates, inflation, and diversification (e.g., Lusardi and Mitchell 2011; See note in Figure 8).

This was extended for Australia by Deputy Director Hazel Bateman, and Associate Investigators Julie Agnew and Susan Thorp (e.g., Agnew et al. 2013a). They show that financial literacy is higher for men and the more educated (as in other countries) and that it increases with retirement and age (unlike the hump shaped pattern in countries like the US). Overall, fewer than half of Australian respondents answered all three questions correctly – a level that is not much better than many countries (see Figure 8). Most don't realise their knowledge gap – only 14% of people considered themselves below average.

As elsewhere, low financial literacy in Australia translates to less planning – only a third of non-retired respondents attempted to work out how much to save. In Bateman et al. (2012), Bateman, Thorp, Associate Investigator Jordan Louviere, and their colleagues, showed that it also affects expectations – the financially literate were better at judging the likelihood of shocks and asset price recovery, essential for long term investing in risky assets.

8 Older, retired, better educated men tend to have higher financial literacy



Abridged version of questions: (1) With \$100, interest of 2% p.a., after 5 years, would you have: <\$102, \$102, or >\$102? (2) With interest of 1% p.a., inflation of 2% p.a., after 1 year, would you be able to buy: more than, same as, or less than today? (3) "Shares in a single company usually provide a safer return than units in a managed share fund": true or false? Source: Agnew et al. (2013a) and Lusardi and Mitchell (2014).

But making decisions may require a combination of numeracy and information at the point of decision. To test this, Bateman, Louviere, Thorp, Associate Investigator Fedor Iskhakov, and their colleagues (2018a) asked individuals to allocate funds between an *annuity* and a *phased withdrawal*. As risk increased, some rationally increased or maintained their annuitisation. It turns out that whether someone understood the product characteristics (tested via a quiz) had greater explanatory power of rational behaviour than general financial literacy.

Financial literacy can protect against presentation effects. For example, Bateman et al. (2016a) found that those with low numeracy and financial literacy were more susceptible to presentation effects. This is consistent with Mitchell's results in the US (Brown et al. 2017).

Box 3 CEPAR research spotlight Presenting and framing financial information

To what extent can product disclosure help those willing to make financial decisions? Research led by CEPAR Deputy Director Hazel Bateman suggests that presentation formats matter.

In research conducted with Associate Investigators Christine Eckert, Jordan Louviere and Susan Thorp (Bateman et al. 2016a), Bateman looked at responses to different presentations of risk information. Participants were asked to rank three investment options (safe, mixed, and risky) in order of preference given various risk scenarios. In each scenario the average return of each option stayed the same -2% for safe, 3.25% for mixed, and 4.5% for risky – but the risk profile for each, as well as how this risk was presented, changed. In some cases, a graphical representation of a risk range was used (Figure 9A), while in others, the range was described in text (Figure 9B)



Choices between the investment options were then assessed against those of a 'rational' person to identify the propensity of people to make two key investment mistakes: (1) people who exhibit a dislike for risk ranking the mixed option as least preferred; and (2) people who understand volatility choosing the safe option at low risk and mixed or risky at high risk. Presentation was found to have a strong influence on the propensity of irrational choices. For example, mistake (2) was made by 29.3% of people faced with a textual description of a risk range, while only 25.4% of people made the same error given a graphical representation of the risk range.

Presentation using the frequency format – i.e. the frequency of negative or positive returns is different for each investment option – led to the highest incidence of mistakes. The worst performer was the frequency of negative returns (e.g., "negative returns occur 7 years in every 20"), which has been formally adopted by Australian regulators as the 'standard risk measure'. Over 30% of people made both mistakes in this case. The most favourable was when risk was presented as a probability range (e.g. the examples presented above). Similar results were found in Bateman et al. (2015), where respondent preferences were tested against an alternative rationality model founded on loss aversion (where people weigh losses more than gains).

In further work, Susan Thorp, Hazel Bateman, Associate Investigators Isabella Dobrescu and Ben Newell, and co-authors (2018) conducted an experimental survey to investigate how fee and return information as disclosed on the single page MySuper product dashboard prompted switches between products. They found that people relied on fee information but were confused by returns information. Similarly, in Bateman et al. (2016b), participant responses to product disclosure information focused more on asset allocation (i.e. naïve diversification) than risk and return. This research shows that people may not use the disclosed information as expected by regulators. Lastly, Thorp, Bateman, Dobrescu, Newell, and their colleague, found in an experimental setting that simplifying disclosures reduced losses considerably, but that small changes – such as changing fee reportage from percentages to nominal dollars – had a large impact on consumer actions.

Getting presentation right can have enormous benefits. Partner Investigator Olivia S. Mitchell and colleague Donald B. Keim (2018) found that simplification in a US based DC plan not only made choices easier but reduced costs, with potential savings of US\$9,400 per person over 20 years.

One way to conceptualise how people respond to financial decisions when they don't understand the risks is through the notion of *ambiguity*. Mitchell and her colleagues in Dimmock et al. (2016) found that half the US population is ambiguity averse, a trait associated with more retirement planning but lower allocations of equity in their portfolio. They suggest that better information presentation and financial literacy (Box 2) can help increase people's tolerance to ambiguity.

ASIC launched the new National Financial Literary Strategy in 2018, building upon previous strategies starting in 2011. Among other initiatives, ASIC provides online calculators to help people compare different scenarios of savings and retirement and has targeted schools. In 2017 it reported that 60% of schools made use of its MoneySmart teaching program (ASIC 2017). It's important that such programs include a strong numeracy component – research suggests that numeracy may be more important than prior financial literacy (Box 2).

Financial literary needs to go hand in hand with adequate information provision. There is an ongoing process of adjusting product disclosure regulations to help make information more easily digestible and products more meaningfully comparable. The execution of this however has been problematic. Analysis in experimental settings of product disclosure statements similar to the mandatory MySuper product dashboard and short form product disclosure statements required of super funds indicate they are inadequate in assisting consumers (see Box 3).

Understanding how information helps consumers is crucial as a new approach for choice architecture in decumulation is developed (see Section 6). These will require simplified and standardised disclosures just as accumulation products do (Treasury 2018). The challenge is considerable – the financing risks related to spending super (e.g., investment, longevity, timing, inflation, interest, health risk, to name a few) introduce a level of complexity in Australia that is challenging even for the financially literate.

Financial advice to support choice

Another way to support choice is via personal financial advice. About 60% of Australian retirees access financial advice and for 14%, advisers are the sole source of financial information (National Seniors 2017). This requires that the advice is free of conflicted interests, trailing commissions, and hidden fees, which isn't always the case.

The financial advice system was recently overhauled with what were known as the *Future of Financial Advice* (FOFA) reforms, initiated in 2013. The aim was to move the industry away from a commissions-based system (where advisers were renumerated on products sold) to a professional service with a fiduciary onus on advisers to put the interests of clients ahead of their own (Bateman and Kingston 2012). The regulators have made some inroads since. ASIC's fees-for-no-service repatriation efforts have returned over \$250 million to consumers from financial advisers that charged fees for ongoing advice that was never received (ASIC 2018a).

But some issues have persisted. There is evidence that vertically integrated institutions (that provide financial advice and financial products) have a disproportionately large number of consumers investing in in-house financial products (ASIC 2018b). As noted in Section 3, the big players have control of distribution channels and the provision of advice. About three quarters of customer files reviewed by ASIC indicated that advisers had not demonstrated compliance with their best interests duty and related obligations. Another 2018 report by ASIC found that over 90% of financial advice given on setting up a SMSF did not comply with relevant laws.

The systemic issues in the industry have spurred the Hayne Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry (Hayne 2018). Its revelations suggest that reducing conflicts of interest, including the fee and commission structures that lead to poor outcomes for consumers, may require more attention and greater enforcement, not least from large financial institutions themselves, who have much to lose from the reputational damage.

Significant changes are already apparent from within the industry. Several high-profile purchases of Australian life insurance businesses came without the associated advice channels. And the industry's voluntary code of practice has been amended in the last year, aiming to address some of the issues raised by the Royal Commission.

A remaining concern is that the advice industry is not well prepared for the decumulation part of superannuation – both in terms of incentives structures and adequate knowledge. For example, even for independent advisers, if fees are charged based on assets held, advisers may be less likely to suggest mortality insurance products, since these involve a once-off decision and need no further advice. Such a fee structure may be incompatible with helping retirees run down assets. With respect to training, new education standards from the Financial Adviser Standards and Ethics Authority (which started operating in 2017 is) may help.

Box 4 CEPAR research spotlight How likely are we to follow bad financial advice?

A recently published study by CEPAR researchers found that more financial literacy and experience meant a lower likelihood of following bad advice (Agnew et al. 2018). But the differences found by Deputy Director Hazel Bateman, Associate Investigators Fedor Iskhakov, Jordan Louviere, Susan Thorp, and their colleagues, were only slight, and the complexity of a topic increased the likelihood of even financially literate and experienced individuals making the wrong choice.

The researchers also concluded that adviser credentials increased the likelihood of advice being followed, but that some consumers had difficulty discerning real credentials from fake ones – a problem that exists outside the laboratory as shown in the regular crackdowns on scam advisers in Australia. Perhaps most worrying and yet understandable was the finding that clients were unlikely to recognise and ignore bad advice from someone who had gained their trust in a previous interaction.

Partner Investigator Olivia S. Mitchell and colleagues (Kim et al. 2017) go further and question whether even satisfactory financial advice is beneficial for seniors. They examine the trade-offs between the cost of delegating responsibility to a professional and the cost of self-management in the form of reduced leisure and work time. They find that the later the decision is made to delegate control of funds in one's lifetime the less beneficial doing so is, and by one's 60s the benefits approach zero.

Defaults in the absence of choice

In a choice structure with many options and often disengaged consumers, defaults are important. Well-designed defaults can also lower costs by eliminating the need for financial advice without disadvantaging members. Existing defaults consist of the default fund (through the industrial award system or as selected by the employer) and default investment strategies (through MySuper; see Figure 10). Though some may actively 'choose' to stick with the default, experimental evidence suggests this is unlikely to be the case for the majority (Box 5).

The behavioural finance literature suggests that such disengagement can be due to biases. Myopic tendencies mean people place more weight on the near future and less on the decisions that affect the distant future. Superannuation thus becomes a distant and inconsequential concern. As well, many find the decisions too complex. Others follow defaults because they trust the system. For example, a survey of 2,500 members showed that over 60% thought the superannuation system is working for them (PC 2018).

The key issue with defaults is that since most people tend to stick to them they must be well designed and personalised. But there is evidence that the existing allocation of members to default super funds is problematic. Productivity Commission analysis reveals that there is large variation in the performance of default funds and members may be allocated to a poorly performing fund (see Section 5 on accumulation). A lack of default settings for the decumulation phase was raised in the Financial System Inquiry (Murray 2014; and in CEPAR's research and submission to that inquiry; see Section 6 on decumulation).



10 How choice is managed in superannuation

Source: Authors' compilation.

Box 5 CEPAR research spotlight Financial behaviour and the power of defaults

Why do so many people fail to smooth their consumption and plan for retirement unless compelled or '*nudged*' to do so? Historically, explanations revolved around 'rational' explanations such as tax distortions, incomplete insurance markets, moral hazard caused by public pensions, and the costliness of obtaining and processing information. More recent explanations revolve around human fallibility. These include biases and self-control issues, which can lead to disengagement, disinterest and confusion in retirement planning.

CEPAR Deputy Director Hazel Bateman, Associate Investigators Isabella Dobrescu, Ben Newell and Susan Thorp, along with their colleagues, studied self-rated interest in super and the extent to which it results in active choice (Bateman et al. 2014). Based on data from a large super fund, they found that active choices are rare (e.g., changing investment options or accessing the account online). Less than a third chose to move out of the default, *balanced* investment option. Active choice was associated with being older, male, a permanent employee, and having higher wages. This makes sense: such characteristics, except for gender, increase one's *stake* in Super. Crucially, being more interested doesn't necessarily mean making active choices (see Figure 11). Perhaps many 'choose' to stay with the default.



11 Older men with higher wages make more active choices in Super

Years of contribution Interest in Super: 7-8 (/10) Interest in Super: 9-10(/10)

Source: Bateman et al. (2014). Signs indicate positive relationship and its strength (i.e., "+++" denotes P-value of <0.01; "++" denotes P value of <0.05; "+" denotes P-value of <0.1). "Perm." denotes permanent employee.

While interest and engagement are important, low levels of trust in the pension fund may be another factor in involvement. This is the finding of Bateman, Dobrescu, Newell, Thorp, and their colleagues, in Deetlefs et al. (2018). Those less likely to recommend their pension provider to friends tend to make more active choices. In other cases, savers benefit from delegating financial decision making and focusing on their own job-specific skills instead.

So how do current defaults affect retirement wealth? Dobrescu, Bateman, Newell, and Thorp, along with other colleagues, answer this question in Dobrescu et al. (2016). They take account of the observed stickiness of defaults to model the effect of changing the default from defined benefit to defined contribution and investment default from balanced to low- or high-risk. They show that default behaviour can have large implications for lifecycle wealth. For example, since women are less likely to opt out, inappropriate defaults can deepen the gender wealth gap. Defaults must be carefully designed and irreversible opt outs avoided.

Having discussed the key actors in the market, the following sections look at the processes of accumulation and decumulation that define superannuation.

Additional

contributions

Perm.

5. Accumulation

Superannuation can provide Australians access to the wealth generating machine of financial markets beyond just the housing market, allowing them to raise living standards above what is available from the Age Pension. The accumulation phase is when this wealth is generated, which depends on contributions, investment performance, and fees. What do balances look like and how have these changed over time?

Balances are increasing but differ by group

There is much disagreement about how much super accumulation one needs for retirement. ASFA (2018) suggests that the retirement balance benchmark for a *comfortable lifestyle* is \$545,000 for a single person. The mean super balance in 2016 was well below that at \$214,000 for those aged 60-64; the median was at \$68,000.

There are vast differences in outcomes by different characteristics. These are presented in Figures 12A-12H. They show that men, postgraduates, full-time workers, and home owners have higher balances.

Of course, the super system is yet to mature. Balances are expected to be higher for workers with a full career under the Superannuation Guarantee. Chomik and Piggott (2016) calculate that someone entering the labour market in 2017 and working a full career at median earnings until age 67 could be expected to accumulate about \$350,000, adjusted to today's standards of living (i.e., in current wage terms). This along with Age Pension income (worth an estimated \$650,000 over the course of retirement, in current wage terms) would result in a replacement rate of about 68% (See Brief 1, Box 2; assumes 2017 parameters including rise in contribution rate).

The gender gap in super is narrowing but needs continued attention

Gender gaps in retirement incomes are driven by gaps during working life. This includes gender-based differences in (1) wage (15% in 2017; WGEA 2018); (2) career (e.g., industries with a concentration of women tend to have lower pay); (3) care responsibilities (i.e., taken time out from work for childbearing and childrearing, or to look after partners or parents); and (4) norms that affect retirement (e.g., differential pension and retirement ages). Each of these can compound over the lifecycle and affect retirement.

Inequality can spread beyond just contributions and balances. Women also exhibit lower financial engagement and literacy (Agnew et al. 2013a; Bateman et al. 2012) and report greater stress regarding financial decisions (ANZ 2015). Further, women pay proportionally larger insurance premiums (because these costs are fixed rather than variable; KPMG 2017). They also live about four years longer than men and thus must do more with less.

Gender gaps may be acceptable in a society where everyone forms part of a couple, where working and saving decisions are joint and retirement income is pooled. But 17% of Australians are entering their 60s living alone (up from 14% in the 1980s). And single people tend to have lower balances than members of a couple of either gender (Figure 13B). This is a problem in the presence of divorce and decreasing marriage rates.

Various solutions have been proposed. Rice Warner (2015a) suggested revising the Age Pension for single women who rent and alter the Sex Discrimination Act to allow employers to make additional contributions for women without requiring special approval. The Labor party recently suggested introducing super contributions on paid parental leave. But analysis suggests this would have only a marginal effect (Coates and Emslie 2018): low- and high-earning women who took two 18-week blocks of leave were projected to only gain an extra 0.5% of retirement income. And middle-earners would see less of that due to the Age Pension means test.

As far as the retirement income system is concerned, there are already various measures in place to ensure that those who have poor outcomes in working life are partly compensated in retirement. This is the basis of Australia's means tested Age Pension. In 2016, the average woman aged 65+ received about \$2,000 more in government pensions than the average man aged 65+. Therefore, the retirement income system should be judged on overall outcomes not just on the outcomes of its constituent parts.

SUPER BALANCES























12H Average balances by housing tenure





SUPER BALANCES BY GENDER

Note: The low balances of single men may be driven by the fact that divorced men who are not remarried earn less than women who are divorced and single (de Vaus et al. 2007). Source: Authors' analysis of ABS (2018a).

Better targeting, such as towards single renters (many of whom are women), is likely to be the best use of further funds (as also argued by others, e.g., Coates and Emslie 2018, and discussed in Brief 2). Another option is to extend the Low Income Superannuation Tax Offset, which would benefit women more than men.

But the greatest impact will be achieved by tackling gender differences in the labour market. The changes seen in recent decades are already filtering through to a narrowing in the gender gap in super: over the last decade the size of the super balance gap has almost halved. In 2016, women's balances at age 60-64 were 64% lower than men's; down from 117% ten years earlier (Figures 13C-13D).

Contributions: Most people contribute well below caps

Based on 2013-14 ATO (2015) data, the median worker contributes the mandatory 9.5% into super but many contribute more (the denominator in this analysis is based on taxable income). As Figure 14B shows, a substantial portion of members make more than the mandated 9.5% contribution – either through higher employer contributions, salary sacrifice arrangements, or other tax-deductible contributions. At the other end of the spectrum, in 2013-14, there were over 20% who filed a tax return but had no contributions. These probably comprise people who didn't have employment earnings or were self-employed (employed as a sole trader or in a partnership), who have assessable income but are not subject to mandatory contributions.

From 2017-18, the cap on concessionary contributions was dropped to \$25,000. Figure 14A shows that only 2.5% of people would be affected by this measure, based on data from three years earlier. The figure remains low even at older ages – not many people are *catching up*.

Contributions below this cap (and above the Low Income Superannuation Tax Offset; see Section 7) are normally taxed at 15%. Those with taxable income above \$250,000 are taxed at 30% on such contributions. As shown in Figure 14H, only about 1% of the population were affected by this.

To increase contributions, rules regarding work in retirement will be relaxed from July 2019. Currently those aged 65-74 must pass the *work test* to be able to contribute: they must work a minimum of 40 hours in any one-month period. But the Government recently announced that those with balances below \$300,000 will have an extra year from when they last passed the *work test* to make contributions, regardless of their work frequency.

Contributions trend in a similar way to income, with higher, more varied contributions being correlated with age (13C). They also increase at a more unequal rate for higher superannuation balances (13I). But overall, even the highest income earners are not, on average, voluntarily contributing the maximum (13G).

Individuals can also contribute an additional \$100,000 per year after tax, and while these are not tax-deductible, future investment earnings from them are only subject to 15% tax once they are in the superannuation fund, which is likely to be much lower than the investor's personal marginal tax rate. But few take advantage of non-concessionary contributions. About 30% of individuals in the 2013-14 made some form of voluntary contribution, less than half of whom did so through non-concessionary contributions (Feng and Gerrans 2016).

There are multiple reasons for low voluntary contributions, some of which may be behavioural (see Section 4), while others are demographic. Financial planning and education are associated with more voluntary saving, while older, more financially secure people are more likely to make voluntary contributions due to fewer competing priorities like paying off mortgages and education debt (Feng 2018).

Increasing compulsory contributions: Too much of a good thing?

The increase in the Superannuation Guarantee contribution rate to 12% was scheduled to take place between 2013 and 2019 but has been delayed several times. It's now set to increase between 2021 and 2025 from the current 9.5%. Back in 1995 there was a plan to increase it to 15%. The argument for the increase revolves around raising retirement savings further to promote consumption smoothing between working life and retirement, potentially offsetting projected declines in rates of return, and the fact that contributions into the account are net of taxes, insurance, and fees. The delay was largely driven by fiscal concerns (if income is received as super contributions it attracts lower taxes than as wages).

But there are other arguments against raising the rate, including: (1) mandatory super may crowd out non-super saving; (2) Australians are already saving enough for retirement; and (3) younger lower-income people can't afford for their wage increases to be diverted into super, especially if they will be clawed back via lower pensions (e.g., Potter 2016).

While there is mixed evidence about the *crowding out* argument (Connolly 2007; Gruen and Soding 2011; see also Section 9 on housing) and some persuasive but ultimately subjective arguments that Australians are already saving enough (Henry 2009; Daley et al. 2016; Coates et al. 2018; Brief 1 also provides background), it's worth touching on the extent to which younger and poorer Australians are suffering because of mandatory savings.

Younger people do tend to experience greater financial stress (e.g., inability to pay bills on time). But a crosssection of financial stress levels by employment status and age shows that it is those out of work that are at high risk of financial stress, i.e. individuals who aren't contributing to super anyway (Figure 15A).

Employed people do show a financial stress gradient which is higher at younger ages. But a split by tenure suggests that this is largely driven by employed renters (Figure 15B). Yet it's difficult to design a mandated savings policy around such groups who may be better targeted via rental assistance, or, more likely, family-related payments.



CONCESSIONAL SUPER CONTRIBUTIONS: WHO CONTRIBUTES HOW MUCH?





15C Claims that households save more outside super are based on averages. On median measures, super is the most important liquid asset





15D This will be more the case as super matures



Average super as share of net wealth by deciles of the equivalised household net wealth distribution and age of household head, 2016 2 Δ 6 7 2 q 15-19 36% 35% 31% 23% 25% 24% 22% 16% 20-24 35% 39% 42% 35% 19% 24% 23% 21% 25-29 44% 28% 51% 50% 38% 17% 19% 20% 30-34 51% 42% 27% 23% 19% 19% 52% 30% 44% 35% 35-39 51% 30% 25% 23% 22% 17%

40-44	43%	31%	34%	21%	24%	23%	21%	18%
45-49	42%	36%	26%	29%	22%	26%	23%	19%
50-54	39%	27%	25%	26%	26%	26%	24%	22%
55-59	32%	25%	22%	24%	24%	26%	27%	27%
60-64	33%	19%	16%	20%	26%	27%	31%	30%
65-69	21%	9%	11%	17%	19%	25%	30%	29%
70-74	14%	6%	9%	10%	15%	19%	23%	23%
75-79	5%	4%	6%	5%	8%	11%	13%	16%
80+	6%	3%	3%	2%	3%	6%	8%	10%

Note: Financial stress defined as inability to pay gas/electricity/telephone bill on time due to shortage of money. Other non-financial assets comprise value of businesses, vehicles, and dwelling contents. First decile excluded since the denominator can be negative or close to zero. Source: Authors' analysis of ABS (2018a).

The concern about forcing low income households to save is not new in Australia or elsewhere. In other retirement income systems this has been solved by not requiring contributions below a certain threshold of earnings. In Australia, this threshold has been \$450 per month since the Superannuation Guarantee was introduced - the figure is unindexed. It could be raised and kept constant with wages. But there are counter arguments for such a measure. For example, for those on casual or part-time contracts, many of whom are women, a higher threshold would mean missing out in net terms (i.e., where employers have monopsony power the benefit may not show up in wage rises).

Furthermore, these groups may also experience behavioural biases against saving, value the commitment mechanism of compulsion, and benefit from access to financial markets that comes with super. The bottom 20% of the earnings distribution are unlikely to experience lower pensions as a result. For those in the middle, with less access to the wealth generating power of financial markets, superannuation offers a way to diversify their assets away from housing. Over the last decade the median value of superannuation across most age groups has come to represent the largest liquid asset (Figure 15C-15D) and super also represents the largest asset commanded by younger households in the bottom half of the wealth distribution (Figure 15E). This is important for younger people because small accumulations at an early age can compound into considerable sums by retirement. A compromise may be to introduce an auto-escalation in contributions that the individual can opt out of below some threshold of earnings (Mitchell and Piggott 2016).

Asset allocations and fund performance: Some serial underperformers

How savings are invested can be as important as the contributions themselves. Like all investment portfolios, super fund returns can be expected to differ in performance and risk profiles. A good starting point is to look at asset allocations.

Overall, Australia's pension assets have higher equity exposures than in other countries, except for the United States (Figure 16A). One reason is that since Australians tend to make use of phased withdrawals (i.e., accountbased pensions), they continue to think of these as investments rather than converting them into low-risk pensions (Knox 2014). That is, there is less *life-styling* investment – where risk exposure automatically reduces with age. Other reasons include that Australia has less defined-benefit (DB) funds, which traditionally invest more conservatively, and that the age profile in Australian super funds is younger than it is in many other countries.

SMSFs have performed about the same as large APRA funds over the past decade. From 2007 to 2016, SMSFs had an average annual return of 4.9%, while large funds averaged 5.0% (Figure 16D; compound returns were 5.16% and 5.18%, respectively). But there is a large discrepancy between small and large SMSFs (of over 10%). This is likely due to the differences in fees.

Differences in returns also exist within the APRA funds. Retail funds performance on average less well over the past decade than Industry funds (Figure 16F), while MySuper funds have outperformed the *choice* segment on average (Figure 16G).

But it's important to make comparisons of performance based on asset class adjusted benchmarks. Using such methodology, the Productivity Commission (2018) shows that there is systematic underperformance in the choice sector as well as in defaults. They find that in MySuper there were 1.7 million accounts in funds considered to be serial underperformers against their asset class adjusted benchmarks. Being defaulted into such a fund can have a large negative impact on retirement savings. The Productivity Commission estimates that the difference in the retirement balance between someone who is in a median top quartile fund and a median bottom quartile is 53%.



40%

16B SMSFs have more cash and local equity

COMPARING ALLOCATION AND PERFORMANCE 16A Aust funds have higher risk exposure than elsewhere

Average fund composition, 2017

100%

Note: 12-year returns for MySuper based on analysis of a sub-sample of products that were precursors to 2013 MySuper products. The sub-sample represents over 73% of MySuper assets and member accounts. Source: WTW (2018), Murray (2014), ATO (2017), APRA (various years), PC (2018).

Fees and costs: Remain relatively high

The final piece to the accumulation puzzle involves the potential leakages, mostly in the form of fees. Australians pay more than \$30b or about 2% of GDP in fees on their super, excluding insurance (PC 2018).

Many, including Cooper (2010), Grattan Institute (Minifie et al. 2014; Minifie et al. 2015), and Murray (2014), identified high fees as the manifestation of inefficiency in the super system. A lack of adequate competition means that providers can charge higher fees, and in turn maintain high costs (Figures 17A-17F).

The consolidation of funds over the past two decades has not decreased costs and fees as much as expected. Some have claimed that changes to superannuation rules and processes placed upward pressure on costs and fees - yet reforms around processing and payments should by now be reducing costs. But a persistent issue is that the data reporting is poor quality and inconsistent. Over the decade to 2016, average fees dropped by up to 0.27% on some measures but increased by 0.05% on others (Figure 17B).

By 2016, average fees reached between 1% and 1.2% of a member's balance (Figure 17C), though 14% of member accounts were charged over 1.5% (PC 2018). A delve into fees by sector reveals that retail fund fees are significantly higher than industry fund fees (Figure 17D). This appears to be due to higher operating costs that are not entirely offset by their lower investment costs (Figures 17E and 17F).

As expected, high fees are more common among choice funds rather than MySuper funds, but there are still many default members paying high fees (Figure 17C). The Productivity Commission estimated that an average worker's retirement balance would be 12% lower if their fees were 0.5% higher than the MySuper average.

One would hope that higher fees mean higher performance. Yet, there is evidence that higher fees were correlated with *lower* net returns and that this wasn't due to lower risk (Minifie et al. 2014). Indeed, the only consistent indicator of high performing funds was found to be their low fees.

LARGE FUND FEE COMPARISONS



Figure 17A note: administration and investment cost data are not collected for all countries. Sources: OECD (2017), Rice Warner (2017), PC (2018), APRA (various years).

If the market structure is not driving costs down perhaps more direct intervention will. As well as bans on exit fees, Government also introduced a 3% cap on annual passive fees for accounts with low balances (<\$6,000). But there is room for further reform.

SMSF fees: High start-up costs

Unlike with APRA funds, fee information for SMSFs is more transparent and readily available from ATO tax data. SMSF costs are predominately *fixed* – large unavoidable costs when starting up to comply with regulations, which don't increase with assets. It means there are economies of scale for those with large balances.

For example, audits and ATO supervisory levies are significant for small funds as a proportion of assets, but negligible for large ones. Even some variable costs decrease with account size, such as the ability to negotiate more competitive investment fees when trading more shares.

Overall, the expense ratio decreases significantly with fund size (Figure 18A). Small SMSFs face costs that are not only much higher than those of large SMSFs but large compared to APRA funds as well.

This is not necessarily of concern. Longitudinal data suggests that expense ratios for small funds catch up to large funds as they grow (ATO 2017). Still, SMSF expenses have increased over time, and so despite the fact that the average SMSF fund balance has been steadily increasing, average expense ratios are up over the decade (Figure 18C).



SMSF COST COMPARISONS

Sources: ATO (2017), PC (2018) analysis of unpublished ATO data.

Insurance – A lack of transparency

Another potential leakage is insurance. Insurance within a super fund is generally provided through a single contract that covers the entire super fund cohort. Group insurance has the potential advantage of lower costs than available to individuals. But it's unclear whether superannuation is the best vehicle for working-age insurance and whether existing default insurance settings are appropriate.

MySuper funds are required by law to provide life and total and permanent disability insurance by default, which requires the individual to opt out, rather than opt-in. About 75% of MySuper accounts have life insurance, 67% have disability insurance, and 29% have income protection. Most non-MySuper accounts typically exclude insurance, so coverage rates are 29%, 23%, and 9%, respectively (APRA various years, APRA 2018).

For some people there are good reasons to have life and disability insurance beyond what is available as public benefits. One in five families will be impacted by the death of a parent or an accident or sickness that renders them unable to work. The median level of cover in Australia is about 60% of what is necessary to cover debt and living standards (Rice Warner 2015b).

One problem is that many people don't realise they are insured or may be insured under multiple accounts. Premiums are paid directly out of contributions and default premiums vary widely between funds, so a disengaged customer may not know what costs they are incurring. This variety in premiums is not necessarily because of differences in members – insurance policies are rarely tailored to member cohort information. And bundling of life with other insurance doesn't necessarily serve those members with no dependents.

Government is seeking to address this, with a 2018 Budget announcement that those under 25 and those that are inactive will have to opt-in to be covered. The Government predicts this will deliver \$700 million to the Treasury because fewer funds will leave super and more fund earnings will be taxed.

The Productivity Commission (2018) predicts that for an average full-time worker, those with income protection, life insurance and disability insurance can expect their retirement balance to be 7% lower than it would otherwise be. For those at the upper tail of insurance premiums, this reduction may be as high as 14%. However, this is a complex issue. For many, default insurance in super does provide appropriate cover as a lower cost than if purchased outside super.

Commentators, such as Chant West (2014), have suggested transparency with insurance in super has seen less progress than with super fees. The Productivity Commission has thus suggested that the voluntary code of practice should be mandatory.

How to improve super accumulation

Perhaps more radical reforms will be needed to address the systemic issues that start with member disengagement and lack of competition and end with multiple accounts, high fees, and entrenched underperformance.

One way to inject competition into the market is by making providers compete or overcome some threshold to *be* in the market: for example, by way of a government run tender (e.g., as in New Zealand and Chile). The Productivity Commission (2018) suggest a *Best in Show* model, in which the allocation of defaults is taken out of the industrial awards system and the hands of employers. Instead new super fund members would select a fund from the top ten performing funds, determined every four years by an independent expert panel. The panel could be made up of already independent experts such as the Reserve Bank Governor and Chair of Fair Work Commission (to avoid politicisation) and be tasked to consider metrics such as ongoing returns, investment strategies, and governance practices (to avoid high-risk gaming strategies).

In the model, members could be allocated a default once, and take the pot with them when they move jobs. The selection of the top ten funds would bring clarity for anyone considering a switch. This would be complemented

by the great powers already given to APRA (in the form of an enhanced *outcomes test*) to address the long tail of underperformance among existing defaults.

The idea is that such a model would create competition for default MySuper products and enhance choice for those wishing to choose. It may deal to some extent with conflicted advice since advisers would need good reasons for recommending against the top ten. But there are many issues to resolve with such a model, including the validity of metrics that determine the best in show (those delivering good returns now are not necessarily the ones who will do so in future); and how to avoid legal disputes from funds that miss out.

6. Decumulation

Much thought has gone into accumulating super, less into its decumulation. Australia is the only OECD country that has a mandated pre-funded accumulation structure without a mandated decumulation structure.

As a result, many retirees have faced difficult financial choices in retirement without sufficient support or an adequate selection of products. Some receive access to their superannuation at a time when the risk of cognitive decline is increasing, which can result in suboptimal decision making (see Chomik et al. 2018 – CEPAR's brief on *Cognitive ageing and decline*).

Superannuation is accessible from the *preservation age* of 60 (lower for those born before 1964), which requires retirement, or from age 65, which does not. If super is accessed after the *tax-free* age of 60 then the funds are transferred (up to a cap of \$1.6m) into a decumulation account that incurs no tax on fund earnings (funds above the cap continue to incur a 15% tax on earnings; see Brief 2, Figure 4A, on different eligibility ages).

But it's possible to start accessing super without retiring. A *transition to retirement income stream* (TRIS) is available to those who reach their preservation age but don't want to retire – they can start withdrawing between 4% and 10% of their super. In the past, a TRIS triggered the super account into decumulation which meant fund earnings for those aged 60-64 were tax-free. Many used this mechanism to lower their superannuation taxes. While the flexible retirement option is still available, the tax advantage has been removed.

Australians have full flexibility about how they draw down super assets – they can take a lump sum, an accountbased pension, or an annuity, though for earnings to remain tax free there is a minimum drawdown requirement of between 4% at age 60 to 14% after 95. This is to encourage people to spend super rather than use it as a tax efficient vehicle for bequests.

Lump sums: Decreasing in importance

Many take lump sums – but not as many as in the past. In recent years a smaller proportion of all superannuation benefit flows (40%) is paid out as income streams (Figure 20A). Fewer still among SMSFs (11% in 2017; APRA various years). Looking at survey data across all older age groups, about 420,000 people received lump sums from super in 2015-16 and about 1.4m received income streams (ABS 2017). Such cross-sectional data should be interpreted with caution. On the one hand, each successive year of data includes income streams started in the past but not lump sums taken in the past, which may overstate the importance of income streams. On the other hand, the value of a person's income stream is likely to be smaller than the lump sum, if they draw one, which may overstate the importance of lump sums. Much of this will depend on the maturity of the system (e.g., smaller accumulations are more likely to be withdrawn as lump sums).

Most lump sums are small – half were less than 25,000 – and tend to be used to consolidate wealth, such as clearing debt (22%) or investing in the home (19%) rather than on living or medical expenses (11%). Those with small balances tend to withdraw more of their superannuation in a lump sum (PC 2015a). The higher the balances the more likely that savings are left behind the tax-advantaged superannuation veil.

Overall, the lump sum spending behaviour of Australians may be reassuring for those worried that retirees will spend super too fast and need to fall back on the Age Pension. If anything, there may be underconsumption of savings in retirement (see Box 6).

The potential reasons for such conservative spending are multiple. It may be due to: (1) precautionary savings in the absence of adequate risk management products (Figure 20E); (2) bequest motives (Figure 20F); (3) loss aversion caused by the fact that withdrawals may affect Age Pension payments; (4) viewing minimum drawdown rates as a safe status quo default in the face of uncertainty; and/or (5) the psychological difficulty of depleting a non-replenishable resource they have spent a lifetime accumulating (see Brief 2).

Account-based pensions: Main product used in Australia

Account-based pensions, also known as allocated pensions, or phased withdrawals, involve regular income payments (monthly, quarterly, half-yearly or yearly). It is the most common way of spending super in Australia – over 70% of those who received an income stream from super in 2016 made use of allocated pensions. On average they receive about \$25,000 per year from such products.

Asher et al. (2017) found that withdrawing at the minimum rate from account-based pensions is more common than withdrawing more and suggest that this indicates a desire of people to spend less than legally required or that they stick with it as a default. Another reason could be self-insurance: the product leaves all liquidity, market, longevity, and inflation risk with the households. Indeed, such products have more in common with a bank account than a pension – bank accounts can be drawn down until there is no money left; pensions are a guaranteed form of income for life.

Box 6 CEPAR research spotlight Drawdowns of superannuation in practice

Researchers often theorise about what asset drawdown behaviour is optimal in retirement. These models often ascribe certain preferences, such as an appetite for risk and desire for bequests based on real world data. The results can have important implications for policymakers, financial advisers, and those designing retirement income product. But what does asset spending behaviour look like in such unfettered empirical data?

As described in Brief 2, Box 4, CEPAR researchers found that people who face the Age Pension means test spend down their overall wealth surprisingly slowly.

CEPAR Honours student Igor Balnozan (2018) focused on just one form of asset drawdown: account-based pensions. He looked at longitudinal data for 44,000 retirees and found that a number of simple drawdown strategies explain most drawdown behaviours within these accounts. For example, two dominant strategies involved (1) withdrawing funds in line with the legislated minimum drawdown rate (about 48% of members; some of whom revised down their drawdown when the minimum was lowered) or (2) preferring to take a level dollar amount over time (28% of members; which implies that they preferred to draw less money over time, in real terms). Many also made ad hoc drawdowns, which highlights the need for flexibility in the system.

19 Who used which strategy?							
Those following minimum drawdown rates were more likely to:	Those drawing level amounts were more likely to:						
Be female	Be male						
Have larger account balances	Have smaller account balances						
Have lower risk appetites	Have higher risk appetites						
Have retired later	Have retired younger						
Source: Balaozan (2018)							

Associate Investigator Jennifer Alonso-García, Deputy Director Hazel Bateman, Associate Investigator Ralph Stevens, and co-authors (2018) conducted an experimental survey in Australia and the Netherlands to investigate why people failed to drawdown as expected by lifecycle theory. The key reasons related to concerns about health and aged care expenses, as well as adequate liquidity (by the Dutch – who are fully annuitised).

LUMP SUM vs INCOME



Figure 20A note: APRA's method of calculating benefit payment shares changed between 2014 and 2016. The implied decrease in lump sum payment may be due to the income stream data reflecting the accumulation of current and prior-year's non-lump-sum payment streams, therefore overstating the level of pension payments relative to lump sum. Figure 20C is for persons who received a lump sum in last 2 years. Figure 20D share does not sum to 100% since some people have multiple streams. Sources: APRA (various years), ABS (2017), National Seniors Australia (2017).

Annuity-type products: A recent resurgence

Annuities are typically guaranteed income streams purchased with a lump sum. These commonly refer to life annuities but can be for shorter periods (*long term* annuities refer to period of 20+ years). They are among a set of pooled risk products that insure against longevity, investment, and inflation risk. Such pooling often requires that there is no benefit at death (though hybrids exist).

Figure 21 shows that there has been a small renaissance in annuity sales in recent years, but it remains a very small market. Annuities account for 7% of total pension member accounts and only 4% of total pension members' benefits (APRA 2018). The average annuity is small – about \$17,000 – so are probably used to complement rather than supplement other financial strategies. A recent slowdown in sales may relate to people waiting for clarity around changes in policy affecting risk-pooled products.



Note: RCV denotes residual capital value. Source: Strategic Insight (2018).

The Australian retirement risk-pooling market is also one that is lacking in competition. Challenger have over 70% of total annuity market share (Challenger 2018) and have a monopoly of long term and lifetime annuities, (Figure 22). The market changing but is yet to provide a full menu of competitively priced products to help retirees manage risk (e.g., deferred annuities, hybrid annuities, group self annuitisation, etc.).

How to improve super decumulation

So far, superannuation has predominantly been a savings scheme rather than a retirement income scheme, which allocates risk to those best able to deal with it. What could Government do to improve this?

As documented in a series of CEPAR submissions to the Financial System Inquiry there are three broad policy responses to help turn assets into retirement income and pool risk more effectively, some of which have recently been taken up by policymakers.

The solutions include: (1) encouraging private market provision of risk-pooled retirement income products (e.g., by lowering barriers to innovation, aligning tax and benefit system and regulatory structures); (2) Government intervention in the market to directly provide products and/or financial instruments that support such products (e.g., reverse mortgages via the Pension Loan Scheme, tail end insurance, or longevity bonds); and (3) enhancing the decumulation choice architecture (e.g., targeting education, information, compulsion, incentives, and for those that don't choose: defaults). Regardless of the method, the apparent market failures around longevity products suggest there is a rationale for state intervention.

Encouraging private market provision of retirement income products

A range of retirement income products can provide a stream of resources in retirement, some of which are unavailable in Australia or operate in an inefficient market. These include products related to longevity risk insurance, long term care insurance, and equity release products (all of which have been the subject of extensive research at CEPAR – see boxes below).

The concentrated structure of the Australian financial system (described in Section 3) hasn't helped. As with the accumulation phase, there have been few incentives for providers to offer low cost, innovative solutions for members once they retire. After all, developing good, risk-pooling products for the mass market is harder than operating a superannuation *bank account*, not least because longevity insurance has a cost and is capital intensive. The financial advice industry has also focused on strategies during the accumulation phase and ignored strategies that respond to member needs in retirement. Such structural issues need to be tackled or sidestepped by alternative mechanisms.

A lack of a formal supra-regulatory framework means that the development of new products has previously faced a fragmented and complex set of rules and policies. In the past, there was little thought about how Age Pension means test rules (set by the Department of Social Services), tax rules (set by the Australian Treasury), and prudential rules (set by various regulators) affected product demand and provision. Government recognised this recently and changed the Age Pension means testing to make annuities more attractive. From July 2019, only 60% of annuity payments will be treated as income in the asset test and 60% of the purchase price as assessable assets in the asset test (30% after age 84). This takes account of the fact that a proportion of the income is a return of assets while a proportion of the asset value is an insurance premium that should not be punished by excessive means testing. In 2017, tax-exemption status was also extended to annuity-type products (with limits on residual capital value) in recognition that these are used to fund retirement rather than shelter assets from tax.

Direct government intervention in the market

A direct method of developing the retirement income market would be for the Government to get involved. This could happen through the issuing of underlying financial instruments to support the longevity insurance market, such as long duration longevity, infrastructure and inflation linked bonds.

Such a bond market would hedge the long term risks facing life annuity providers and reduce the costs of annuities, making them more attractive to consumers (Evans and Sherris 2010). These bonds hedge on the population level, with purchasers receiving payments based on future mortality rates for the population, rather than hedging the mortality risks of an annuity provider. The outcome would be welfare improving by allowing

the private sector to focus on insuring against individual idiosyncratic risk, while Government takes on the more difficult systematic longevity risk (see Box 12 on longevity risk).

An alternative intervention for the Government could be directly providing longevity insurance to people through existing distribution channels (e.g. Centrelink or Australia Post). The government already provides a form of home equity release through the Pension Loan Scheme (see Box 17 and Section 9).

Designing a decumulation default

Many of the challenges regarding financial behaviour discussed in Section 4 are relevant to the decumulation stage. The provision of financial education that is stage-of-life specific, and the presentation of simple, standardised product information are crucial to facilitating sound decision making and interest in retirement income products. Mandating that member statements include generic projected retirement incomes rather than just current accumulations may engender an *income*, rather than *lump sum*, mentality.

Mandating a specific retirement income product is undesirable because individuals enter retirement with different experiences, resources and exposures to risks. But a *MyPension* default may be a more appealing policy option. While providing appropriate guidance for the majority, they offer an opt out.

Designing a decumulation default requires settling on several parameters (see Box 7). One of these is what the product should look like. A good option is to combine a phased withdrawal, which provides flexibility in the first phase of retirement, and a *deferred life annuity*, which is a prepaid annuity that begins at an age late in retirement and can cover investment, inflation, and longevity risk (see Figure 23). This solution could be developed for the mass-market by leveraging new technologies and sidestepping existing problems with market concentration and financial advice. Deferred annuities may provide additional comfort for those concerned with cognitive decline since the product requires less decision making in the later years. It also provides a clear planning horizon in the first phase of retirement. Until recently, tax-and-benefit rules inhibited the deferred lifetime annuity market. But changes since 2017 mean the system is now moving toward Australians gaining access to deferred annuity products (one such product was launched by Challenger in 2017).

Other products options include *ruin-contingent life annuities, group self annuitisation* (Box 9), or guarantees that allow the consumer to take advantage of both strong investment returns and long term security (Box 14).

Extent of risk coverage of different decumulation products by risk type	Longevity	Investment risk	Inflation risk	Liquidity risk	Timing (or sequence) risk	Replace- ment rate (or price) risk	Counter- party (or provider) risk
Phased withdrawal (min)	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH
Phased withdrawal (min-max)	LOW	LOW	LOW	MED	HIGH	HIGH	HIGH
Immediate fixed-income fixed-term annuity	LOW-MED	HIGH	LOW	LOW	LOW	MED	MED
Immediate inflation-indexed fixed-term annuity	LOW-MED	HIGH	HIGH	LOW	LOW	LOW	MED
Immediate fixed-income life annuity	HIGH	HIGH	LOW	LOW	LOW	MED	LOW
Immediate inflation-indexed life annuity	HIGH	HIGH	HIGH	LOW	LOW	LOW	LOW
Immediate variable life annuity	MED	LOW	MED	LOW	LOW	LOW	LOW
Immediate variable guaranteed annuity	HIGH	MED	MED	LOW	LOW	LOW	LOW
Group self annuitisation (GSA)	MED	MED	LOW	LOW	LOW	HIGH	HIGH
Deferred inflation-indexed annuity	HIGH	HIGH	HIGH	LOW	LOW	MED	LOW
Phased withdrawal + deferred lifetime annuity	HIGH	MED	MED	MED	MED	HIGH	MED

23 Combining phased withdrawal with deferred life annuity may be a good decumulation option for many people

Source: Authors' compilation.

Recent government responses: Development of a retirement income framework

Decumulation defaults have not been taken up by policymakers. But a policy framework is being developed that seeks to address the concerns (Treasury 2018). A headline policy measure is to require trustees to offer Comprehensive Income Products for Retirement (CIPRs) to members as part of a *covenant* introduced in legislation governing super. CIPRs will include risk-pooling, with simplified and standardised information disclosures. The offer of such options is expected to be a signal to retirees that they should consider its benefits.

Box 7 CEPAR research spotlight Designing default decumulation products

Defaults could be a powerful tool to not only guide the accumulation phase of super, but also support the process of converting superannuation assets into retirement income. In one of its submission to the Financial Services Inquiry, CEPAR (2014c) considered how this might work. The submission looked at the various design elements of a decumulation default and how a mandated Deferred Life Annuity (DLA) might be an appropriate risk-pooling option.

CEPAR suggested that there are ten domains that would need to be resolved when designing a default. These consist of decisions about: (1) what the default product/s may be; (2) phasing of products if a mix is used (e.g., when should deferred life annuities start?); (3) what the trigger for default would be (e.g., preservation age plus a period of no contributions); (4) coverage of defaults (e.g., excluding self-employed); (5) which accounts are defaulted (e.g., MySuper only); (6) how opt outs would operate (e.g., 3 month cooling off period; methods of notification); (7) minimum and maximum thresholds that determine how much of a balance is defaulted into which product (either percent or dollar amount; it could determine who receives which default); (8) how a default provider would be determined (similar to debates about accumulation defaults); (9) how prices and fees should be set and regulated (e.g., annuitisation rates in Switzerland are set by government); and (10) how to align incentives so that the default is indeed optimal for most people.

Some of these questions, such as the optimal proportion of funds that should be annuitised under which scenario, have already been modelled by CEPAR researchers (e.g., see Box 8 on optimal ways to annuitise).

As with research on accumulation defaults, CEPAR research shows that decumulation defaults are sticky too but the effects differ by group. Bateman and Thorp, along with Associate Investigators Christine Eckert, Fedor Iskhakov and Jordan Louviere, looked at defaults and rules of thumb in annuity choice in an online experimental survey (Bateman et al. 2016). Participants were allocated different risks of running out of money and a slider showing different initial annuity allocations. In theory, those facing higher risks should annuitise more. Yet many stuck with the default or invested equally between annuity and the risky asset. About 22% of choices relied on the default and 10% on naïve diversification. Lower education, wealth, and higher self-assessed (but not actual) financial literacy were associated with less annuitisation.

As part of the policy framework, the Australian Government Actuary (2018) as well as Treasury (2018) sketched out tests for certifying potential CIPRs and principles that these should follow. The suggested requirements include that the product will provide customers with: (1) a broadly constant real income for life, (2) that this income will include some longevity insurance; and (3) some flexibility of access to capital.

Such a product could result in higher incomes than what would be delivered by an account-based pension. This is because the minimum rates for account-based pensions are set below a level which would typically exhaust capital at life expectancy and because of the inherent mortality premium in longevity insurance products. The longevity premium exists because some of the benefits of those that pass away are passed on to those that survive. But this introduces a potential equity issue: since poorer people tend to have lower life expectancies, they could be subsidising richer people who tend live longer (a phenomenon which occurs in social security systems throughout the world). This could be tackled by having separate insurance pools, taking account of the heterogeneity of the population; but most forms of risk pooling could increase consumption in retirement across the board if it reduces the need for self-insurance.

Many questions remain regarding how decumulation products will be integrated into the retirement ecosystem. These include issues about how pricing will work, how to decide on the appropriate product, whether trustees have the capacity to choose CIPRs for members, how prudential oversight will work, whether the current proposals will just result in a proliferation of many complex products, and whether consumer-friendly comparisons of products will be possible. Indeed, there is a danger that the same inefficiencies that have plagued the accumulation phase and resulted in complex and underperforming products could also translate to the opening of a new, even more complex market of decumulation products. This is a live debate that will determine the future of superannuation decumulation in Australia, which is leading the world in policy that attempts to combine flexibility and paternalism.

Box 8 CEPAR research spotlight What is the optimal way to annuitise?

Everyone is likely to have a different preference for annuities, but it's possible to calculate the optimal annuity purchase based on a given individual and specific market. CEPAR Associate Investigator Fedor Iskhakov, along with Deputy Director Hazel Bateman and Associate Investigator Susan Thorp (2015), developed a stochastic lifecycle model to investigate this in the Australian context. The modelling involved a choice between risky assets and either a fairly priced immediate or deferred annuity (purchased at 65 to pay out at 85). It was based on single male home owners reaching retirement with different levels of accumulation.

The researchers find that in the absence of an Age Pension, 38% of one's wealth should be used to buy an annuity, and higher if the market is more volatile. The rate is lower when the Age Pension is included – about 18% for someone with an accumulation of \$500,000. Interestingly, the findings also show that annuitizing all savings is worse than annuitizing nothing, especially when the retirement asset is low.



In the case of a deferred annuity, the Age Pension crowds out even more than in the case of an immediate annuity. The authors consider the Age Pension to be the main driving force, because as the wealthier retirees age and their retirement wealth decumulates, they will probably begin receiving the pension at the same time as the deferred annuities start paying. However, the retirees with low wealth can optimise their purchases with more deferred annuities than immediate annuities, especially with the deferred annuities at fair prices.

In another scenario analysed, if the individual seeks complete certainty of retiring on \$23,400 (the ASFA modest lifestyle minimum retirement income at the time), the model suggests 100% annuitisation for those with \$75,000 through to below 20% for those with over \$400,000 (those with below \$75,000 cannot reach ASFA modest level).

CEPAR Partner Investigator Olivia S. Mitchell and her colleagues (2016) explored the value of annuities in the US. While the US system is quite different to Australia, the US Treasury recently encouraged firms to protect retirees from longevity risk by converting some of their defined contribution (DC) pensions into deferred annuities. They used a lifecycle portfolio framework to measure the welfare impact of including such annuities in the menu of pension options. They find the average optimal commitment to be 8-15% of pension balance at 65 for an annuity that starts paying out at 85. This, they estimate, will boost welfare by 5-20% for most plans.

Box 9 CEPAR research spotlight What is the optimal way to annuitise? (Part 2)

As well as studying annuities in different national contexts, CEPAR researchers have also looked at more complicated annuity options, including new products such as group self-annuitisation (GSA). Senior Research Fellow Katja Hanewald, Centre Director John Piggott, and Chief Investigator Michael Sherris (2013) examined the best ways for individuals to manage post-retirement longevity risk, comparing portfolios that included fixed life annuities, deferred annuities, inflation-indexed annuities, phased withdrawals, and GSAs.

In GSAs, participants pool their money together and invest in assets. This pooling of money partially protects individuals from longevity risk as some individuals will die earlier and others later. GSAs also provide higher income than normal annuities because they do not require capital to back the guarantee of income.

These were found to be preferred to full annuitization for individuals with a bequest motive, and for those without a bequest motive if the life annuity products involved product loadings. Even in the case of no bequest motive and no product loadings, a retirement strategy that had small holdings of GSA plans was preferred. In short, GSA played a significant role in optimal portfolios across a range of situations, much more so than deferred annuity portfolios despite their increasing popularity in discussions about the future of decumulation products.

In 2013, however, Sherris along with his colleague Chao Qiao investigated GSAs and found that systematic longevity risk (Box 12) can undermine their effectiveness. Increasing the pool size as well as dynamic pooling, where individuals of the same age join existing funds on a frequent basis, were shown to reduce the high volatility of benefits experienced by pool members surviving into old age. New research will look at optimal investment strategies for GSAs and the extent that GSA redistribute benefits between different groups.

Box 10 CEPAR research spotlight How long do people think they'll live?

Knowing how to spend super requires households to know how long they will live. Chief Investigator Hazel Bateman, Associate Investigators Susan Thorp and Federica Teppa (2015), surveyed 4000 individuals from Australia and the Netherlands to elicit their subjective life expectancies. They found that people are pessimistic about their likelihood of reaching young older age (ages 75 - 80), but are optimistic about reaching 90+ relative to their actual chances.

This phenomenon of expecting to 'either die young or to live long' is echoed in two other CEPAR-affiliated projects. Associate Investigators Shang Wu, Ralph Stevens and Susan Thorp (Wu et al. 2013) and Hazel Bateman, Susan Thorp and Julie Agnew (Agnew et al. 2013b) found that women tend to underestimate their life expectancy, while males are much closer to actuarial expectations. Bateman, Thorp and Teppa also sought to assist people formulate subjective survival expectations by providing peer and familial information on life expectancy, however this additional information was unable to address the pessimism.



25 Many people under-estimate the age until which they will live until they reach age 70

Box 11 CEPAR research spotlight How to make annuities more attractive?

While the availability of annuity products has grown, the demand for them has been lacklustre. One reason may be that current products are poor value for money. Money's Worth Ratio (MWR) is widely used to measure the attractiveness of annuities from a customer's perspective. It represents the expected return to the average annuitant per dollar of premium paid. Associate Investigator, Ralph Stevens, looked at the Dutch annuity market, which is more developed than that of Australia. He estimated a MWR above 0.9 over the decade to 2012 and close to unity by the end of the period (Cannon et al. 2013). It indicates that the market is efficient by international standards and annuities are fairly priced. In comparison, older research by Centre Director John Piggott and Partner Investigator Olivia S. Mitchell, showed that Australian MWRs were as low as 0.81 for a men aged 60 in 2000 – before the decline and resurgence in the market (Doyle et al. 2004).

But the MWR is indicative of value for the average person. Those living longer benefit more. Former Research Fellow Joelle H. Fong measured the value of Singaporean annuities by considering various life expectancies and quantified volatility by the dispersion and skewness of the expected benefits (Fong et al. 2014). She found that for a 55-year-old male annuitant, who purchased a commercial annuity, the 'worst-time to die' (with respect to financial payoff) is around age 78. The annuitant would breakeven around age 90. This high breakeven age disincentivises retirees from annuitising, particularly when they underestimate the longevity risk they are going to face (see Box 12) and believe they will not 'recoup' their investment.

One way to make annuities more attractive is to tailor the price to different types of people, to the extent that regulations allow. CEPAR Chief Investigator Michael Sherris has used both Frailty and Markov Aging models to quantify heterogeneity in the life annuity market and its financial implications (Su & Sherris 2012). These models can be used to price annuities to the extent that mortality is decomposed into causal factors (e.g. health status and socio-economic status). By taking these factors into account when underwriting and pricing products, providers may attract segments of the population that don't currently purchase life annuities.

CEPAR Associate Investigator Ramona Meyricke and Michael Sherris have taken this further by jointly modelling the effect of both observable individual-level characteristics (e.g. BMI) and unobservable characteristics (e.g. frailty), which results in a clearer picture of mortality risk (Meyricke & Sherris 2013). For example, they found an underwritten high-risk male aged 65 should pay 35% to 65% of the standard annuity price (based only on age and gender). In other words, it is possible to offer much lower prices to high risk individuals. The results suggest that underwriting results in fairer annuity prices because individuals with longer expected lifetimes pay more for an annuity than individuals with short expected lifetimes. The message is that quantifying and pricing heterogeneity can increase attractiveness of annuities.

Also important to the discussion of annuity uptake is cognitive constraints. Partner Investigator Olivia S. Mitchell and her colleagues (Brown et al. 2017) found in an experimental setting that people value annuities less when offered to buy them but valued them more when offered to exchange them for lump sums. The authors interpreted these results as evidence of people not correctly calculating the actual value of the annuities, as the spread between buy and sell was negatively correlated with cognition. It may, therefore, be the case that annuities are not popular because people don't understand them as much as it being because they don't provide the best option all things considered.

Similarly, Chief Investigator Hazel Bateman, Ralph Stevens, Associate Investigator Jennifer Alonso-García, and their colleague (2018b), found in an experimental survey that people were more willing to pay for an annuity after being provided with timely, balanced information and the opportunity to learn about the key features. Also, they found that those with high incomes valued annuities higher than those with low incomes.

Finally, could the way that a product is described also have an effect? Chief Investigator Hazel Bateman and colleagues (2017) found that study participants were willing to allocate considerable retirement funds to annuities when its commercial name was omitted and only its features (e.g., insurance) were described.

Box 12 CEPAR research spotlight How to estimate longevity risk?

Mortality risks for insurers who offer retirement products are both individual (idiosyncratic) and cohort (systematic). Insurers can pool individual risk so one person's earlier passing is another's longer payout, but systematic risk poses a greater challenge. Insurers cannot mitigate against the possibility of the overall population living longer by increasing the number of policyholders. Hence, it is critical for insurers to appropriately model the mortality of policyholders when determining the premium level for retirement products.

The Lee-Carter model is the most common mortality forecasting model. It requires a mortality index which is commonly understood to be an unobserved latent variable that follows a random walk. But Senior Research Fellow Katja Hanewald (2011) found that a few causes of death, such as cardiovascular diseases and diabetes, accounted for a large fraction of the variation, so causes of death could be used to better predict trends in total mortality rates.

Former CEPAR Research Fellow Craig Blackburn and Chief Investigator Michael Sherris proposed and calibrated a consistent multi-factor Affine Term Structure Model to analyse mortality (Blackburn and Sherris 2013). Although the model has typically been used to derive financial yield curves, parallels can be drawn and used to model mortality. This model was applied to Swedish data from 1910 to 2007. The survival curves predicted by the model were remarkably accurate. The inclusion of multiple risk factors introduces flexibility to the model, which allows for applications in pricing and more general risk management problems such as longevity risk.

Associate Investigator Daniel Alai and Michael Sherris applied Trend Models, which usually estimate the reserve requirements for general insurance, to period-cohort mortality trends (Alai and Sherris 2014). Estimating mortality improvement in this way avoids the pitfalls of traditional models where age groups that have seen the greatest mortality improvement in the past are forecast to experience the greatest mortality improvement in the future.

With another colleague, Sherris proposed a method of modelling mortality that minimises the possibility of inaccurate assumptions (Njenga and Sherris 2011). They managed parameter risk by using a Bayesian Vector Autoregressive Model, and, using Australian data, showed that the method can significantly improve forecast accuracy. He performed a similar study using a Vector Error Correction Model to estimate a parametric mortality model (Gaille and Sherris 2011). The approach captures changing age structures and allows the modelling of long-run trends while having the flexibility to incorporate different causes of death as well as aggregate mortality rates.

Most mortality forecasts are performed for a single population but it is often preferable to forecast multiple populations simultaneously (e.g. mortality by sex or region). When independence is assumed, forecasts of mortality for subpopulations are often divergent in the long term and inconsistent. Associate Investigator Heather Booth and her colleagues introduced the Product-Ratio Method which takes dependencies between subpopulations into account and produces equal if not better overall accuracy than independent forecasts (Hyndman et al. 2013). In similar research, Michael Sherris led a team to generalise model calibration for a Multivariate Tweedie Distribution to allow for censored observations (Alai et al 2015).

Sherris also led a project with Senior Research Associate Mengyi Xu and Associate Investigator Ramona Meyricke to look at how systematic mortality improvements vary with individual risk characteristics (Xu et al. 2018) – relevant for life insurers, pension funds and regulators. He also worked with Alai and another colleague to model lifetime dependence using the Truncated Multivariate Gamma Distribution (Alai et al. 2013) to assess how similarity in mortality can impact insurers.

Insurers need to accurately forecast mortality rates, whether it is improving existing methods or proposing new techniques, both of which are shown here. Only then can innovative products that target longevity risk be adequately priced and brought to market.

Some of the latest insights from research on mortality data and underlying trends for the Australian market have been summarised by Senior Research Associate Heloise Labit Hardy and Chief Investigator Michael Sherris (2018). They include the different mortality tables used in the market, which can be based on those from the Australian Government Actuary, the ABS, or from private sources.

Box 13 CEPAR research spotlight How should insurers cope with mortality risk?

For insurers, part of longevity cannot be easily diversified away by increasing portfolio size. As a result, insurers could face cash flow volatility, which may require higher reserves, and lead to reducing profitability or insolvency. One solution is conventional reinsurance. This requires the insurer to determine the optimal level and type of reinsurance. The task is complex, so understanding the features of different types of reinsurance and how these different arrangements affect an insurer's risk–profitability profile is crucial.

Research can guide decisions on the optimal reinsurance in a profit maximisation or risk minimisation setting. Chief Investigator Michael Sherris extends on previous research by allowing for variations in claims experience, levels of premiums, and sum insured or reinsured values (Veprauskaite and Sherris 2014). These allowed the proposed model to provide more realistic insights about the effects of different types of reinsurance products when analysing a sample of 426,000 life insurance policies from a large Australian provider (covering Income Protection, Total and Permanent Disability, Life Insurance, Funeral, and Trauma risks). The empirical results clearly indicate the importance of heterogeneous portfolio characteristics when choosing the best form of reinsurance. Insurers must take this into consideration when determining reinsurance for their new products to manage longevity risk.

CEPAR continues to push boundaries in the field. For example, former Research Fellow Yang Shen derived a generalised form of the Optimal Mean-variance Investment Reinsurance Model for proportional reinsurance, where the surplus process of the insurer is described by the classical Cramer-Lundberg Model (Shen and Zeng 2015).

Insurance-linked securities are a hybrid of finance and insurance instruments that transfer risk to investors in capital markets. This can be used to manage longevity risk. Sherris, and colleague Dominic Ho (2012), investigated the application of Multiple Criteria Decision Making to the selection of securities in the portfolio. The results demonstrate that the method selects better performing assets and improves portfolio optimisation because it incorporates investor preferences and value systems.

Life annuity providers must adhere to many solvency and reserving regulations, such as Solvency II for European insurers and APRA's Life and General Insurance Capital for Australian insurers. These ensure that insurers can meet their financial promises to policyholders and beneficiaries within a stable, efficient and competitive system.

CEPAR Senior Research Fellow Katja Hanewald and Michael Sherris worked with Maathumai Nirmalendran (2012) to investigate the impact of solvency capital requirements on product pricing and shareholder value for a life insurer. They found that value-maximising insurers should target higher solvency levels than the Solvency II regulatory 99.5% under assumptions of reasonable levels of policyholder's aversion to insolvency risk. It is shown that a life insurer's profit maximising strategy is dependent on the policyholder's price elasticity and solvency preferences.

Similar research has been done by Sherris and Associate Investigator Ramona Meyricke, who found that longevitylinked securities are more cost effective for younger ages than older ages (90+) when compared to the required capital costs under Solvency II (Meyricke and Sherris 2014). They propose pairing longevity-linked securities and risk sharing product designs to allow insurers to offer more finely priced products whilst maintaining solvency.

Meanwhile former Research Fellow Craig Blackburn, Katja Hanewald, and Michael Sherris, and Associate Investigator Annamaria Olivieri assessed the impact of longevity risk management on insurer shareholder value, as well as solvency (Blackburn et al. 2013). Shareholder value is calculated based on an Economic Value and a Market-Consistent Embedded Value approach. Longevity risk management strategies through longevity swaps and bonds were found to reduce the volatility of shareholder value, reduce frictional costs, reduce the risk of insolvency, increases demand and hence, shareholder value.

Associate Investigator Adam Shao and former Research Fellow Joelle H. Fong, with Michael Sherris, explored the impact of interactions between longevity risk and disability risk on the solvency capital requirements for long term care insurance providers (Shao et al. 2017). They quantified the extent to which combining long term care benefit riders with life insurance or annuities can provide lower solvency capital requirements than stand-alone long term care insurance.

Box 14 CEPAR research spotlight Product design innovations

Individuals often seek a combination of security and investment returns – something that guarantees in variable annuity products can deliver. But the US experience with these suggests that such guarantees were too generous in the past and providers suffered unexpected losses. Appropriate design is therefore paramount, including accounting for systematic risk (Box 12 and 13).

Guaranteed Lifetime Withdrawal Benefits (GLWBs) are the most common. As the name implies, the policyholder can decide when to withdraw funds each year, subject to a limit. In Fung et al. (2014), CEPAR Chief Investigator Michael Sherris led a team that demonstrated how the actuarially fair price for GLWBs is positively linked and highly sensitive to the volatility of the insured's investment account. Importantly, price increases exponentially with volatility of mortality. This underlines the importance of capturing trends in mortality when setting the price.

Another set of guarantees are Guaranteed Minimum Maturity Benefits (GMMB). Former Research Fellow Yang Shen and Michael Sherris, with another colleague, provide a new valuation method focusing on GMMBs that allow for a cooling off period during which the policyholder can recoup some of their purchase (Shen et al. 2016). They decomposed the variable annuity into two parts, a mutual fund and a guarantee component. This division provides clearer guidance on the risk management of guarantees and allows comparisons between variable annuity contracts and traditional mutual funds.

CEPAR Associate Investigator Jennifer Alonso-García valued guarantees in the context of notional defined contribution pension systems (Alonso-García and Devolder 2016). She found that long term guarantees can cost up to 13% of the initial contribution for risk-neutral individuals.

In a related project, Sherris, with others, proposed a pricing method for Guaranteed Annuity Options where the annuitant can only receive the guarantee at the maturity of the contract (Ziveyi et al. 2013). Meanwhile, Yang Shen, with other colleagues, suggested methods to price equity-linked annuity guarantees under a Double Regime-Switching Model (Fan et al. 2015).

The impact of including guarantees was also investigated by CEPAR Associate Investigator, Ermanno Pitacco, who argued that pricing guarantees require complex mathematical methods which often hinders sound pricing and reserving principles (Pitacco 2012). He suggested products be designed such that risks are shared between insurers and policyholders. This is emphasised further in a related paper where he shifts the main focus to biometric risk transfers (Pitacco 2013).

One reason why some people hold onto assets instead of spending them in retirement relates to self-insurance against health and aged care expenditure shocks. Associate Investigators Shang Wu, Ralph Stevens and Susan Thorp, with Deputy Director Hazel Bateman (Wu et al. 2017) suggest that one solution could be a long term care insurance product that pays income in long term care states whether care services are used or not. They found strong demand for such a product among those who had access to, and preferred, informal care by family and friends, particularly women.

7. Taxing Super

The Australian system of taxing superannuation is uncommon among developed countries. Most countries have adopted what is called a *postpaid expenditure tax* regime. Under such a system, (1) contributions are exempt from tax, (2) fund earnings are also exempt, while (3) benefits received in retirement are taxed progressively like regular income (this is referred to as an EET regime, i.e., Exempt, Exempt Taxed). But in Australia contributions and fund earnings are taxed while benefits are exempt, what is known as a *comprehensive income tax* (TTE) regime. But the system has morphed from an EET to TTE regime over time, as summarised in Figure 26.

The changes have meant varying superannuation taxes for different people depending on (1) what type of contribution was paid (employee vs employer); (2) which savings phase they were in (accumulation vs

decumulation); (3) how benefits were taken (lump sum vs income stream); and (4) where they were in the earning and saving distribution (low vs high). The historic rates are shown in Figures 27A - 27F.

26 Tax rules over time

	CONTRIBUTIONS			IN-FUND EARNINGS						BENEFITS					
				AC	CUMULAT	ION	D	CUMULAT	ON	LUMP SUM		A INC		OME STREAM	
	LOW	MED	HIGH	LOW	MID	HIGH	LOW	MID	HIGH	LOW	MID	HIGH	LOW	MID	HIGH
⊢ ¹⁹⁸⁰	0%	0%	0%	0%	0%	0%	0%	0%	0%	5% x PIT	5% x PIT	5% x PIT	PIT	PIT	PIT
H 1981	0%	0%	0%	0%	0%	0%	0%	0%	0%	5% x PIT	5% x PIT	5% x PIT	PIT	PIT	PIT
1982	0%	0%	0%	0%	0%	0%	0%	0%	0%	5% x PIT	5% x PIT	5% x PIT	PIT	PIT	PIT
1983	0%	0%	0%	0%	0%	0%	0%	0%	0%	5% x PIT	5% x PIT	5% x PIT	PIT	PIT	PIT
1984	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	15%	30%	PIT	PIT	PIT
1985	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	15%	30%	PIT	PIT	PIT
1986	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	15%	30%	PIT	PIT	PIT
1987	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	15%	30%	PIT	PIT	PIT
⊢ ¹⁹⁸⁸	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
L 1989	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1990	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1991	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1992	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1993	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1994	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1995	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1996	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1997	15%	15%	30%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1998	15%	15%	30%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
1999	15%	15%	30%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
2000	15%	15%	30%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
2001	15%	15%	30%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
2002	15%	15%	30%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
2003	15%	15%	27.5%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
2004	15%	15%	25%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
2005	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
2006	15%	15%	15%	15%	15%	15%	15%	15%	15%	0%	15%	PIT	PIT-15%	PIT-15%	PIT-15%
ш 2007	15%	15%	15%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E 2008	15%	15%	15%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2009	15%	15%	15%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2010	15%	15%	15%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2011	15%	15%	15%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2012	0%	15%	30%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2013	0%	15%	30%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2014	0%	15%	30%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2015	0%	15%	30%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2016	0%	15%	30%	15%	15%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2017	0%	15%	30%	15%	15%	15%	0%	0%	15%	0%	0%	0%	0%	0%	0%
2018	0%	15%	30%	15%	15%	15%	0%	0%	15%	0%	0%	0%	0%	0%	0%
2019	0%	15%	30%	15%	15%	15%	0%	0%	15%	0%	0%	0%	0%	0%	0%

Note: PIT denotes the marginal rate of the Personal Income Tax schedule, which changes over time. Table is illustrative. For example, shading is subjective and income categories (low, mid, and high) are stylised and based on thresholds that differ by policy element and year. Earnings taxes are effectively lower due to dividend imputation and lower capital gains taxes. In-fund earnings during decumulation attract no tax only if taking minimum drawdowns. Dividend imputation reduces the tax on in-fund earnings. Source: Adapted from Bateman (2018).



CHANGES IN TAX RATE BY INCOME, YEAR, AND ELEMENT OF SUPER

Note: Low is lowest bracket earner, mid is the bracket that a median earner or median income pensioner would find themselves in a given income distribution in a given year, high is highest bracket earner or someone who has savings high enough to be affected by policies affecting such savers. Source: Authors' analysis.

The impact of separating superannuation tax from personal income

Many of the challenges of superannuation taxation stem from the fact that it was separated from the income tax schedule. This means that the generally flat-rate superannuation taxes are inherently less progressive and can be more easily manipulated by policymakers.

Since Treasury calculates superannuation taxes as a departure from income tax this implies large tax expenditures – though the methodology is problematic (Box 15). So, despite having one of the lowest public pension expenditure levels among developed countries, Australia's tax breaks on super appear larger than in other countries (OECD various years). As *foregone revenue*, these are estimated to be around 2% of GDP (Treasury 2015) and in 2019 to exceed the cost of the Age Pension.

These tax expenditures are concentrated among those who pay the highest taxes, the rich. For example, Grudnoff (2015) found that the wealthiest 10% of Australians receive 41% of these tax advantages, while the bottom 50% receive just 11%. For this reason, the Henry Review suggested linking contribution taxes to the marginal tax rate via a constant level of rebate (e.g. 15 or 20%).

Box 15 CEPAR research spotlight How do different countries tax pensions?

In an ambitious initiative, CEPAR and Munich-based research institute CESifo have put together a prospective book focused on the relationship between pensions and taxation, edited by CEPAR Honorary Professor Robert Holzmann and Centre Director John Piggott (2018).

The topic is under-researched yet increasingly important as countries under fiscal pressure from demographic ageing look to pension taxes to help plug revenue shortfalls.

The volume lays out the historical and institutional landscape for pension taxation. In almost all countries, some departure from the standard personal income tax treatment of saving is accorded to pension saving, and this has been so since the inception of retirement policy.

Part II of the book contains chapters dedicated to individual country systems and provides empirical and policy analyses for each, including: Australia, Denmark, Germany, Portugal, Sweden, UK and the US. These were chosen for both their importance and for their contrasting pension tax structures. The chapter on Australia is authored by CEPAR Deputy Director Hazel Bateman and explores many of the issues in the system discussed in Section 8 of this Brief, especially that of over complexity. The chapter also traces the evolution of super taxes in Australia.

Part II also includes a chapter by CEPAR Senior Research Fellow Rafal Chomik and John Piggott regarding the way tax expenditures are measured. Chomik and Piggott point out that pension tax expenditure figures may be too heavily relied upon in public debate, with important factors like choice of benchmark, behaviour, interactions with other tax expenditures, and economic efficiency being ignored. They highlight the need for a holistic analysis.

Part III of the book explores issues of pension taxation through the application of country-calibrated Computational General Equilibrium (CGE) models for Switzerland, Finland and Australia. Each of the chapters has a special focus but there are interesting overlaps around the topic of front and back-loaded pension taxation. Each has its own story to tell regarding possible reforms to yield efficiency gains. What is notable is that these are not all the same – feasible efficiency gains depend on your starting point.

The chapter on Australia is written by CEPAR Senior Research Fellow George Kudrna, and Chief Investigator Alan Woodland, who used Overlapping Generations Models to test the effects of radically reforming superannuation taxation. Some reforms they examined include a shift to an EET or TEE regime – both of which are common overseas – and adopting the reforms proposed in the seminal 2010 Henry Review.

Their focus was to see to what extent these changes would mitigate intra-generational inequity found in the incumbent system. They discovered that all three hypothetical reforms generated positive effects in their model over the short, medium and long terms, with the welfare gains being greater for lower income households than higher income households.

Part IV of the volume consists solely of a chapter by Robert Holzmann and his colleague Bernd Genser that explores the taxation of cross-border pensions. This is an area in which very little economic analysis has been done so far, despite the topic receiving attention by legal scholars. Legal co-ordination, especially in the context of an overarching EU framework, turns out to be very legalistic and complex. These same considerations point to an economic tax design where revenues are best collected at source, rather than at the benefits stage, simplifying what would otherwise be a daunting array of inter-jurisdictional remittances.

Overall, some broad conclusions can be drawn from this mix of research projects. First, something approaching a neutral treatment of working life and retirement consumption is preferred, both to reduce the efficiency costs of price distortions affecting intertemporal choice, and to reduce inter-asset price distortions, especially between pension assets and the family home (often treated under an effective "expenditure tax" regime). Second, while most countries have an underlying "expenditure tax" structure for their pension saving, thresholds and limits vary widely, raising questions about the perceived role of pension saving in different countries.

Instead, governments have made changes to contribution taxes at the top and bottom ends of the income distribution. An additional 15% *Division 293 Tax* was imposed on those who earn over \$250,000 and a Low Income Superannuation Tax Offset (LISTO) lowers the effective contribution tax for those on low incomes.

The Henry Review also suggested reducing the tax on super earnings to allow compound interest to generate more accumulations and prevent the price distortion between consumption in working life and retirement that is associated with a tax on saving. An expenditure tax approach also aligns superannuation taxation with the other major life course asset: owner-occupied housing (Chomik and Piggott 2016).

Another remedy has been to set various caps on concessional and non-concessional contributions as well as on in-fund earnings (which are tax-free for assets below \$1.6m once in the decumulation phase). This ensures that superannuation does not become a tax-preferred haven for estate planning that will further increase intergenerational wealth inequality.



Note: Amount of cap is in current dollars which means that declines in real terms would have been greater. Source: Authors' compilation.

8. Public sector superannuation

In most countries, pension arrangements for civil servants are distinct from those of the general population and often more generous. Australia is no exception; Australians employed in the public sector belong to a series of national and state level super funds that have until recently been based on a defined benefit (DB) regime, which work differently to private defined contribution (DC) schemes. But the differences have been narrowing as first comprehensively documented in Bateman and Piggott (2011; see Box 16). Few public employees are now offered DB pensions (e.g., judges still are). Instead they become members of schemes that are closely aligned with those available in the private sector.

Commonwealth pensions

At the Commonwealth level, employees were first offered the Commonwealth Super Scheme (CSS), a hybrid superannuation fund with a DB and a DC component. This was closed to new members in 1990 and replaced by the Public Sector Super scheme (PSS), a generous, partly funded DB plan, closed to new members in 2005.

Employees since then have joined the Public Sector Superannuation accumulation plan (PSSap), a defined contribution (DC) scheme under which the Government contributes 15.4% of employees' salary into individual accounts (plus voluntary contributions).

The PPSap has performed well – for the 2017 financial year it delivered a return of 9.1%, compared to the average of 7.01% across all funds (APRA 2017), and the fund was above the average for the five- and tenyear periods to 2017 as well. The plan has nine investment options, but 85% of its total assets are invested in a default or MySuper strategy. Despite the success of these modern schemes, the history of public sector pensions has meant considerable legacy costs. The costs of the two Commonwealth DB schemes were \$216 billion in 2018 (Australian Government 2018), with state level unfunded liabilities pushing a total to \$300 billion. These costs are projected to fall to zero over the next 30 years due to regular contributions and special funds to finance future liabilities.

One such fund is the *Future Fund*, an independent sovereign wealth account established in 2006. In 2016-17, the fund delivered a return of 8.7%, and since 2014 has exceeded its benchmark return of the Consumer Price Index plus 4 - 5% (Future Fund 2017).

The Commonwealth Superannuation Corporation (CSC), which manages the superannuation funds for Commonwealth employees and defence personnel, also manages a series of retirement income arrangements for these employees. They facilitate ad-hoc lump sum withdrawals, investment options and a *transition to retirement income stream*.



PUBLIC SECTOR SUPERANNUATION

Notes: Defence schemes were unfunded in 2010, but are funded as of 2016. ACT figure in Figure 29A is 2017 projection for 2018. Sources: Bateman and Piggott (2011), ACT Government (2017), Australian Government (2018), AGA (2017), New South Wales Government (2018), Northern Territory Government (2018), South Australian Government (2017), Tasmanian Government (2018), Victorian Government (2018), Government of Western Australia (2018).

State and other public sector pensions

Current public sector pension schemes for the states and territories of Australia, as well as for the PSSap and the funds for national defence personnel are summarised in Figure 29C. While these are all now accumulation schemes, the trajectories taken by individual states to reach this point differ significantly.

Queensland's historical DB plans, for example, have always been fully funded and hence have no legacy costs. NSW, on the other hand, has the highest legacy costs and the State Government has undertaken to pay off liabilities via asset sales (e.g., \$500 million from selling NSW Lotteries Corporation in 2010).

The accumulation schemes in South Australia, Western Australia and Tasmania replaced hybrid DB schemes. Meanwhile, in the Northern Territory, prior to 1988, and in the ACT, prior to 2006, public sector employees were enrolled in the schemes for Commonwealth government employees.

A partly funded hybrid DB scheme operated for Northern Territory public sector employees between 1988 and 1999, but no specific scheme was established in the ACT. Instead, permanent employees joined one of the Commonwealth Government schemes and casual employees joined AGEST (Australian Government Employees Superannuation Trust), an Australia-wide industry fund for public sector workers. Now, new Territorian public sector employees are offered a default option but can choose any private sector fund.

And since 2016, Australian Defence employees can allocate their employer contributions of 16.4% into any public scheme. Bur legacy costs in this segment are large: \$83 billion in 2017, larger than those of any state (AGA 2017).

Box 16 CEPAR research spotlight Public sector pensions

As detailed in Section 9, the unfunded liabilities of public sector direct benefit (DB) plans are a considerable burden. In their 2012 working paper, former CEPAR Research Fellow Joelle H. Fong, Centre Director John Piggott and Chief Investigator Michael Sherris examined the longevity risks of these plans, and how this may affect the costs of the liabilities.

The researchers analysed a panel data set of over 150,000 Australian pensioners from now closed public sector DB schemes, and distinguished between the different types of longevity risk – longevity selection risk, computational omissions of new mortality projections, and systematic longevity.

They find that selection risk exists for pensioners below 85, with 60-year-old public sector pensioners having a mortality rate that is half of that for the general population at the same age. This translates to a 4.6% higher net present value from the pension annuity, and the costs are higher for certain civil servant sectors. With regard to computational errors, the authors shows that failing to take into account future mortality improvements will under-estimate pension liabilities by 2.7% for a similar 60-year-old public sector pensioner.

Overall, the research shows that taking longevity risks into precise consideration is important for those handling the DB liabilities due to the lighter mortality of public sector pensioners compared to the general population and the fact that civil servants obtain more generous pension benefits than their counterparts in the private sector.

CEPAR researchers have also examined ways to evaluate the management, governance and investment policies of public pension funds and sovereign wealth funds such as Australia's Future Fund. In their 2008 paper, CEPAR Partner Investigator Olivia S. Mitchell, John Piggott and Associate Investigator Cagri Kumru explain the sector's challenges, such as the fact that government involvement in the financial sector is susceptible to conflicts of interest and that intergenerational equity is not always assured by increasing the assets held by public pensions.

The researchers call for greater development of performance criteria regarding fund governance, accountability and investment policies, and a better understanding of best practice – most importantly, the linking of fund performance indicators with the structure of liabilities as well as intertemporal and intergenerational goals.

9. Housing as an additional pillar of retirement

Australian living standards in later life rely heavily on housing as an additional pillar of the retirement income system. Indeed, the system takes for granted that most retired Australians have low housing costs, and this assumption has provided a justification for keeping Age Pension rates relatively low (see Brief 2, Section 5).

Housing based welfare, where governments encourage home ownership as part of the retirement income system, is not unusual in developed countries (Doling and Ronald 2010; Bradbury 2013). But this strategy is challenging if: (1) some indefinitely defer the purchase of a house or are locked out of the housing market; (2) it is difficult to transform such illiquid assets into retirement income (which leads to excesses in the consumption of housing and bequests); (3) the volatility of housing markets results in some generations being disadvantaged depending on when they enter or exit the market; and (4) it is subject to costly inefficiencies (e.g., stamp duties) and can cause asset bubbles with negative externalities. Let's look at the first two challenges.

More people who don't own and more who pay it off after retirement

The assumption that older Australians own their own home, while true on average, does not bear out for an increasing minority of retirees. Home ownership rates of each successive generation have been declining – someone aged 35-44 now is over 10pp less likely to own a home than a baby boomer at the same age (Figure 30A). And mortgages are being paid off at later ages than in the past. In 2016, about 36% of home owning households still had a mortgage at the point of retirement (age 60-64), up from 23% a decade earlier (Figure 30B).

These trends mean an increasing share of individuals will need to dip into their super to clear outstanding mortgage debt – for them, super is already being used to fund housing (though inefficiently if loan interest was greater than super earnings). Non-home owners who rely only on the Age Pension and rent assistance are likely to see poor outcomes. As Yates and Bradbury (2009) point out in their argument that the 'fourth pillar' of housing in Australia is 'crumbling', these non-home owners are not expected to see the rise of superannuation as compensating for not owning a home in retirement. It's unclear the extent to which these trends have been built into fiscal impacts on public programs.

Drawing money from super *before* retirement has been mooted as a way of help finance home purchases. The arguments against such a move are that it could erode retirement savings, lower tax revenues, and bid up house prices, while the arguments for it usually revolve around helping credit constrained younger households. Government leant on the side of the latter arguments and introduced a policy in 2017 known the *First Home Super Saver Scheme*. It allows people to make voluntary before- or after-tax contributions of up to \$30,000 into their super fund for the specific purpose of purchasing a home. These contributions and their associated earnings can then be drawn down at the individual's marginal tax rate, minus a 30% offset.



Note: Based on age of household head. If analysis was based on age of persons, the home ownership rates for younger cohorts would appear to have declined even more than shown in 30A since more younger people are living with a parent. Source Authors' analysis of Yates (2015) and ABS (2018d).

Turning home equity into retirement income

For those that do own their home, the challenge is about how to best turn it into retirement income. Reverse mortgages allow just that. These are essentially loans against the value of one's home, where repayment is deferred until the borrower (or their dependents) pass away and the home is sold.

These can be useful to older Australians, who tend to be asset-rich and income-poor (Figure 31A). Unlike downsizing to a smaller property, a reverse mortgage is less likely to result in a loss of the Age Pension (due to having too much money in the bank) and doesn't require selling and moving out of one's home. And analysis suggests that the product is more useful than home reversion options (Box 17).

Yet reverse mortgages represent a niche market. The supply may be inhibited by worries about reputational damage. The size of the market has grown (Figure 31B) but still only accounted for \$3.7 billion of the \$1.4 trillion mortgage market in 2014 (Deloitte 2015).

The lack of demand may include reasons such as: (1) precautionary saving motives, to self-insure against spending shocks (e.g., health and aged care); (2) bequest motives; (3) high insurance costs (e.g., interest on loans is typically 1.5-2% higher than the market rate for a regular home loan); (4) worries about losing the home which outweigh the existing safety nets (there are maximum loan restrictions and a floor on the debt obligations); and (5) lack of trust in providers.



Sources: ABS (2018a), Deloitte (2015).

The desire to use home equity to self-fund aged care above a basic, publicly subsidised standard and respond to health shocks it likely to be the biggest reason why people are reluctant to make use of reverse mortgages. Analysis by ASIC (2018) suggests that for many this makes financial sense.

In a survey, the Productivity Commission (2015b) asked individuals under what circumstances they would draw down on their home equity. Almost half claimed they wouldn't do so under any circumstances whatsoever. About 40% said they would for health and aged care needs, and 15% would draw down for other necessary living expenses (only 8% would do so for a better lifestyle).

In the 2018-19 Budget the government announced measures to encourage individuals to draw down on their home equity by expanding the Pension Loan Scheme (PLS). The PLS, which previously allowed part-pension recipients and some individuals who received no pension to 'top up' their pension to the maximum rate will now be extended to those already receiving the maximum rate and self-funded retirees. They will be able to increase their income by up to about half of the full pension rate and be charged the same interest rate of 5.25% that has been applied in the PLS since 1997. Any such help in turning home equity into income in retirement is likely to benefit existing generations of older people and reduce bequests.

Box 17 CEPAR research spotlight Designing reverse mortgage (RM) products

Designing RM products requires understanding what will happen to the value of a loan and the home equity that repays the loan. These are subject to different risks. For providers, if the house value grows too slowly or declines then the sale can earn less than the loan cost. Providers normally can't ask for more money – RMs act as a guarantee that a customer will not fall into debt due to the contract. But how can providers distinguish between houses when drawing up contracts?

Associate Investigator Adam Shao, Chief Investigator Michael Sherris, and Senior Research Fellow Katja Hanewald, try to answer this question. In Shao et al. (2018) they construct house price indices based on a large data set of Sydney property transactions between 1971 and 2011, which includes characteristics such as location, age, and size. This allows them to estimate the likely evolution of prices by type of house (Figures 32A and 32B).



In Shao et al. (2012), they evaluate providers' house price risks in practice. For example, all else being equal, a reverse mortgage based on a CBD house has a higher risk and should be charged at a higher risk premium than a contract elsewhere. In Shao et al. (2015) they combine house price risk with longevity risk and analyse the impact of non-mortality related causes of reverse mortgage termination, including entry into long term care, prepayment and refinancing. Their results suggest that risk factors associated with a property's characteristics, such as the land area, should be used in the pricing and risk analysis of RM loans.

The other side of the equation is the loan value, which varies with interest rates and how long the customer lives. With former CEPAR Graduate Student, Daniel Cho (Cho et al. 2015), the CEPAR team estimate how different economic scenarios affect pricing and profits. They find lump-sum RMs are more profitable and less risky to providers than income stream products, explaining why the former dominates most markets. Michael Sherris and Associate Investigator, Daniel Alai in Alai et al. (2014), also look at provider risks but include home reversion contracts. The authors find both products to be poorly priced in Australia, in favour of providers, and recommend regulation and education to ensure better risk sharing.

With regards to the consumer side of RMs, Adam Shao and Michael Sherris show that the highest welfare benefits in retirement come from combining a RM with long term care insurance because of strong complementary effects between them (Shao et al. 2017). Hanewald, Sherris, and a colleague (2016) find that consumers benefit from both home reversion contracts and RMs, but gain more from RMs when longevity, house price, interest rates and aged care risks are considered.

Deputy Director Hazel Bateman, Partner Investigator Hanming Fang, Katja Hanewald, and Associate Investigator Shang Wu (2018c) surveyed older Chinese home owners and their adult children to gauge interest in RM products in the country. Almost 90% of home owners were interested in RMs, with framing of the product having a small effect on the interest expressed. The primary reasons for interest were more comfortable living in retirement and the ability to pay for better medical treatment and aged care services. The main reasons given by those who rejected the products were a bequest motive and a belief that the product was too complex.

10. Future research directions

Australia's retirement income system will continue to attract attention as population ageing unfolds. At CEPAR, six projects will expand the research presented in this series of briefs. The project consist of research on: (1) mortality and morbidity risk; (2) financial and insurance product design; (3) retirement policy issues; (4) guiding financial decision making; (5) National Transfer Accounts; and (6) demographic change and optimal policy.

In the first project, researchers led by Chief Investigator Michael Sherris will extend functional disability and health status models to include systematic risk factors, informing product and policy development and health modelling. This will help with estimating the impact of systematic improvements in disability and mortality as well as recovery rates using advanced statistical techniques using US and Australian data.

Michael Sherris will also lead analysis of financial and insurance product design. Modelling will be done to support insurance and financial markets and help develop models for sustainable cost-effective products that allow individuals to manage longevity, health, and aged care risk. Researchers will investigate optimal design of health and aged care insurance products and equity release products.

Centre Director John Piggott will lead a project that integrates insights from analysis of actuarial product design, retirement policy, and tax modelling, to provide an evidence base for industry and policy reform in Australia and internationally. This will also focus on inequality and gender gaps in resources in later life.

Deputy Director Hazel Bateman will lead research into the financial decision making of older Australians. Using surveys, discrete choice and field experiments and administrative data, research in this area will investigate how information architecture, choice architecture, financial education and advice can be used to improve retirement saving and decumulation decisions, aged care financing, housing, and life insurance choices. Outcomes will help guide communication by the financial services industry, and associated policy and regulation.

Peter McDonald and his colleagues will be extending the National Transfer Accounts (see Brief 1, Box 5) to include wealth accounts, and updating the data for more recent years. The NTA methodology will also be updated in ways that enhance its contribution to policy.

Lastly, Chief Investigator Alan Woodland and his team will make use of overlapping generations models of Australia, integrating population dynamics, productivity and technology. The model will compute optimal tax and pension policy trajectories, capturing demographic dynamics and wellbeing of both current and future generations, providing new ways to evaluate policy recommendations.

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About CEPAR

The ARC Centre of Excellence in Population Ageing Research (CEPAR) is a unique collaboration between academia, government and industry, committed to delivering solutions to one of the major economic and social challenges of the 21st century.

Funded primarily by an initial seven-year grant from the Australian Research Council (ARC), with generous support from the collaborating universities and partner organisations, the Centre was established in March 2011 to undertake high impact independent multidisciplinary research and build research capacity in the field of population ageing.

Renewed funding awarded for an additional seven-year term from 2017-2023 supports an exciting new research program which will deliver comprehensive outcomes with the potential to secure Australia's future as a well-informed nation with world-best policy and practice for an ageing demographic.

We acknowledge financial support from the ARC under project numbers CE110001029 and CE170100005 and from our university, corporate and government partners. Views expressed herein are those of the authors and not necessarily those of CEPAR or its affiliated organisations.

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