



MONASH University

CSIRO-Monash Superannuation Research Cluster



REVIEW OF THE CSIRO-MONASH SUPERANNUATION RESEARCH CLUSTER PROJECT: IMPACT AND OUTCOMES 2013 to 2017

THE CSIRO-MONASH SUPERANNUATION RESEARCH CLUSTER IS A COLLABORATION BETWEEN CSIRO, MONASH UNIVERSITY, GRIFFITH UNIVERSITY, THE UNIVERSITY OF WESTERN AUSTRALIA, THE UNIVERSITY OF WARWICK, AND STAKEHOLDERS OF THE RETIREMENT SYSTEM, TO DEVELOP A RESEARCH AGENDA THAT ESTABLISHES AN EVIDENCE BASE TO FACILITATE BETTER DECISION MAKING WITH RESPECT TO THE SUPERANNUATION AND RETIREMENT SYSTEMS IN THE INTEREST OF BETTER OUTCOMES FOR ALL.

www.superresearchcluster.com

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The CSIRO-Monash Superannuation Research Cluster (the Cluster) is a collaboration between Australia's CSIRO and four universities: Monash University; University of Western Australia; Griffith University; and the University of Warwick in the United Kingdom.

Aimed at addressing the two key themes of 'Superannuation and the economy', and 'Australians over 60', the \$9m Superannuation Research Cluster Program has been built around a \$3m Flagship Cluster Fund grant from CSIRO, and \$3m in in-kind research contributions from the university partners led by Monash University. A further \$3m in funding has been provided by leading industry stakeholders and research partners ANZ, BT, Cbus, Colonial First State, Challenger, Mercer, AMP Capital and Vanguard Investments.

By the completion of the Cluster in March 2017, researchers will have produced around 45 working papers addressing the two superannuation themes indicated above. This body of research will deliver long-term benefits to retirees, the superannuation industry, policy makers and the Australian economy as a whole. A brief summary of the key research findings is provided below, and further details on this work are contained in the body of this review.

Infrastructure Investment and Superannuation (Cluster Project 1)

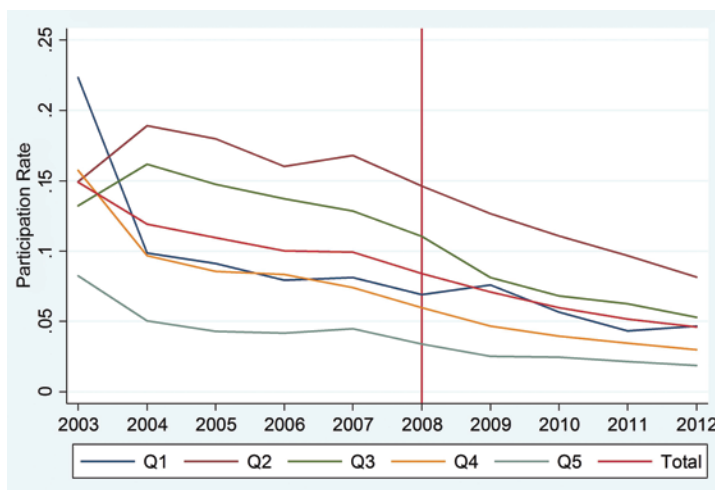
- The systematic risk factors of term, default and liquidity (in an asset pricing model) can explain between 37 per cent of the variation of bond returns on a toll road **public-private partnership (PPP)** and 84 per cent of the variation of bond returns on a hospital PPP. (Working Paper (WP) 2013–02)
- The best predictor of **infrastructure returns** over the 1997–2012 period was a fixed excess return model of 10 per cent per year. (WP 2014–05)
- Empirical evidence suggests that **listed infrastructure is not a separate asset class** and returns are simply a subset of listed stocks with significant industry exposure to the utility sector. (WP 2014–11)

Short- and Long-term Member Behaviour (Cluster Project 3)

- Participation in pre-tax superannuation **contributions** declined from 24 per cent to 17 per cent, and post-tax contributions fell from 15 per cent to 5 per cent over the 2002–12 period. Age, income and gender (male) all have a positive association with pre-tax contributions participation whereas for post-tax contributions, income and male gender have a negative effect on average (see Figure 1). (WP 2014–06)

- Members seeking **intra-fund advice** through a call centre are more likely to be female, older, with a larger account balance, and with longer years in the fund. While women, more than men, tend to seek advice, this is less evident once a web-based facility is introduced (which attracts younger male advice-seekers more than the call facility). Those who seek advice regarding a policy change wait until the last moment to do so. (WP 2014–09)
- Around one-fifth of members from a large sample made an **investment strategy change** to an existing balance or future contributions, with men consistently making more changes than women. Changes to investment strategy increase with time in the fund, higher balances and larger contributions. The superannuation policy changes announced in May 2006 were associated with an increase in investment activity across a relatively large proportion of members. The global financial crisis appears to be the catalyst for investment change in 2008–09, but only for those with closer proximity to retirement and, possibly, larger balances. (WP 2015–07)
- Structural features of superannuation create a **gender gap in superannuation savings** and women's balances proportionate to men's are only improving marginally over time. There is little evidence of change in young women's engagement with the labour market in Australia, as career breaks and part-time work for women remain the chosen strategy for families with young children. While women's return to full-time work in their mid-40s stabilises the interrelationship between male and female contribution rates, the long-term effects in terms of lost promotions and related workplace opportunities mean that women's final balances are much lower. (WP 2015–03)

Figure 1: Participation in post-tax contributions to superannuation by income group (Q1 is the lowest income group)



Fund Indexing, Style and Hedge Funds (Cluster Project 4)

- **Fundamental Indexation** (FI) creates a broad-based market portfolio, like traditional market capitalisation weighted indices, but weights stocks according to a firm's economic size, not stock price. FI timed the market well during the technology boom and bust (August 1998 to August 2002), however, underperformed in the global financial crisis against a market capital-weighted index. (WP 2013–03)
- **The performance of commodity trading advisers (CTAs)** has, over the long run (short run), a positive (negative) effect on new CTAs. We do not observe a 'smart money' effect, indicating that investors are generally unsuccessful in choosing subsequent well-performing CTAs. (WP 2014–04)
- High **incentive fees in hedge funds** do not generate superior risk-adjusted returns during normal market conditions. Rather, increases in incentive levels are accompanied by an increased proclivity to take on risk and increased leverage. (WP 2014–05)
- The cost of trading in financial markets has irrevocably changed due to the proliferation of algorithmic and high-frequency trading. We compare different immediate **price impact** models for individual trades using out-of-sample predictions to examine the extent of this price impact. (WP 2014–08)
- **Active management** should be manifest through nonlinear exposure to the systematic risk factors that drive hedge fund returns, leading to enhanced performance. However, we find that around two-thirds of hedge funds exhibit only linear factor exposures and hence are 'passive'. What's more, these 'passive' managers tend to outperform 'active' managers. Also, many 'active' managers eventually become 'passive'. (WP 2016–06)

Superannuation and the Economy: Tracking Systemic Impacts (Cluster Project 6)

- Using a new type of computable general equilibrium (CGE) model we find that **a rise in the superannuation contribution rate increases long-run real GDP**, largely via an increase in the savings rate and, at the same time, the structure of the superannuation sector's activities, relative to other savings vehicles, boosts short-run employment and housing investment. (WP2015-05, WP2015-08)

Modelling Retirement Outcomes for All Australians (Cluster Project 7)

- Increasing the Superannuation Guarantee from the previous 9 per cent rate to 12 per cent (effective from 1 July 2025) increases **retirement adequacy** in expectation only. We find that the retirement adequacy of workers could be more simply

improved through investment strategy design that mitigates sequencing risk rather than a broad-based increase in the contribution rate. (WP 2013–04)

- Costs associated with age-related health treatment and aged-care services during the retirement phase can impact on retirement income levels, income stability and longevity risk. We show that for a broad set of circumstances the risk of premature ruin can be mitigated through a **dynamic lifecycle investment strategy** during the retirement phase. (WP 2014–10)
- **Superannuation savings of Indigenous workers** are approximately 27 per cent lower than the average non-Indigenous worker. Further, only 20 per cent of full-time employed Indigenous workers accumulate enough superannuation savings to maintain a comfortable standard of living in retirement. (WP 2016–01)

Comparative European Perspectives (Cluster Project 8)

- The **gender gap in pension savings** might be addressed through the more equal distribution of care work in the home, through gender-neutral annuity markets, or through pension splitting and tax-based solutions. (WP 2014–02)
- While there are many differences between the Australian and UK super (pension) arrangements, due to regulatory changes, compliance costs have tended to increase overall management expenses, thereby exacerbating the very problems these policies seek to address. (WP 2016–03)

Post-Retirement Wealth and its Effect on Health and Well-Being (Cluster Project 9)

- **Stock market increases** lead to a significant but modest improvement in life satisfaction and mental health in young and middle-aged males, especially for those with direct exposure to the stock market. For young cohorts, the stock market index acts as a leading indicator of employment prospects, while for older cohorts it directly affects financial satisfaction. (WP 2014–07)
- Households with a strong **locus of control** (i.e. belief in the controllability of events, a key component of self-control) save more, both in terms of levels and as a percentage of their permanent incomes. Although the locus-of-control gap in savings rates is largest among rich households, the gap in wealth accumulation is particularly large for poor households. Those with a strong locus of control hold significantly less financial wealth, but significantly more pension wealth, than similar households with an external locus of control decision maker. (WP 2015–04)
- Non-economic factors influence **the allocation of financial decision making within a household**, in particular, the

physical and mental health of each partner as well as their cognitive ability and personality traits. These non-economic characteristics of couples are important predictors of who 'holds the purse strings', although reported allocations of responsibility are sensitive to whether the male or female reports on who is the decision maker. (WP 2015–06)

- The pure **effect of ageing on total health and aged care expenditure** has been relatively small and its effect on disposable income and fiscal balance has been mitigated by increased labour force participation among the elderly and increased savings. While this may change, a focus on greater efficiency in health production and finance is more likely to be effective in delivering high-quality care than trying to restrain the demand for health and aged care among the elderly through finance reform. (WP 2016–05)

Labour Market Policy and Flexibility for Older Workers (Cluster Project 10)

- Serious flaws in the current representations of older workers provide a weak basis for policy development and potentially exacerbate prejudicial attitudes towards older workers. **Older workers' employment** should be examined within the context of market-driven mainstream programs, recognising that policies driven by negative attitudes towards ageing can trap older workers in employment placements sheltered from competition. (WP 2015–01)
- **Age discrimination policies** generally focus on jobseekers and workers aged over 50. A survey of working Australians shows that discrimination was experienced by 25 per cent of respondents, but there was little evidence of age differences in experiences. We argue that there may be an overemphasis on tackling age discrimination facing older workers, and this may entrench ageist perceptions among labour market participants. (WP 2016–02)

Retirement Incomes Needs (Cluster Project 11)

- Most superannuant retirees in their 60s and 70s **draw down** on their account-based pensions at modest rates, close to the minimum amounts each year, consequently most retirees are likely to die with substantial amounts unspent if these drawdown rates continue. (WP 2016–04)
- Using the CSIRO Simulation of Uncertainty for Pension Analysis Model (the 'SUPA' model) to study retirement outcomes under the 2014 superannuation contribution rate regime and the previous schedule, we find that the **post-retirement duration of the superannuation fund** of an individual will fall by approximately one year, and the probability of ruin will increase by approximately 2 per cent.
- Simulations using the SUPA model suggest that \$851,000 is a **sufficient superannuation balance at retirement age** to achieve a comfortable retirement, and there is only a 5 per cent chance of exhausting the superannuation fund during the retirement phase. When eligibility for the full age pension is met, a super balance at retirement of only \$73,000 is needed to provide a modest retirement income, with a 95% probability.



ABOUT THE CSIRO-MONASH SUPERANNUATION RESEARCH CLUSTER > > >

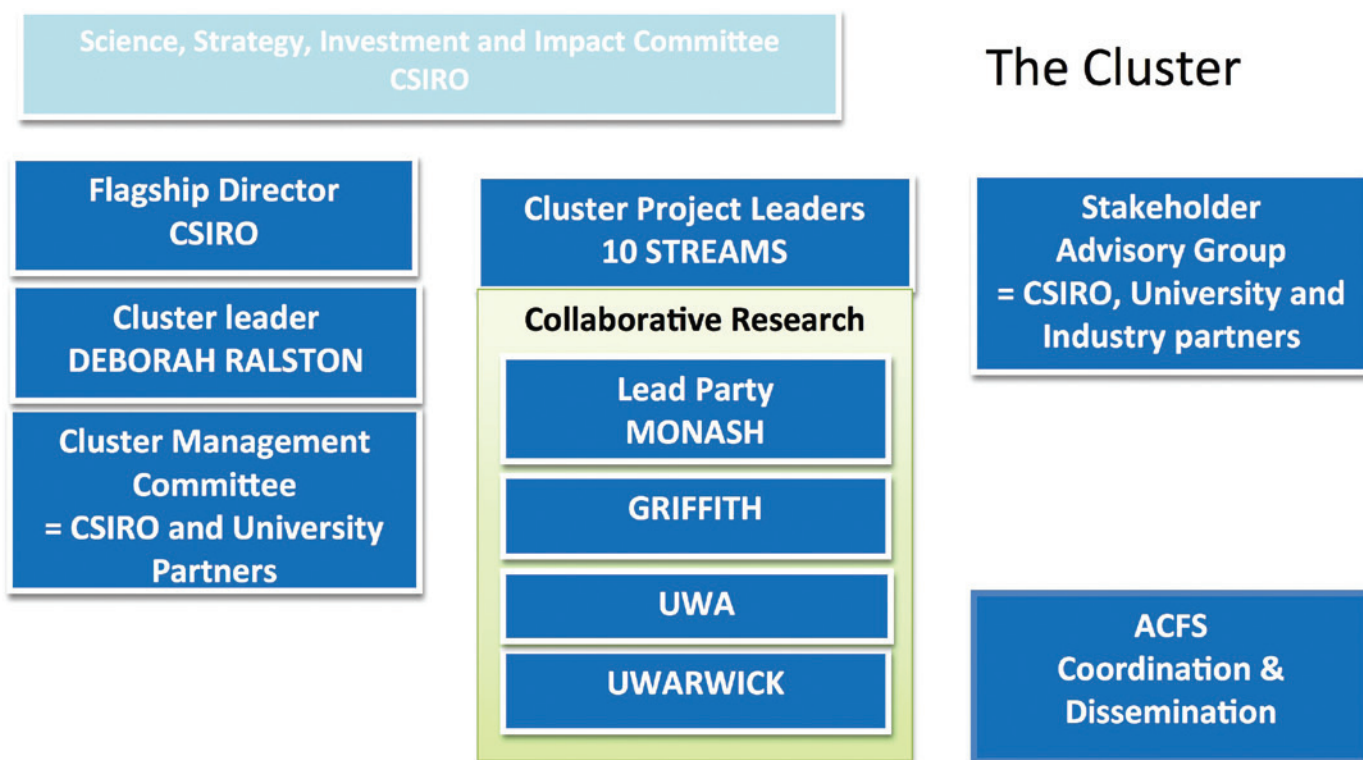
The Australian superannuation industry has the fourth largest pool of funds in the world, with over \$2.0 trillion in assets under management and total superannuation savings now exceeding domestic GDP.

While this augurs well for the future of the Australian retirement system, it raises a number of critical issues for industry participants, policy makers and fund members, both in terms of the allocation of super assets, and its impact on the economy and post-retirement income streams.

Potentially, the allocation of this significant pool of super assets provides opportunities to: drive economic growth and employment; and reshape the economy through funding vital infrastructure, supporting innovation and contributing to the development of a corporate bond market. However, much of the focus to date in the Australian superannuation industry has been on asset allocation and the accumulation phase, rather than on the post-retirement phase and Australians over 60. To maximise the potential benefit of the system for retirees, it is also important to ensure less volatile income streams closer to retirement, and appropriate financial literacy and advice.

After exploring these issues with academics and industry participants, both domestically and internationally, CSIRO and Monash University identified a research agenda to help solve some of the issues emerging from this rapidly developing industry. The CSIRO-Monash Superannuation Research Cluster Program commenced in 2013 as a multi-disciplinary international undertaking supported by funding under the CSIRO Flagship Collaborative Cluster Funding Program.

In addition to its own researchers, Monash University as lead research partner has brought together academic teams from Griffith University, the University of Western Australia and the University of Warwick in the UK. These research teams together with researchers from CSIRO meet on a regular basis with a range of private and public stakeholders to explore and seek feedback on the research agenda. The Cluster Leader chairs the Cluster Management Committee, and reports on an ongoing basis to the CSIRO Flagship Director regarding the conduct and outcomes of the research. The project is supported by the Australian Centre for Financial Studies in dissemination and events.





**From Chair of the
Stakeholder Group,
Jeremy Duffield**

The CSIRO-Monash Superannuation Research Cluster is a collaboration between Australia's CSIRO and four universities: Monash University; University of Western Australia; Griffith University; and the University of Warwick in the United Kingdom.

Aimed at addressing the two key themes of 'Superannuation and the economy', and 'Australians over 60', the \$9m Superannuation Research Cluster Program has been built around a \$3m Flagship Cluster Fund grant from CSIRO, and \$3m in in-kind research contributions from the university partners led by Monash University. A further \$3m in funding has been provided by leading industry stakeholders and research partners ANZ, BT, Cbus, Colonial First State, Challenger, Mercer, AMP Capital and Vanguard Investments.

Other key stakeholders and supporters of the program have been major industry bodies and government departments: Australian Bureau of Statistics (ABS); Australian Institute of Superannuation Trustees (AIST); Association of Superannuation Funds of Australia (ASFA); Australian Taxation Office (ATO); Federal Treasury; Financial Services Council (FSC); Productive Ageing Centre, National Seniors Australia; Productivity Commission; and Professor Hazel Bateman of UNSW.

The academic research program has been developed for Monash University and led by Deborah Ralston, a Professor of Finance at Monash University and former Executive Director of the Australian Centre for Financial Studies.

Over the past three years, the CSIRO-Monash Superannuation Research Cluster Program has generated a large body of research that will potentially deliver significant long-term benefits to retirees, the superannuation industry, policy makers and the Australian economy as a whole.

This high-impact research provides an independent evidence base to inform policy and promote innovation within the superannuation system, which is likely to have a major influence on economic activity and the lives of most Australians in the years ahead.

A distinctive feature of the Cluster has been its focus on combining the knowledge and expertise of key stakeholders within industry and regulatory bodies with that of outstanding researchers working as part of a multidisciplinary, international team that has access to critical industry and regulatory data previously unavailable to researchers.

The research program has been specifically designed to maximise the impact of outcomes, particularly retirement outcomes from the perspective of fund members and retirees. In order to achieve this, it has been critical to foster industry consultation, to embed researchers with industry participants, and to develop knowledge transfer and dissemination programs, structured in parallel with the research program.

Governance

The Cluster has engaged on an ongoing basis with a stakeholder group including supporters, government agencies and industry peak bodies who have assisted in providing data, guidance and feedback to researchers, and in disseminating outcomes. The governance structure of the Cluster has ensured that the research agenda is well informed and that researchers have access to expertise, insights and data, where possible, from the stakeholders, policy makers and industry representative bodies. These parties form a Stakeholder Advisory Group.

This Group informs the research program and it: meets quarterly; advises the Cluster Management Board on the research program; monitors and reviews progress of research programs; advises on funding, deliverables and impact of research activities; and provides input on the need to add/modify or cease activities in the light of progress and/or research outcomes.

To drive real, beneficial change within the industry, each investor is required to: make senior staff available to serve as members and sit on the board; have senior, technically capable staff attend meetings and workshops; discuss and review results; provide data and other assistance to researchers as necessary; and provide office accommodation for embedded researchers where required. As the following figure demonstrates, the creation of high-impact research is an iterative process, requiring ongoing communication and dissemination across all stakeholders.

Translating knowledge to practical application for stakeholders

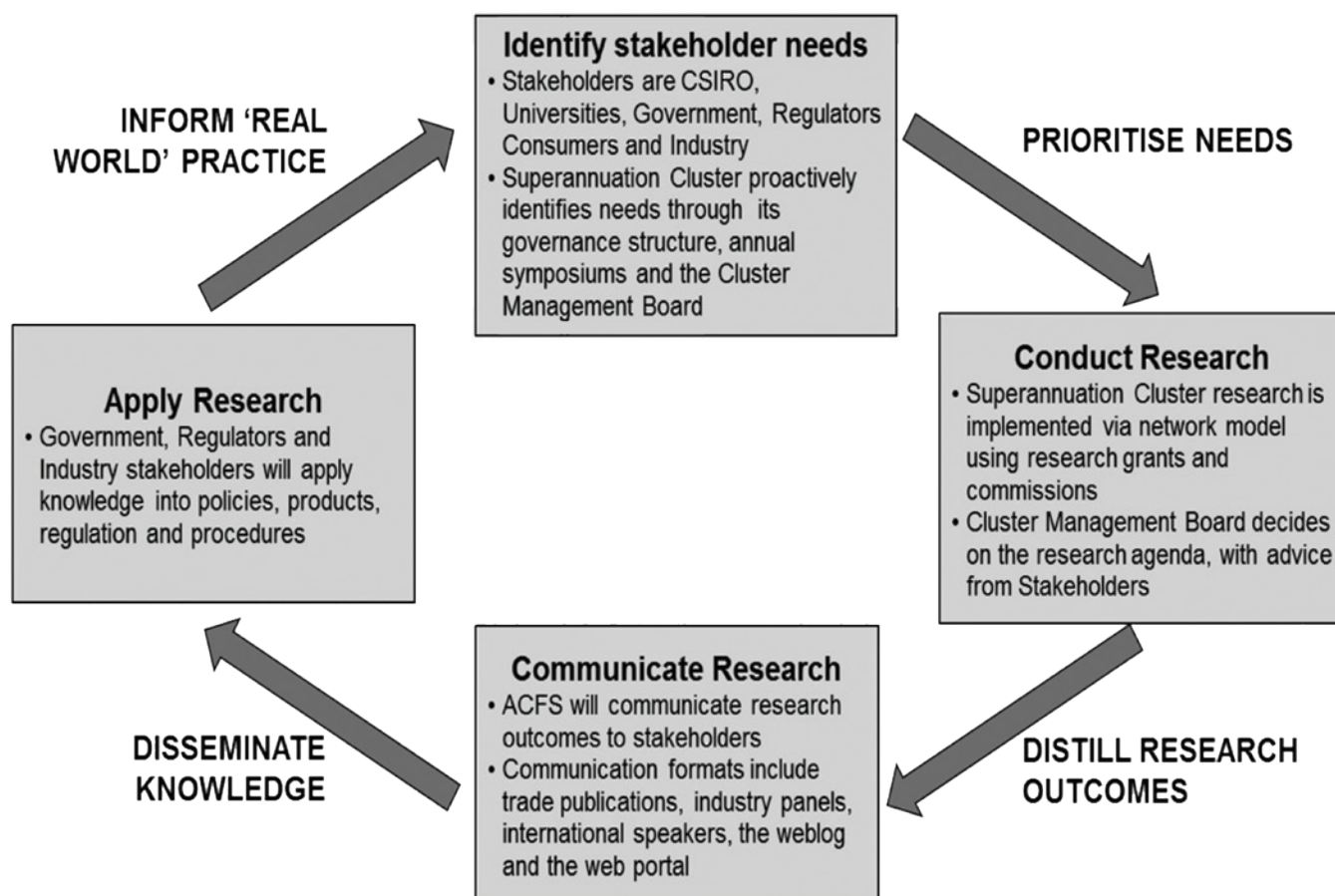
This iterative process of knowledge generation and translation to practical outcomes begins with understanding stakeholder needs. Regular meetings and an annual conference of researchers and stakeholders and researchers are held to share information and seek feedback on the research.

Scope of the research program

This ambitious research program utilises methodologies such as macroeconomic modelling, stochastic simulation and behavioural finance.

Priority has also been given to accessing databases including: APRA statistics; confidential de-identified data from sources such as the Department of Human Services, the ATO, the Financial Services Council, Mercer, super funds and other regulatory and industry bodies.

The organisational model for the Superannuation Research Cluster has worked well under Deborah Ralston's leadership. It shows how a cluster can work to bring expertise together and create a wide body of impactful research. The challenge ahead is for industry participants and academics to continue to work together and for government and industry to harness the insights gained from this significant research program.



KEY STAKEHOLDERS, RESEARCH PARTNERS & SUPPORTERS > > >

The Cluster would like to acknowledge the support of its many stakeholders and research partners, without which this program would not have been possible. We believe that the potential benefits to stakeholders from this research significantly outweigh their initial investment.

Industry leading stakeholders and research partners:



With the support of major industry bodies and government departments:

- > Australian Bureau of Statistics (ABS)
- > Australian Institute of Superannuation Trustees (AIST)
- > Association of Superannuation Funds of Australia (ASFA)
- > Australian Taxation Office (ATO)
- > Federal Treasury
- > Financial Services Council (FSC)
- > Productive Ageing Centre, National Seniors Australia
- > Productivity Commission.

Professor Hazel Bateman of UNSW also provides advice to the Cluster.



MEMBERS OF THE STAKEHOLDER ADVISORY GROUP > > >

The following table lists the representatives of all of the stakeholders who have participated in the Stakeholder Advisory Group over the past three years.

ORGANISATION	NAME
Australian Bureau of Statistics	Dean Adams, Heather Burgess, Caroline Daley, Philip Elliott
Australian Centre for Financial Studies	Amy Auster, Richard Dillon, Jeremy Duffield, Eliana Maddock, Rodney Maddock, Joyce Teo
Australian Institute of Superannuation Trustees	Janet de Silva, Tom Garcia, David Haynes, Richard Webb
AMP Capital	Jeff Brunton, Craig Keary, Jeff Rogers
ANZ Wealth	Patrick Clarke, Laura Hildebrand, Steve Sheppard, Milena Shtifelman, Will Ranken, Kerry Vogel
Association of Superannuation Funds of Australia	Ross Clare
Australian Tax Office	Nathan Burgess, Matthew Bambrick, Stuart Forsyth, Kasey MacFarlane
BT Financial Group	Melinda Howes, Richard Jamieson, Natalia Jarvis
Cbus	Peter Keogh, Rod Masson, Stephen Spiller
Challenger	Jeremy Cooper, David Cox, Aaron Minney, Samantha Timms
Colonial First State	Matthew Gardiner, Brian Long, Nicolette Rubinsztein, Alistair See
CSIRO	Alan Dormer, Simon Dunstall, Claire Mason, Andrew Reeson, Zili Zhu
ESSSuper	Shane Pearce
Financial Services Council	Blake Briggs
Medibank Private	Mario DeLosa
Mercer	David Knox
MLC	Andrew Barnett
National Seniors	Timothy Adair, Philip Taylor
Productivity Commission	Karen Chester, Philip Harslett, Angela MacRae
SMSF Professionals	Andrea Slattery
Suncorp	Amanda Crews, Cathy Duncan
Treasury	Rachael Blackwood, Rob Donelly, Brant Pridmore, Penny Sirault
University of NSW	Hazel Bateman
Vanguard	Robin Bowerman



**From Cluster Leader
Prof Deborah Ralston**

As we work towards completion of this project we can look back on three very productive years.

In all we will have completed over 45 working papers. We have also held more than 20 meetings and events, bringing together researchers, industry participants and policy makers to address a range of complex issues relating to superannuation, and this engagement process has been integral to the development of the Cluster's research.

As you review the outcomes of the Cluster contained in this document you will note that in addition to these working papers there are also many peer-reviewed publications, simulation models and presentations that have contributed to the overall outcomes.

The following section provides an introduction to our research leaders from the four universities and CSIRO. We have been very fortunate to have the direction of these eminent researchers, who have led over 30 researchers to produce some important findings for industry, policy makers and other researchers.

The 30+ working papers described herein represent the work to date at the time of writing this Review. Additional work from a number of Cluster Projects has yet to be completed and will continue through to the end of the project in early 2017.

In addition, the Cluster has benefited from the work of two post-doctoral staff members, Jun Feng and Sonja Kassenboehmer, who were appointed full-time to the project and will now move in to other academic roles.

This has been an unusual research project in many ways. The collaboration between researchers from the four partner universities, CSIRO, industry stakeholders and policy makers has led to relationships developing around common areas of interest which will extend beyond the completion of this project in March 2017.

I would be remiss if I did not acknowledge the excellent contribution of (the late) Dr Maria Strydom to the work of the Cluster. Maria was a very active contributor to Cluster Project 3, which examines member behaviour. With her enthusiasm, good nature and research skills developed through a PhD in finance and studies in psychology, Maria was a highly valued member of the team. Very tragically Maria was killed in May 2016 while descending Mt Everest.



RESEARCH TEAMS >>>

Research within the CSIRO-Monash Super Research Cluster has two key themes:

- > **Superannuation and the economy:** exploring the dynamics and interrelationships between the asset allocation of superannuation funds and the wider macroeconomy.
- > **Australians over 60:** examining how we can maximise decision making for superannuants in the transition from the accumulation phase to post-retirement.

The CSIRO-Monash Superannuation Research Cluster has brought together a team of outstanding research leaders to develop and undertake this ambitious research program. A brief bio for each of these research leaders is provided in the following section.

RESEARCH LEADERS >>>

CLUSTER PROJECT 1: INFRASTRUCTURE INVESTMENT AND SUPERANNUATION

Robert Bianchi

*Associate Professor of Finance
at Griffith University*



Robert Bianchi is Deputy Director of Griffith Centre for Personal Finance and Superannuation, and an Associate Professor of Finance at Griffith Business School. Robert's research expertise and interests are in the areas of asset allocation, alternative investments, hedge funds, investment style analysis and fund manager selection. Robert's industry appointments include H3 Global Advisors (current), AlphaHedge, Venitia and Queensland Treasury Corporation (QTC).

Rob represents Griffith on the Cluster Management Committee.

CLUSTER PROJECT 3: BETTER SUPERANNUATION OUTCOMES: INFORMATION, OPTIONS, AND SHORT-TERM AND LONG-TERM MEMBER BEHAVIOUR

Gordon Clark

*Professor and Director, Smith
School of Enterprise and
the Environment, Oxford
University, and Sir Louis
Matheson Distinguished
Visiting Professor, Monash
University*



Gordon's research focuses on global finance and the governance of investment management in pension funds, sovereign wealth funds, and endowments. He is a Founding Governor of the UK Pension Policy Institute, and is a consultant to the Swedish Government's Buffer-fund Inquiry. He also advised The Kay Review on Equity Markets and Long-Term Decision Making. His research expertise spans superannuation, financial structure and economic development. Monash and Gordon Clark have recently entered into an agreement to access Mercer data for research purposes.

Paul Gerrans

*Professor of Finance, UWA
Business School, The University
of Western Australia.*



Paul has received many competitive research grants including from government agencies (ARC, Productive Ageing Centre, Australian Institute of Aboriginal & Torres Strait Islander Studies) as well as industry (for example Australian Institute of Superannuation Trustees). He is widely published in retirement savings and his expertise is highlighted by appointments to the Federal Government's Superannuation Advisory Committee (2010) and the Superannuation Roundtable (2011 to present).

Paul represents UWA on the Cluster Management Committee.

CLUSTER PROJECT 4: BETTER SUPERANNUATION OUTCOMES: FUND INDEXING, STYLE AND HEDGE FUNDS

Paul Lajbcygier

*Associate Professor,
Department of Banking and
Finance and Department of
Econometrics and Business
Statistics, Monash University*



Paul combines extensive industry and academic experience in investments and has provided investment advice to various funds managers, banks and hedge funds. He has worked at both London Business School and the Stern School of Business, New York University.

CLUSTER PROJECT 6: SUPERANNUATION AND THE ECONOMY: TRACKING SYSTEMIC IMPACTS

James Giesecke

*Professor and Director, Centre
of Policy Studies/Impact
Project, Victoria University*



James' research interest is in the development of large-scale multi-regional and national computable general equilibrium (CGE) models, and the application of such models to the analysis of economic policies. He has 20 years of experience in commissioned research, completing over 100 contract research projects. Recent major projects include: a World Bank financed project to investigate rice market policy interventions in Vietnam (2010); and an AusAid-financed project to develop a large-scale labour market forecasting model for the Vietnam Ministry of Labour (2011).

CLUSTER PROJECT 7: MODELLING RETIREMENT OUTCOMES FOR ALL AUSTRALIANS

Robert Bianchi

*Associate Professor of Finance
at Griffith University*



Robert Bianchi is Deputy Director of Griffith Centre for Personal Finance and Superannuation, and an Associate Professor of Finance at Griffith Business School. Robert's research expertise and interests are in the areas of asset allocation, alternative investments, hedge funds, investment style analysis and fund manager selection. Robert's industry appointments include H3 Global Advisors (current), AlphaHedge, Venitia and Queensland Treasury Corporation (QTC).

Rob represents Griffith on the Cluster Management Committee.

CLUSTER PROJECT 8: COMPARATIVE EUROPEAN PERSPECTIVES

Noel Whiteside

*Professor of Comparative
Public Policy, Zurich Financial
Services Fellow, University of
Warwick*



Noel Whiteside's research focuses on systems of governance and public accountability in historical and comparative perspective; she has specific interests in labour markets and constructions of social dependency. Recent work has focused on pensions: their governance, regulation, economic and political viability in Europe and the UK: work involving the coordination of an extensive network of European scholars. She has long been a consultant for Zurich Financial Services and gave invited evidence to the UK House of Lords Select Committee on Public Service and Demographic Change.

CLUSTER PROJECT 9: POST-RETIREMENT WEALTH AND ITS EFFECT ON HEALTH AND WELL-BEING

Anthony Harris

Director of the Centre for Health Economics, and Professor, Monash University



Anthony has held previous academic positions at the University of Aberdeen, Murdoch University and the University of Western Australia. He has been awarded numerous competitive research grants including an NHMRC funded program modelling the economics of the health care system in Australia, a macroeconomic model of the impact of an influenza epidemic, and an ARC grant on drug pricing. His most recent work has been an analysis of international drug reimbursement decision making, evaluation of cost effectiveness within clinical trials, econometric analyses of the impact of chronic disease on labour market outcomes in Australia, and the demand and supply of acute and emergency public hospital care.

CLUSTER PROJECT 10: 60+ AS A NATIONAL ASSET – ABILITY TO CONTRIBUTE TO THE ECONOMY - LABOUR MARKET POLICY AND FLEXIBILITY FOR OLDER WORKERS

Robert Lindley

Founding Director, Institute for Employment Research, and Professor of Social Studies, University of Warwick



Robert is founding Director of the Institute for Employment Research, University of Warwick and a professor in the Faculty of Social Sciences. His principal fields of research are the labour market; the roles of education, training and knowledge production in economic development; and European integration. He has taken the lead in three major EU multi-country studies on older worker employment and has served on many UK and EU advisory and related bodies.

Robert represents the University of Warwick on the Cluster Management Committee.

Philip Taylor

Professor of Human Resource Management, Federation University Australia Honorary Professor, University of Sydney; Visiting Fellow, University of Warwick



Philip has researched and written in the field of age and the labour market for more than 20 years. He is currently leading major programs of research considering the management of ageing workforces. His interests include the management of labour supply, individual orientations to work and retirement, employers' attitudes and practices towards older workers and international developments in public policies aimed at combating age barriers in the labour market and prolonging working life.

CLUSTER PROJECT 11: CSIRO MULTI-DISCIPLINARY RESEARCH PROJECT

Andrew Reeson

*Research Scientist, CSIRO
Data61 Digital Productivity
Research Flagship, Canberra*



Andrew Reeson's current research is focused on the service sector, and involves applying econometric modelling and behavioral economics to better understand human decision-making. He has a track record of innovative interdisciplinary research to inform policy design. Past projects include the design and implementation of environmental incentive schemes, water buybacks and a review of behavioral economics for the Henry tax review. He has 25 published papers across a broad range of topics, which have been cited over 500 times in the academic literature.

Zili Zhu

*Research Leader in Real-
Options and Financial Risk,
Digital Productivity Research
Flagship, CSIRO Data61*



Zili leads the CSIRO Finance and Optimal Decisions research team in developing risk analytics and innovative solutions for government services, finance, agribusiness and mining. The focus is on developing real-option evaluation methodologies for optimal decision making under uncertainty, particularly for large uncertainties with longer-term market prices. The other activities of the team are in evidence-based policies, risk quantification and measurements. Zili has over 25 years of experience in delivering science solutions through innovation and technology. His career spans naval architecture, engineering, software development, and financial engineering.

RESEARCH COORDINATION

Deborah Ralston

*Cluster Leader and Professor of
Finance, Monash University*



Deborah Ralston has extensive experience in financial studies research and in coordinating and managing research and dissemination programs. She is project manager of the Melbourne Mercer Global Pension Index and has research interest in fund management, performance and regulation. Deborah and ACFS are responsible for ensuring that a program of industry engagement and research dissemination maximises the research program impact.

Deborah Chairs the Cluster Management Committee and reports to CSIRO on the activities of the Cluster.

CLUSTER PROJECT 1: INFRASTRUCTURE INVESTMENT AND SUPERANNUATION

Principal Researcher:

Associate Professor Robert J Bianchi
(Griffith University)

Research Team:

Dr Adam N Walk (Griffith University)
and Professor Michael Drew (Griffith University)

Project Overview:

The underlying design feature of this Cluster Project considers infrastructure as one of numerous asset classes in which superannuation funds can invest to explore the asset class and portfolio characteristics of this key investment exposure. The Cluster Project also explores lessons from PPPs to provide insights into structuring future infrastructure investments.

Outcomes:

Systemic Risk Factors in the Returns of Australian PPP Bonds, WP 2013–02

This research examines the ability of systematic risk factors to explain the returns of bonds issued by Public–Private Partnerships (PPPs) in Australia. Despite the large number of PPP transactions being conducted in Australia in recent years, no previous studies have examined the systematic risk factors that explain the variation of returns for PPPs in Australia or around the world. Using the systematic risk factors of term, default and liquidity in an asset pricing model, this study finds that systematic risks can explain between 37 per cent of the variation of bond returns of a toll road PPP to 84 per cent of the variation of bond returns of a hospital PPP.

The Predictability of Australian Listed Infrastructure and Public-Private Partnership Returns Using Asset Pricing Models, WP 2014–05

Can asset pricing models predict the future returns of publicly listed infrastructure investments in Australia? This study finds that asset pricing models exhibit poor out-of-sample predictive performance when compared to simple, fixed excess return models for the 1997–2012 period. Consistent with recent US evidence, these results suggest that using the long-term historical mean return may be a reasonable starting point for superannuation funds seeking to understand the long-term expected returns of publicly listed infrastructure. This paper is an updated version of Working Paper 2013-05.

Is Infrastructure An Asset Class? – An Asset Pricing Approach, WP 2014–11

This study employs an asset pricing approach to examine whether infrastructure investments are an asset class in their own right. By employing the Merton zero-criterion approach, we demonstrate that global and national listed infrastructure returns cannot be deemed as a separate asset class. Empirical evidence suggests that listed infrastructure returns are simply a sub-set of listed stocks with significant industry exposure to the utility sector. These findings have important implications for the asset allocation decisions of pension and superannuation funds.

Determinants of Unlisted Infrastructure Success and Failure (*still to come*)

CLUSTER PROJECT 3: BETTER SUPERANNUATION OUTCOMES: INFORMATION, OPTIONS, AND SHORT-TERM AND LONG-TERM MEMBER BEHAVIOUR

Principal Researchers:

Professor Gordon Clark (Monash University and University of Oxford) and **Professor Paul Gerrans**, (University of Western Australia)

Research Team:

Dr Carly Moulang, Dr Maria Strydom, Dr John Vaz and Dr Jayasinghe Wickramanayake, in collaboration with Professor Noel Whiteside (University of Warwick)

Project Overview:

A key element in the structure and performance of Australia's superannuation system concerns the nature and scope of member behaviour as regards the choice of savings options and investment vehicles, and their response to changing personal circumstances and financial markets. Many participants in superannuation plans give responsibility for making such choices to the sponsoring institution (the employer, the superfund, etc.). Notwithstanding the significance of 'passive' participation in the Australian superannuation system, little is known about the behavioural histories of superannuation plan members over the short, medium, and longer terms, or how superannuation plan members react to changing macroeconomic and financial market circumstances. Academic research has found it difficult to situate observed behaviour in the context of members' longer term behaviour. This cluster project seeks to better understand patterns of active versus passive behaviour, short-term and longer term behaviour, and the responses of members to events as well as advice given by the superannuation fund.

Outcomes:

A Review of Retirement Savings Investment Behaviours: Theory and Evidence, WP 2013–01

This study provides a review of individual retirement savings decisions within the Australian superannuation system, and analyses when and why investors make (or don't make) changes to their superannuation savings. Using the Mercer database, our preliminary analysis of member investment activity over the 2003–12 period suggests that some key demographic factors (gender, age, balance, income) are associated with investor behaviour. Other factors such as financial literacy and internet access also appear to explain investment activity. The most compelling finding is the lack of activity. The majority of members do not make changes even over considerable periods of time.

Understanding Superannuation Contribution Decisions: Theory and Evidence, WP 2014–01

This paper reviews individual retirement savings decisions focusing on the contributions or savings behaviours. It examines lessons learned from international retirement saving systems and the limited number of studies examining the Australian superannuation system, to provide a better picture of who and why people make (or don't make) voluntary contributions. Using the Mercer database, preliminary analysis of member contribution behaviours in Australia indicates consistently declining voluntary post-tax contributions across all age groups over the 2002–12 period.

Patterns of Voluntary Worker Retirement Savings: A Longitudinal Analysis, WP 2014–06

This is the first study using employer-level data to analyse long-term trends in voluntary superannuation contributions in Australia, therefore facilitating the formulation and assessment of superannuation policies. In addition to comparing the role of demographic and social-economic factors in predicting contribution behaviours, we identify the dynamics between salary sacrifice and post-tax contributions, and between past and current year decisions. Interestingly, we identify declining participation in both pre- and post-tax contributions in recent years. We also find that age, income and gender (male) all have a positive association with pre-tax contributions participation whereas for post-tax contributions, income and male gender have a negative effect on average.

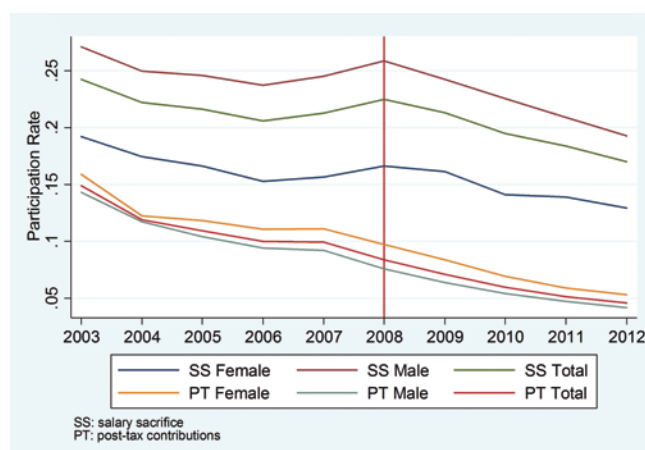


Figure 2:
Participation in voluntary super contributions by gender

CLUSTER PROJECT 3: BETTER SUPERANNUATION OUTCOMES: INFORMATION, OPTIONS, AND SHORT-TERM AND LONG-TERM MEMBER BEHAVIOUR *continued*

> **The Demand for Advice in Defined Contribution Pension Plans, WP 2014–09**

This paper examines the results of a comprehensive study of the advice which participants in Australian defined contribution (DC) saving schemes have sought from their plan sponsors (agents) over time. Whereas previous research on this topic has focused upon fee-for-service advisers, our focus is on advice provided by the agents of DC plan sponsors that have no direct interest in the outcome of calls or web-based inquiries. Our study of 430,000 DC fund members over the 2004–13 period indicates that the predictors of intra-fund advice-seeking are gender (female rather than male), age (older than younger), account balance (larger than smaller), and experience-related (longer rather than shorter).

A Longitudinal Analysis of Superannuation Outcomes - Gender Differences, WP 2015–03

Using longitudinal data based on a sample of member accounts provided by a major Australian superannuation fund, we examine the question of whether established gender-derived savings gaps are likely to diminish in the future. We find that older males increasingly dominate the higher earnings groups and, although there is some evidence that women's balances proportionate to men's are improving over time, the rate of improvement is virtually imperceptible. There is little sign that young women's engagement with the labour market in Australia is changing, with career breaks and part-time working by women remaining the strategy of choice for the care of babies and young children. The compound interest accruing to lower balances in mid-working life exacerbates the gap between male and female super savings which expands over the final years before retirement.

Retirement Savings Trajectories: An Analysis of the Experience of Fund Members, Part One: Experience, WP 2015–07

This paper examines the extent to which changes in individual wealth accumulation trajectories in retirement savings are associated with demographic and social factors. We investigate member-initiated investment changes to their superannuation accounts, distinguishing between investment changes to future contributions and the accumulated balance. Our findings indicate large gender differences across both types of investment changes and that members with higher balances, larger contributions and greater time in the fund are more likely to make changes. Only around one-fifth of investors make some sort of investment strategy change over the 10-year period examined, and men consistently make more investment changes than women.

Retirement Savings Trajectories: An Analysis of the Experience of Fund Members, Part Two: Individual and Peer Moderation Effects on Member Investment Choice, WP 2016-07

This paper explores the role of peers in a member's propensity to make a change to their retirement savings investment strategy. Given that evidence indicates that the majority of individuals do not seek professional financial advice, we investigate whether workplace peers may be influential in member retirement savings investment strategy behaviour. We explore three ways a peer influence may manifest. First, we examine whether the likelihood that an individual makes an investment strategy change is related to what their sub-plan peers do. Second, we explore whether the concentration of one gender in a sub-plan is associated with the individual member's likelihood of changing investment strategy. Third, we explore if the previously documented gender effect, specifically the over-propensity to trade among males, is moderated by the gender critical mass of a worker's retirement savings plan peers.

Acting Your Age in Retirement Savings
(still to come)

Retirement Savings Trajectories: An Analysis of the Experience of Fund Members, Part Three: Performance
(still to come)

The Demand for Advice in Defined Contribution Plans 2
(still to come)

CLUSTER PROJECT 4: BETTER SUPERANNUATION OUTCOMES: FUND INDEXING, STYLE AND HEDGE FUNDS

Principal Researcher:

Associate Professor Paul Lajbcygier
(Monash University)

Research Team:

Dr Huu Duong, Dr Mikhail Tupitsyn,
Professor Heather Anderson, Manh Pham,
Madeleine Barrow, Rohan Fletcher and the
Funds Management Research Cluster

Project Overview:

This Cluster Project aims to maximise retirement outcomes for the superannuant and comprises various sub-projects. The researchers evaluate various alternative indexes recently proposed. They consider the effect of hidden costs on indexing and retirement investments, such as market impact and high frequency traders and how trading style may mitigate such costs. The researchers also explore nonlinear hedge fund cloning as one potential way the costs of investing in alternative assets such as hedge funds might be reduced to better serve investors.

Outcomes:

Is Fundamental Indexation Able to Time the Market? Evidence from the Dow Jones Industrial Average, WP 2013–03

Fundamental Indexation (FI) creates a broad-based market portfolio, like traditional market capitalisation weighted indices, but weights stocks according to a firm's economic size, not stock price. Using the Dow Jones Industrial Average index, we find evidence of the ability of FI to time the market during the technology boom and bust (August 1998 to August 2002). However, in the global financial crisis, FI underperforms against a market capital-weighted index, thereby undermining much of its claim to success. Overall, the superior outperformance of FI is clearly linked to loadings on the Fama and French book-to-market and size factors. We find that equal-weighted indexation, which represents a traditional form of non-market capitalisation, performs well and appears to be successful at timing the market, transaction costs aside.

Do Incentive Fees signal Skill? Evidence from the Hedge Fund Industry, WP 2014–05

We examine whether fee structure acts as a reliable signal of hedge fund performance. Recent theoretical work suggests that, given the unique asymmetries faced by hedge fund investors, managers use performance-based incentives to signal skill. We test this hypothesis empirically and find little support for the notion that high incentive fee funds generate superior risk-adjusted returns during normal market conditions. Rather, increases in incentive level are accompanied by an increased proclivity to take on risk and increased leverage. Consequently, higher incentive fee funds suffer higher rates of attrition. Higher incentive fee funds do demonstrate lower market correlations and thus provide enhanced diversification benefits. As a result, high fee funds exhibited remarkable outperformance during the recent global financial crisis.

Factors Affecting the Birth of and Fund Flows into Commodity Trading Advisers (CTAs), WP 2014–04

Over the past two decades, the CTA industry has grown tremendously in size and scope, and it is now a unique and important part of the alternative investments asset class. This paper investigates the timing of commodity trading advisers (CTAs) inception and the relationship between their fund flows and performance. Our results show that performance by the CTA industry has, over the long run (short run), a positive (negative) effect on new CTAs. The flow–performance relationship is strongly evidenced, though its functional form differs across CTA subcategories. Also, we do not observe a 'smart money' effect, indicating that investors are generally unsuccessful in choosing subsequent well-performing CTAs.

Measuring Immediate Price Impact: The Comparison between Different Price Impact Models, WP 2014–08

As a consequence of the recent technological advances and proliferation of algorithmic and high-frequency trading, the cost of trading in financial markets has irrevocably changed. One important change relates to how trading affects prices, known as price impact. We compare different immediate price impact models for individual trades using out-of-sample predictions. Besides employing several parametric price impact models

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CLUSTER PROJECT 4: BETTER SUPERANNUATION OUTCOMES: FUND INDEXING, STYLE AND HEDGE FUNDS continued

- > proposed in the literature, this paper introduces a novel semi-parametric approach, known as Generalised Additive Models, to estimate price impact. Using an Australian dataset, we find that the semi-parametric models outperform all other models both in- and out-of-sample. While the dependence of price impact on trading volume is consistent with a power-law function, nonlinearities between price impact and market capitalisation and volatility are much more complicated than what is suggested by the literature.

The Viability of Alternative Indexation when Including All Costs, WP 2015–02

This research compares the performance and viability of two prevalent alternative indices, equal and fundamental, with a traditional market capitalisation weighted index (MCWI). The paper assesses the viability of the three strategies in terms of both investment capacity and trading requirements. We find that as fund size and, consequently, transactions costs increase the difference in returns between alternative and traditional indices decreases to the point where no significant outperformance exists. We also consider alternative index implementation and find that alternatives are not viable for large funds, since execution shortfalls induce tracking error. We conclude that the traditional, market capitalisation weight index will remain popular for its simplicity, vast investment capacity and low inherent implementation costs.

Fund Style, published as ‘Passive Hedge Funds’, WP 2016–06

We show that most hedge fund managers are passive, not active. Active management should be manifest through nonlinear exposure to the systematic risk factors that drive hedge fund returns which leads to enhanced performance. However, our findings indicate that approximately two-thirds of hedge funds exhibit only linear factor exposures and hence are ‘passive’. What’s more, these ‘passive’ managers tend to outperform ‘active’ managers. Finally, we also show that many ‘active’ managers, despite initial nonlinear risk exposures, eventually become ‘passive’.

CLUSTER PROJECT 6: SUPERANNUATION AND THE ECONOMY: TRACKING SYSTEMIC IMPACTS

Principal Researcher:

Professor James Giesecke (Centre of Policy Studies/Impact Project, Victoria University)

Research Team:

Professor Peter Dixon and Professor Maureen Rimmer (Centre of Policy Studies/Impact Project)

Project Overview:

The project aims to support better policy making around superannuation by providing a better understanding of the impacts of policy changes on the Australian economy. The first part of this Cluster's work will involve developing a platform, based on Victoria University's multi-sectoral model of the national economy, to explore the economy-wide impacts of policy issues and recommendations emerging from the broad Cluster Research program. From this the team will examine how design features of the superannuation system and any proposed changes might affect macroeconomic stability. By varying the structural and policy settings, it will be possible to construct a number of plausible alternative forecasts for the development of the national economy.

Outcomes:

The VU-S Model 'Superannuation within a Financial CGE Model of the Australian Economy', WP 2015–05

In this paper we describe a new type of computable general equilibrium (CGE) model that integrates detail of the economy's financial sector with a traditional real-side CGE model. We use the model to explore the macroeconomic effects of the superannuation sector in Australia by simulating a one percentage point increase in the ratio of superannuation contributions to the national wage bill. This simulation has relevance to current policy debate on the merits of further increases in the compulsory contribution rate. Our results indicate that a rise in the superannuation contribution rate increases long-run real GDP, largely via an increase in the savings rate. At the same time, the structure of the superannuation sector's activities, relative to other savings vehicles, boosts short-run employment and housing investment.

Superannuation and the Allocative Efficiency of Capital Supply, WP 2015–08

We explore the consequences for the allocative efficiency of capital supply of a one percentage point increase in the proportion of the national wage bill directed to the superannuation sector. We find that this generates a positive allocative efficiency effect, because it promotes the relative expansion of sectors with above-average rates of return on capital and dampens the relative expansion of sectors with below-average rates of return on capital.

A Modelling Framework for Analysing the Role of Superannuation in Australia's Financial System, WP 2016–09

This paper investigates the implications of an expanded superannuation sector for the Australian financial sector. We undertake detailed modelling of capital adequacy requirements imposed upon the Australian commercial banking sector under Basel III regulations, and the behaviour of the Reserve Bank of Australia. We find that an increase in the Superannuation Guarantee rate drives important short-run structural shifts within the Australia economy: the commercial banking sector expands, while the ratio of debt-to-equity used to finance the residential housing stock rises and Australia's foreign financing requirement falls.

Superannuation and Macroeconomic Growth and Stability, WP 2016–08

In previous work, we identified structural shifts caused by an increase in the Superannuation Guarantee rate. Here we examine the implications of these structural shifts for Australia's macroeconomic stability and future economic growth. We identify multiple channels via which a rise in the Superannuation Guarantee rate impacts macroeconomic stability. Principal among these are: the observed rise in the level of private-debt-to-income (which does not generally aid macroeconomic stability); and a reduction in Australia's net foreign financing requirement (which is regarded as stability enhancing). We also find an increase in demand for corporate debt liabilities by domestic financial asset agents, such as superannuation funds, which results in a deepening of Australia's corporate bond market. Diversification benefits, both in terms of greater regional diversification for Australian households, and a more diverse capital structure for Australian commercial banks, are also apparent and regarded as stability enhancing.

CLUSTER PROJECT 7: MODELLING RETIREMENT OUTCOMES FOR ALL AUSTRALIANS

Principal Researcher:

Associate Professor Robert J Bianchi
(Griffith University)

Research Team:

Professor Michael E Drew (Griffith University) and Dr Adam N Walk (Griffith University)

Project Overview:

This Cluster Project considers the superannuation journey across the life course, from the accumulation phase, to conversion and the decumulation/distribution phase. The research design of this project is outcome-oriented, emphasising the contrasting experiences of different age groups, dynamic risks and cohort outcomes. The research will consider the ability of a range of investment strategies to achieve retirement adequacy for Australians, including the two large liabilities of an ageing population: later life medical expense and the costs associated with aged care.

Outcomes:

Retirement Adequacy through Higher Contributions: Is This the Only Way?, WP 2013–04

In view of ongoing concerns about the adequacy of retirement incomes for Australian workers, this study compares the previous 9 per cent Superannuation Guarantee with the 12 per cent rate, effective from 1 July 2025. We use long-horizon historical returns data from various asset classes to simulate retirement outcomes of workers investing in typical asset allocation strategies. Our findings indicate that the retirement adequacy of workers could be more simply improved through investment strategy design that mitigates sequencing risk rather than a broad-based increase in the contribution rate.

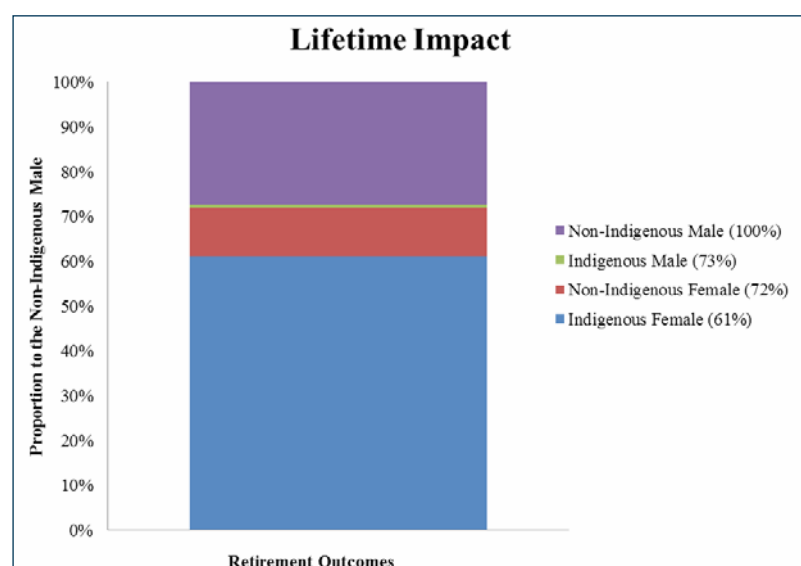
Withdrawal Capacity in the Face of Expected and Unexpected Health and Aged Care Expenses during Retirement, WP 2014–10

We examine the impact on retirement income levels, income stability and longevity risk of accounting for costs associated with age-related health treatment and aged care services during the retirement phase. To measure the impact of these costs on income sustainability and longevity, we derive asset return data using historical bootstrap simulation to determine an optimal withdrawal income during retirement using dynamic optimisation techniques. We show that the greatest risk to income sustainability occurs when unexpected health costs translate into greater longevity, particularly for conservative investors. Paradoxically, this means that high costs associated with health treatment may result in a longer life, however, without commensurate adjustment in asset allocation towards assets with a greater risk-return profile it also risks premature wealth depletion. We further show that the optimal withdrawal rate is highly sensitive to the timing of health costs and moderately sensitive to later-life aged care costs. We find that for a broad set of circumstances the risk of premature ruin can be mitigated through a dynamic lifecycle strategy during the retirement phase.

Retirement, Pension and Superannuation Outcomes for Indigenous Australians, WP 2016–01

Using simulation techniques and current Indigenous Australian demographic and employment data, we estimate the superannuation balance of the typical Indigenous worker and compare this with the average non-Indigenous Australian. Our findings indicate that the retirement outcomes of Indigenous workers are approximately 27 per cent lower than the average non-Indigenous worker. In addition, only 20 per cent of full-time employed Indigenous workers accumulate enough superannuation savings to maintain a comfortable standard of living in retirement. The simulation results suggest that the differences in current earnings play an important role in retirement adequacy.

Figure 3: Retirement Wealth Gap



CLUSTER PROJECT 8: SUPERANNUATION: EUROPEAN COMPARATIVE PERSPECTIVES

Principal Researcher:

Professor Noel Whiteside (University of Warwick)

Project Overview:

Research under this cluster project addresses what can be learned from European experience. Where are the success stories to be found – and what factors contributed to positive outcomes? Topics included are gender gap in retirement outcomes, and governance of funds.

Outcomes:

Gender Issues in Australian Pensions: Some European Perspectives, WP2014–02

Drawing on European research and policy experience, this paper explores the implications for women of recent shifts from PAYG state pensions to individualised, privately funded savings systems such as the Australian superannuation scheme. It argues that funded schemes are unable to address inequalities in old age incomes generated by personal savings, particularly in Europe, where there are financial and labour market instabilities, public expenditure constraints and rising costs due to demographic ageing. Further, the paper marginally favours pension splitting and tax-based solutions, while stressing that preventative action should be taken now, as the full effects of reforms in Europe and Australia will not be felt for some years.

Governance and Funded Pensions: European Perspectives, WP 2016–03

While there are many differences between the Australian and UK super (pension) arrangements, following the introduction of auto-enrolment in the UK in 2012 they are increasingly similar market-based systems. Less stable returns for superannuation (pension) funds in recent years have prompted governance reforms, both in Australia and the UK, designed to improve performance and reduce costs. This paper reviews governance issues within personal funded pensions in both countries, focusing specifically on costs incurred. Although reforms are still underway, the paper concludes that due to regulatory changes compliance costs have tended to increase over time, and thus are likely to raise overall management expenses, thereby exacerbating the very problems these policies seek to address.

CLUSTER PROJECT 9: POST-RETIREMENT WEALTH AND ITS EFFECT ON HEALTH AND WELL-BEING

Principal Researcher:

Professor Anthony Harris (Centre for Health Economics, Monash University)

Research Team:

The Monash team, which includes Michael Shields, David Johnson and Sonja Kassenboehmer, has considerable experience in the measurement of the causal links between health and the labour market particularly in the relationship between well-being, health, chronic illness and retirement.

Project Overview:

The project considers the role of socioeconomic status in the determination of health and quality of life in Australia, with a particular emphasis on retirees. It focuses on the impact of fluctuations in wealth over time - particularly that induced by market volatility - as a consequence of retirement and variations in the value of superannuation on individual life circumstance and particularly on measures of well-being, health status and health care expenditure. This is important for policy makers who aim to develop post-retirement incomes policies that seek to improve elderly Australians' health outcomes and reduce future health care expenditures. The research involves the econometric analysis of high-quality Australian data to provide evidence on this issue, and will also look to use complementary British data to provide useful comparisons.

Outcomes:

A Lifecycle Perspective of Stock Market Performance and Well-being, WP 2014–07

We estimate the effect of stock market fluctuations on subjective well-being and mental health using Australian survey data over the period 2001–2012, which includes the global financial crisis. A particular innovation of the paper is the use of three satisfaction measures – overall, financial, employment – and the use of a stylised lifecycle investment model. These features, coupled with a robust identification strategy based on comparing survey respondents interviewed in the same quarter and location, allow us to better understand individual reactions to stock market changes. We find that stock market increases lead to significant but modest improvements in life satisfaction and mental health. This effect is driven by young and middle-aged males, and is stronger for those with direct exposure to the stock market. For young cohorts, the stock market index acts as a leading indicator of employment prospects, while for older cohorts it acts directly on financial satisfaction.

Locus of Control and Savings, WP 2015–04

This paper analyses the relationship between individuals' locus of control and their savings behaviour, i.e. wealth accumulation, savings rates and portfolio choices. Locus of control is a psychological concept that captures individuals' beliefs about the controllability of life events and is a key component of self-control. We find that households with an internal reference person save more both in terms of levels and as a percentage of their permanent incomes. Although the locus-of-control gap in savings rates is largest among rich households, the gap in wealth accumulation is particularly large for poor households. Finally, households with an internal reference person and average net worth hold significantly less financial wealth, but significantly more pension wealth, than otherwise similar households with an external reference person.

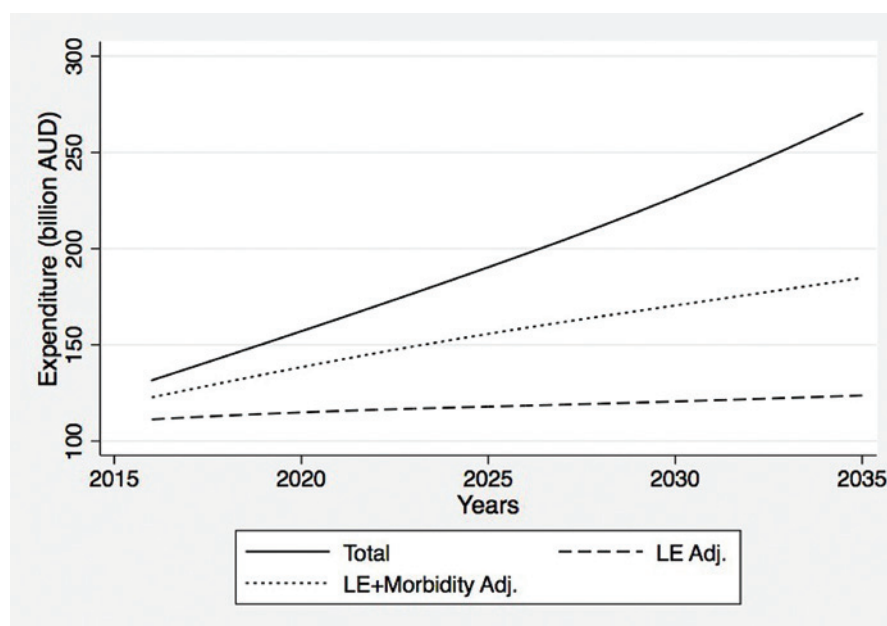
Who Makes the Financial Decisions? Intra-Household Evidence from Panel Data, WP 2015–06

This study tests whether a household bargaining or household production model better explains decision-making allocations. We use unique longitudinal data that tracks couples for eight years and asks each partner annually about who is responsible for making major financial decisions. An important focus is on the role that non-economic dimensions have in determining the allocation of financial decision making, in particular, the physical and mental health of each partner, as well as their cognitive ability and personality traits. We find that household bargaining better captures intra-household financial decision making than household production and specialisation, and that non-economic characteristics of couples are important predictors of who 'holds the purse strings'. We also find that the within-couple panel data estimates are sensitive to whether we use male or female reports on who is the decision maker.

The Future of Health and Aged Care Expenditure in Australia, WP 2016–05

This study investigates the pure effect of ageing on total health and aged care expenditure in the next 20 years. Our results indicate that the pure effect has been relatively small and its effect on disposable income and fiscal balance has been mitigated by increased labour force participation among the elderly and increased savings. While this may change in the future, we argue that a focus on greater efficiency in health production and finance is more likely to be effective in delivering high-quality care than trying to restrain the demand for health and aged care among the elderly through finance reform.

Figure 4: Predicted health expenditure for ageing population (65+ years)



The Impact of Changes in Wealth on Health and Well-being in the Retired Elderly
(*still to come*)

Education and Financial Decision Making by the Elderly (*still to come*)

Cognitive Decline and Financial Decision Making of the Elderly (*still to come*)

CLUSTER PROJECT 10: 60+ AS A NATIONAL ASSET: ABILITY TO CONTRIBUTE TO THE ECONOMY: LABOUR MARKET POLICY AND FLEXIBILITY FOR OLDER WORKERS

Principal Researchers:

Professor Philip Taylor (Federation University) and **Professor Robert Lindley** (University of Warwick)

Research Team:

Dr Peter Smith (Monash University)

Project Overview:

The overall aim of this Cluster Project is to draw on Australian, European and other international experience to produce better understandings of the relationships between age, the labour market and retirement. Its purpose is to inform public policy aimed at the prolongation of working life, the effective management of ageing workforces, and the reconciliation of personal and organisational strategies. The research will look into ageism and the social construction of older workers, as well as those with chronic conditions and/or disability, and possible policy responses. It will also examine possible new patterns of retirement and later-life employment, including 'bridge' employment and its effect on well-being.

Outcomes:

The Social Construction of Retirement and Evolving Policy Discourse of Working Longer, WP 2015–01

This paper examines the evolving and competing 'world views' about older workers and retirement from a public policy and social advocacy perspective. It identifies contradictions and disjunctions within public policies aimed at changing employer behaviour towards older workers. We argue that serious flaws in the current representations of older workers provide a weak basis for policy development and potentially exacerbate prejudicial attitudes towards older workers in society. In addition, we argue that the issue of older workers' employment should be examined within the context of mainstream labour market issues. Directing these workers towards market-driven mainstream programs recognises the negative attitudes towards ageing but avoids trapping older workers in employment placements sheltered from competition.

Public Policy, Age Discrimination and Australian Older Workers: Solutions in Search of a Problem? WP 2016–02

In industrialised nations, age discrimination is widely viewed as a serious impediment to older workers' employment, and age discrimination policies generally focus on jobseekers and workers aged over 50. These policies appear not to consider other sociological factors that may influence older workers' prospects or the experiences of younger workers. To assess the limitations of this current focus, we examine the concept of everyday discrimination by conducting a survey of a nationally representative sample of working Australians. Our results indicate that discrimination was experienced by 25 per cent of respondents, but there was little evidence of age differences in the extent of experiences. We argue that there may be an overemphasis on tackling age discrimination facing older workers, which obscures proper consideration of barriers to their participation, and may entrench ageist perceptions among labour market participants.

New Patterns of Retirement and Later-life Employment (*still to come*)

Employer Age Management Practice, Extending Working Life and the Retirement Process (*still to come*)

Translating Knowledge for Practice: Building an Evidence Base for Good Age Management in Australia (*still to come*)

CLUSTER PROJECT 11: CSIRO MULTI-DISCIPLINARY RESEARCH PROJECT

Principal Researchers:

Dr Andrew Reeson (CSIRO Data61),

Dr Zili Zhu (CSIRO Data61)

Project Overview:

This multi-disciplinary project is structured into five themes: Government Data Analysis, Retirement Income Forecasting, Retirement Investment Life-Cycle, Retirement Product Design and Behavioural Economics and Digital Services.

Outcomes:

Theme 1: Government Data Analysis

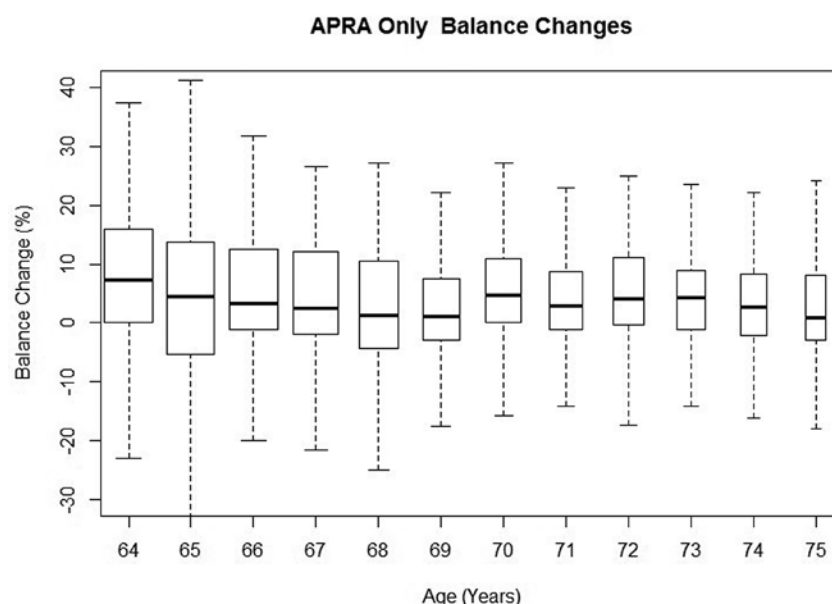
ATO Data Analysis on SMSF and APRA Superannuation Accounts, September 2015, CSIRO, Zili Zhu, Thomas Sneddon, Alec Stephenson, Aaron Minney

Currently, over \$500 billion of assets are controlled by SMSFs. To gain more insight into SMSFs, it is useful to compare SMSFs with conventional superannuation funds that are regulated by Australian Prudential and Regulatory Authority (APRA). The Australian Tax Office (ATO) provided CSIRO with a large dataset of individual and self-managed superannuation fund (SMSF) annual return information to facilitate the comparative analysis of APRA-regulated superannuation funds and SMSFs. The analysis of SMSF and APRA fund activity can shed light on how older Australians behave in relation to withdrawal, contribution and maintenance of their superannuation entitlements. This study represents the first time the original raw ATO return data has been used directly as evidence. In this report, we provide the outlines on the analysis of this ATO data, and also some insights into the behaviour of older Australians in relation to their superannuation fund entitlements.

Superannuation Drawdown Behaviour: An Analysis of Longitudinal Data, WP 2016–04

This paper provides a longitudinal study of withdrawals from account-based pensions from superannuation savings to provide a better understanding of drawdown patterns in retirement. Our analysis indicates that most retirees in their 60s and 70s draw down on their account-based pensions at modest rates, close to the minimum amounts each year. It also suggests that most retirees would die with substantial amounts unspent if these drawdown rates were to continue. These findings are consistent with existing empirical evidence which indicates that retirees are inclined to draw down their wealth relatively slowly.

Figure 5: Net balance changes for retirees with just an APRA fund (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size)



CLUSTER PROJECT 11: CSIRO MULTI-DISCIPLINARY RESEARCH PROJECT **continued**

> **Theme 2: Retirement Income Forecasting**

This study examines the likely effect of the new schedule for compulsory superannuation contribution rates introduced in September 2014. The CSIRO Simulation of Uncertainty for Pension Analysis Model (the 'SUPA' model) has been developed to assist superannuation-related research within the CSIRO-Monash Superannuation Research Cluster. We use the SUPA model to study retirement outcomes under both the new superannuation contribution rate regime and the previous schedule.

Currently, there is no consensus on the minimum superannuation amount required for retirees to maintain a reasonable living standard throughout retirement. An unambiguous target is important as it can help inform individuals as well as the government when it is setting superannuation contributions rates. Using CSIRO retirement income modelling analytics, this study calculates the minimum superannuation fund balance needed to maintain a comfortable or modest retirement lifestyle.

Given the high level of uncertainty involved in estimating future investment returns and the required expenditure for a certain retirement standard, a logical approach would be to also provide the probability of success in meeting a particular retirement living standard. For example, if a 95 per cent probability of success is regarded as the acceptable risk tolerance level, the simulation results suggest that \$851,000 is a sufficient superannuation balance at retirement age to achieve a comfortable retirement, and there is only a 5 per cent chance of exhausting this balance during the retirement phase. When eligibility for the full age pension is met, a super balance at retirement of only \$73,000 is needed to provide a modest retirement income, with a 95% probability.

The CSIRO SUPA model is also available in a software form for use by stakeholders as part of the deliverables.

Theme 3: Retirement Investment Life-Cycle

On retirement at age 65, a retiree may not feel comfortable that their balance is sufficient to fund their retirement due to longevity risk. To mitigate this risk, retirees may purchase an inflation-linked annuity, which pays a guaranteed amount each year until death. However, they need to decide what is the optimal payout period for the annuity and how much of their superannuation balance should be used to buy an annuity that ensures they live comfortably in retirement.

We model these two choices facing retirees using a real-option approach. First, we find the optimal portfolio of financial instruments that maximises the terminal wealth of the superannuation balance over a 30-year planning horizon. Then we find the optimal sequence of annuity purchases using funds from the chosen superannuation balance to ensure that the retiree has sufficient funds to cover their living costs over the 30-year planning horizon.

Based on least-squares Monte Carlo simulation, we also develop an efficient method for solving dynamic portfolio selection problems in the presence of transaction costs, liquidity costs and market impacts. The CSIRO optimal portfolio algorithm-based on the real-option approach is available to stakeholders.

Theme 4: Retirement Product Design

To take advantage of market growth and protect savings, many asset management companies worldwide are offering investment protection options such as capital protection options. US insurers began including these types of options in their variable annuity products in the 1990s and these products have become popular in Europe, the UK and Japan and, more recently, in Australia. Pricing of these contracts is similar to pricing variable annuities with guaranteed minimum withdrawal benefits (GMWB), however, there are several important differences making it a more challenging task.

We develop a new method to more accurately price variable annuities. We extend the methodology for pricing variable annuities to account for stochastic interest rates, stochastic life tables and stochastic volatility. We also model causes of death (including long-term forecasts) in Australia and account for this in the valuation of annuity portfolios. Note that here we develop new modelling methodology different from the time series approach.

Theme 5: Behavioural Economics

Behavioural Economics and Digital Services, Andrew Reeson, Claire Mason, Murni Greenhill, Elizabeth Hobman, Sorada Tapsuwan, Iain Walker

One of the biggest issues facing the superannuation sector is low member engagement. A review of the behavioural and psychological literature has identified how digital service delivery might help enhance engagement, through promoting perceptions of competence, relatedness and autonomy, and hence building intrinsic motivations towards superannuation. In order to improve our understanding of how to better engage members we are running a set of survey studies to investigate how people respond to automated financial services. A first survey with 138 respondents provides us with some key insights into the current attitudes towards automated advice, indicating that acceptance of automated advice decreases with age and increases with income. Follow-up work will test how people respond when exposed to digital advice and primed for perceived competence, relatedness, autonomy and trust.

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An important element underpinning the delivery of evidence-based, industry-relevant research by the Cluster has been its focus on stakeholder and industry engagement.

The Cluster has actively sought to develop a strong understanding of industry needs and increased collaboration between academe, policy makers and industry participants by providing a range of opportunities for networking, the sharing of ideas and reporting on research findings. These include:

- > **Quarterly stakeholder meetings:** These meetings are well-attended and have excellent participant engagement, providing an indication of the value placed by stakeholders on the research work of the Cluster. As part of these meetings regular presentations to stakeholders are given by the research teams, providing opportunities for feedback from stakeholders on key findings and suggestions on areas for further research.
- > **Presentations to individual stakeholder organisations:** Some of the papers focusing on issues with important implications for industry and policy makers have been identified by stakeholders and have resulted in additional presentations/discussions on specific research topics. Key recent examples include: a presentation on 31 May 2016 by the team from Griffith University to Treasury (Canberra) on their work on Indigenous retirement outcomes and sequencing risk; a teleconference meeting between CSIRO and stakeholders to discuss the robo-advice study; a one-day seminar for AMP, including presentations from CSIRO on digital issues and from researchers focusing on behavioural research; and a presentation to the Australian Taxation Office on 5 August 2014 on superannuation drawdown behaviour during retirement.
- > **Presentations to industry conferences:** A number of presentations have been made by researchers and Cluster Leader Prof Deborah Ralston at conferences including: 22nd Annual Colloquium of Superannuation Researchers at the University of New South Wales in 2014; ASFA Global Investment Forum in Sydney in 2014; ATO Super Leadership Conference in Canberra in 2014; and Allianz – Oxford Pensions Conference in 2014, Pension Options – Risk and Behaviour, University of Oxford.
- > **Annual international conference:** The CSIRO-Monash Superannuation Research Symposium is held annually, with the final Symposium being held on 5 and 6 December 2016. These events provide an excellent forum for researchers to network, exchange ideas and share their research findings with industry professionals, policy makers and others in academe.
- > **Publication in leading academic and industry journals:** Several of the Cluster researchers' papers have also been accepted by highly regarded academic journals including *The Australian Journal of Management*, the *Journal of Banking and Finance* and *JASSA, The Finsia Journal of Applied Finance*, which ran a special supplement on superannuation with four Cluster papers in its June 2016 issue.
- > **Submissions:** These include a submission to the *Financial System Inquiry*, 31 March 2014, and to Treasury's Review on *The Objective of Superannuation*, 31 May 2016.
- > **Newsletters publicly reporting updates on programs:** These newsletters are provided online to stakeholders tri-annually, including updates on the progress of research, details on papers that have been published in journals, and stakeholder presentations and events.
- > **Website:** The Super Cluster website is a repository of information on all matters to do with the research programs, the researchers, and outcomes and also links to other relevant sites.
- > **Use of Cluster research in policy reviews:** The Productivity Commission's 2016 Draft Report on *Superannuation Competitiveness and Efficiency* drew heavily on Cluster research, citing five Working Papers on behavioral issues including investment and contribution decisions, advice seeking, and drawdown patterns, as well as presentations delivered at the 2015 Annual Conference. A 2015 report from the Productivity Commission, *Superannuation policy for post-retirement*, also drew on Cluster research into superannuation contribution decisions.
- > **Opinion pieces:** Cluster leaders and researchers have published a number of opinion pieces, promoting Cluster research to a broader audience:
 - Duffield, J and Ralston, D 2016, 'Three key retirement factors other than super', *Cuffelinks*, 26 October
 - Feng, J, Bateman, H and Gerrans, P 2014, 'Why Australians don't make extra super contributions', *The Conversation*, 15 April, republished at *Lifehacker*.
 - Palmer, C, Dormer, A, Ralston, D and Thorp, S 2014, 'CSIRO-led research to model superannuation spending', *The Conversation*, 10 February.
 - Ralston, D and Feng, J 2016, 'Superannuation and the budget', *Cuffelinks*, 3 May.
 - Ralston, D and Feng, J 2016, 'Super changes in budget are a step forward in addressing equity', *The Conversation*, 5 May.
 - Wiafe, OK 2016, 'Indigenous Australians retire with 27% less savings', *The Conversation*, 11 February, republished at *Business Daily*.

- > **Media:** The Cluster has received ongoing media coverage over the course of the research program. Key examples include:

'ANZ Wealth joins Monash-CSIRO Super Research Cluster', *Professional Planner*, October 6, 2014.

Bowerman, Robin 2016, 'Grey budgeting: A long-term balancing exercise', *ShareCafe*, 17 February.

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Smith, Matthew 2016, 'Men and over 50s tinker most with their super [Part 1]', *InFinance*, 14 July.

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Smith, N 2015, 'There's no good reason to mimic a hedge fund', *Bloomberg*, 21 August.

Snyder, Darren 2016, 'Indigenous workers retire with 27pct less: research', *Financial Standard*, 4 April.

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Somerville, Elizabeth 2014, 'ANZ joins Super Research Cluster, more to come', *Financial Observer*, 8 October.

Teckchandani, Vish 2013, 'Slacken off on super reform: McKeon', *Australian Banking and Finance*, 30 August.

Yglesias, Matthew 2015, 'New study argues hedge funds are an even worse scam than we thought', *Vox*, 19 August.

EVENTS: STAKEHOLDER MEETINGS & ANNUAL CONFERENCES >>>

Over the past three years, the Cluster has provided a number of forums for researchers to engage with, inform and consult with stakeholders, including regular stakeholder meetings and a major annual conference to refine and explore the research.

The Cluster was launched in August 2013 at an event where the keynote speaker was Simon McKeon AO, then Chair of CSIRO and AMP, and Executive Chairman, Macquarie Bank, Melbourne. The event was attended by 60 key members of industry and academe.



The first international conference was held on 4 and 5 December 2013, including a stakeholder meeting on 5 December. The conference was attended by 53 members of industry and academe, with 14 papers presented on: Infrastructure Investment Issues and Macro Outcomes (three papers), Member Behaviour (three papers), Health, Labour markets and Social Policy (five papers), and Investment & Products (three papers).



During 2014 stakeholder meetings were held on 17 March, 16 June, 30 September and following the annual conference on 2 December. A workshop was also conducted with stakeholders on 5 August. At each meeting, work in progress was reviewed and forthcoming research was discussed.



EVENTS: STAKEHOLDER MEETINGS & ANNUAL CONFERENCES >>>

In 2014 several researchers, including (the late) Dr Maria Strydom, Carly Moulang, Jun Feng and colleagues from the University of Warwick, attended the Oxford Conference – October 2014 as guests of Prof Gordon Clark. The conference provided an opportunity to share insights with key pension policy makers and industry members from the UK, Europe and the US.



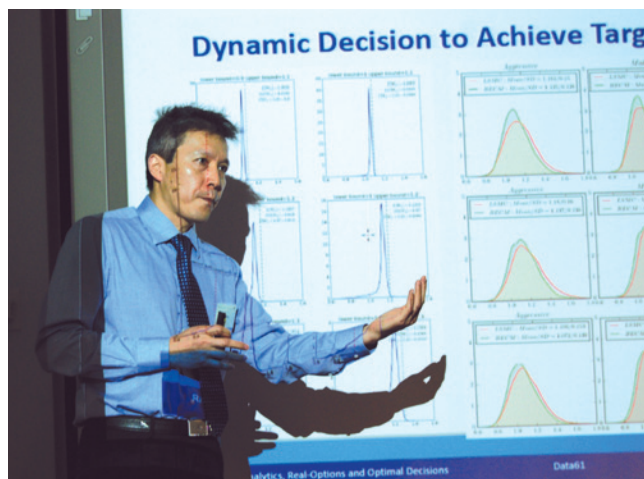
2015 stakeholder meetings were held on 11 March, 15 June, 23 September, and after the annual conference. The conference was held on 1 and 2 December in Melbourne once again and attracted 87 attendees from industry academe and government agencies. The Plenary Speaker was Prof Gordon Clark (Oxford University). In total, 19 papers were presented in two concurrent streams: technical and investment topics; and member behaviour, retirement, wealth and health.



Prof Gordon Clark (Oxford University)

In 2016, stakeholder meetings were held on 10 March, 23 June and on 15 September. A workshop was also conducted at AMP in October on the digital advice project. A further stakeholder meeting will be held prior to the annual conference.

The final annual CSIRO-Monash Superannuation Research Symposium, will be open to the public and will be held on 6 December 2016. The symposium will include presentations by both international and Australian researchers. Keynote speaker will be Karen Chester, Deputy Chair of the Productivity Commission, who is currently conducting the Commission's Inquiry into *Superannuation Competitiveness and Efficiency*. Eleven papers will be presented at the conference from across the full spectrum of superannuation research.



ARC LINKAGE FUNDING >>>

One of the advantages of the Cluster Project is that in bringing together researchers and stakeholders, relationships form which can lead to ongoing research opportunities such as ARC linkage grants.

Earlier in 2016 a team comprising Dr Colin O'Hare and Dr Bonsoo Koo (Monash), Dr Zili Zhu (CSIRO), David Cox (Challenger) and Douglas McBirnie (Accurium) received an ARC linkage grant for a three-year project: Towards a superannuation system fit for the future.

An important element of the Cluster Project is that it gives researchers access to data from government agencies, which is otherwise not available to industry. This three-year project led by Colin O'Hare continues this work, using Department of Human Services data to develop insights into individuals' behaviour and choice. This should inform evidence-based policy making around how government can assist trustees in providing appropriate Comprehensive Income Products for Retirement (CIPRs). As it is

difficult for trustees to design appropriate CIPRs due to limited information on their members, this project will use detailed DHS data to design a range of CIPRs, which funds could then offer to their members.

ARC Linkage Grants are especially well suited to such partnerships as a key objective of the grants is to support the initiation and/or development of long-term strategic research alliances between higher education organisations and other organisations. To be eligible for such a Grant, Partner Organisations must make a significant contribution in cash and/or in-kind such that the combined Partner Organisation(s) eligible contributions are equal to or greater than the ARC funding. The Linkage Projects scheme provides project funding of \$50,000 to \$300,000 per year for two to five years.

For more details visit the Australian Research Council website (www.arc.gov.au) email at [ARC-LinkageProjects\[@\]arc.gov.au](mailto:ARC-LinkageProjects[@]arc.gov.au) or telephone +61 2 6287 6600.

WHERE TO NEXT >>>

The research initiated by the Cluster lends itself to further partnerships between industry and academe, especially given the new focus on research 'impact' in government grants.

Cluster Leader Prof Deborah Ralston has been speaking to stakeholders, both individually and collectively, to highlight the main outcomes of the industry-relevant research that has been already undertaken by the Cluster, and issues pertinent to current policy debates on superannuation and retirement

in Australia where further research would likely benefit all stakeholders.

Prof Ralston has also been canvassing interest in future opportunities for development of this evidence-based research and for ongoing collaboration between researchers and key stakeholders. At this stage there has been interest expressed in establishing a centre for excellence in retirement studies which could build on the Cluster's work.

FURTHER INFORMATION >>>

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