ANNUAL REPORT 2013

ARC CENTRE OF EXCELLENCE IN **POPULATION AGEING RESEARCH**

cepar

UNSW AUSTRALIA

THE UNIVERSITY OF SYDNEY

Australian National University

Australian Government

Australian Research Council

CONTENTS

INTRODUCING THE CENTRE

ABOUT CEPAR

THE ARC CENTRE OF EXCELLENCE IN POPULATION AGEING RESEARCH (CEPAR) IS A COLLABORATION BETWEEN ACADEMIA, GOVERNMENT AND INDUSTRY.

The Centre is based at the University of New South Wales with nodes at the Australian National University and the University of Sydney. It aims to establish Australia as a world leader in the field of population ageing research through a unique combination of high level, cross-disciplinary expertise drawn from Economics, Psychology, Sociology, Epidemiology, Actuarial Science, and Demography.

CEPAR is actively engaged with a range of influential government and industry partners to cooperatively deliver outcomes to meet the challenges of population ageing. It is building a new generation of researchers to global standard with an appreciation of the multidisciplinary nature of population ageing.

VISION

Our vision is to be internationally recognised as a leading research authority on population ageing.

MISSION

CEPAR's mission is to produce research of the highest quality to transform thinking about population ageing, inform product and service development and provision and public policy, and improve people's wellbeing throughout their lives.

OBJECTIVES

THE OBJECTIVES OF THE CENTRE ARE TO:

- Produce original research, to be published in leading international academic journals, in each of the nominated fields, integrating them to advance knowledge globally
- Establish outstanding research capability to generate the evidence base and policy analysis required to anticipate and respond constructively to the demographic transition
- Undertake evidence-based research to allow development of products and markets relevant to an ageing population
- Create new cohorts of researchers with an enriched appreciation of cross-disciplinary contributions by training PhD students and early career researchers (ECRs), thus building high quality research capacity for the generation for which population change is especially crucial
- Become a global intellectual hub for population ageing research, by combining in-house expertise with leading researchers globally in initiatives to target research issues and generate new outcome-oriented approaches to studying the population ageing process and its implications
- Engage with external stakeholders as an integral part of the Centre's research activity, to develop research goals, to share in project execution, and to translate research output into forms accessible by the professional community, both national and global.

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DIRECTOR'S REPORT & HIGHLIGHTS

PROFESSOR JOHN PIGGOTT

THERE'S A SENSE IN WHICH 2013 WAS THE YEAR IN WHICH CEPAR CAME OF AGE. A FULL COMPLEMENT OF RESEARCH STAFF, THE IDENTIFICATION OF NEW OPPORTUNITIES FOR MULTIDISCIPLINARY COLLABORATION, A COMPLETED STRATEGIC PLAN, AND A MATURING OF OUR ENGAGEMENT WITH STAKEHOLDERS, ALL EVIDENCE THIS.

The Advisory Board's active engagement with CEPAR research enriched the relationship with partner organisations, and the Scientific Advisory Committee's review of our research program provided valuable feedback and advice for future direction. We held our first International Conference covering the span of our disciplinary expertise, and enriched our international collaborations. All these activities and events coalesced to give CEPAR a new level of gravitas in the eyes of its members and beyond.

Figuring out how to do all this has taken time. Perhaps the core work was the development of the Strategic Plan. I saw this as key to securing a well-thought-out direction for CEPAR. In the course of its development, we ran workshops, discussion groups and a research retreat. To be real and robust, the strategy had to have buy-in from all the key stakeholders. In many ways, therefore, the process of development was as important as the completed document.

WE ARE CONFIDENT THAT OUR STRATEGIC PLAN MAKES BEST USE OF THE SKILLS CEPAR EMBODIES AND THE RESOURCES AT ITS DISPOSAL, AND IDENTIFIES WORKABLE MECHANISMS FOR DELIVERING ON OUR OBJECTIVES.

The plan's creation and development clearly demonstrated that CEPAR embodies not only eminent Chief, Partner and Associate Investigators committed to its concept, and top quality research staff, but also an inspirational and highly creative management core, and engaged partner organisations. The commitment of Chief Investigators, the Chair of the Advisory Board, Marc de Cure, and CEPAR's Director of Operations, Anne Gordon, were critical. We were fortunate to receive in-kind support from Bain & Company and Evello Partners who provided a framework for this process, and injected new ideas, which helped crystallise the final outcome.

It has taken time for the Centre's key stakeholders to develop the relationships and understanding necessary to make the Centre the highly effective entity that it has become.

But we have the model now. Perhaps partly as a result, we are also fortunate in enjoying the unwavering support of senior research management in the administering and collaborating universities. Not a month goes by without a significant interaction with university administration, and the cooperative spirit we encounter eases the path through management and innovation.

Among the other major initiatives undertaken this year, four stand out for special mention.

The first CEPAR International Conference took place at UNSW in early July. More than 150 researchers from around the globe participated. Four keynote speakers presented, covering the disciplines of epidemiology, sociology, economics, and finance, and more than 70 research papers were delivered. I saw the conference as a litmus test for the research profile of population ageing. There was a genuine risk that each discipline would see the conference as small-scale and unimportant from its perspective. But each keynote was fully attended, and the feedback we received suggested that participants found the multidisciplinary style of the conference rewarding.

The second major initiative involves our expanding footprint in China. Over the past few years Investigators across CEPAR have been actively building research on China, which is one of the world's most rapidly ageing economies.

TOWARDS THE END OF LAST YEAR, WE WERE SUCCESSFUL IN SECURING FUNDING, FROM THE AUSTRALIA CHINA SCIENCE AND RESEARCH FUND AND THE UNSW INTERNATIONAL OFFICE, TO INITIATE A SERIES OF EXCHANGES AND WORKSHOPS IN 2013 FOCUSED ON VARIOUS ASPECTS OF POPULATION AGEING.

Zhejiang University agreed to co-host the first workshop, which was held in May. About 40 researchers from all parts of China took part, most of them young, many meeting each other for the first time. It was an extraordinary event. On that same mission, the Tsinghua-Brookings Public Policy Centre organised a half day workshop at which core members of the CEPAR team presented, and two meetings with officials from the Chinese Academy of Social Sciences (CASS) took place. In December a second mission visited the Southwestern University of Finance and Economics (SWUFE) in Chengdu, reaching beyond the standard metropolises of China, along with repeat workshops at Tsinghua-Brookings and CASS. Initiated by Lisa Magnani, a CEPAR Associate Investigator, and organised by Lu Bei, a CEPAR Research Fellow, this initiative has

consolidated our linkages with Zhejiang and CASS, and developed what we hope will be fruitful relationships with Tsinghua University and SWUFE. These initiatives in economic policy complement research in the psycho-social areas, for example, the work led by Associate Investigator Colette Browning from Monash University through her joint appointment with Peking University.

Third, we have now fully embraced a briefing paper series.

FOLLOWING THE SUCCESS OF THE FIRST BRIEF IN 2012 ON MATURE LABOUR FORCE PARTICIPATION, A SERIES OF THREE, COLLECTIVELY TITLED 'ASIA IN THE AGEING CENTURY', WAS LAUNCHED AT AN EVENT HOSTED BY AMP IN MAY 2013.

This attracted media attention, and firmly established the series as one of CEPAR's hallmarks. A series of two on Aged

Care will be launched in the first part of 2014. Rafal Chomik, a CEPAR Senior Research Fellow, has primary responsibility for the series, which has now set a very high standard for ease of communication and comprehensiveness. Where appropriate, the briefs also highlight CEPAR research, and this shows how CEPAR work contributes to a balanced evidence-based perspective on the issue at hand.

Finally, we began the long journey, flagged last year, towards establishing a longitudinal survey on older age groups in Australia. We now have a core team, we have scoped out the project, and we have begun to discuss the initiative with various government agencies.
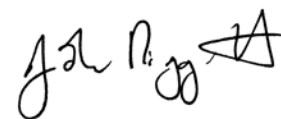
CEPAR-Harvard Workshop on the Economics of Population Ageing, held at Harvard in September; and a pensions conference, jointly organised with Japanese research centre, RIPPA, held at UNSW in November. Both these specialised events involved world leaders in their respective fields. Both are expected to produce research output involving collected papers. Engagement with stakeholders included a Treasury seminar and roundtable discussion, a FaHCSIA workshop, and various meetings with senior management in both industry and government. The Australian National University (ANU) node hosted a number of high profile public lectures by CEPAR investigators and visitors including Carol Jagger, Alex Kalache, James Nazroo, Jean-Marie Robine, Hal Kendig and Peter McDonald.

Our commitment to building a next cohort of researchers was advanced by several initiatives. These included the national Emerging Researchers in Ageing conference, convened by CEPAR Investigators at the University of Sydney, with a keynote address by Bob Cumming, and an Early Career Researchers Workshop hosted by the ANU node.

Looking forward, a major milestone in 2014 will be the mid-term review, conducted by the Australian Research Council. We were successful in winning the Academy of Social Sciences in Australia (ASSA) Symposium for 2014 – the bid was led by Hal Kendig – which will focus on population ageing. We have now established permanent co-hosting status with two UNSW-based annual conferences – the Superannuation Colloquium, co-hosted with the School of Risk and Actuarial Studies, and the Workshop on Health and Ageing, co-hosted with the Centre for Applied Economics Research. And we will continue to consolidate our presence in Asia, and especially China, consistent with our Strategic Plan.

Overall, we have met or exceeded most of our Key Performance Indicators for 2013, as we did in our first two years of operation. Commitment to CEPAR, and its profile, continues to grow.

John Piggott

Various other workshops and conferences were held through the year, both in Australia and elsewhere. These included the

HIGHLIGHTS

61 PROJECTS

117 JOURNAL PUBLICATIONS

FIRST CEPAR INTERNATIONAL CONFERENCE:
ANALYSING POPULATION AGEING:
MULTIDISCIPLINARY PERSPECTIVES
AND INNOVATION

FIRST CEPAR INDUSTRY FORUM:
AGE-FRIENDLY BUSINESSES

JOINT HARVARD-CEPAR WORKSHOP:
THE ECONOMICS OF POPULATION AGEING

JOINT RIPPA-CEPAR CONFERENCE:
PRE-FUNDED PENSION PLANS:
THEORY, PRACTICE AND ISSUES.
DOES PRE-FUNDING WORK?

RESEARCH BRIEFS ON 'ASIA IN THE AGEING
CENTURY' LAUNCHED

RESEARCH PARTNERSHIPS IN CHINA
EXPANDED: ZHEJIANG UNIVERSITY, THE
CHINESE ACADEMY OF SOCIAL SCIENCES, THE
BROOKINGS-TSINGHUA CENTRE FOR PUBLIC
POLICY AND THE SOUTHWESTERN UNIVERSITY
OF FINANCE AND ECONOMICS

EMERGING RESEARCHERS IN AGEING
CONFERENCE HOSTED BY THE UNIVERSITY
OF SYDNEY NODE

KAARIN J. ANSTEY DELIVERED A KEYNOTE
ADDRESS AT THE AUSTRALASIAN ASSOCIATION
OF EPIDEMIOLOGY ANNUAL MEETING

ROBERT CUMMING APPOINTED TO THE BOARD
OF THE SAX INSTITUTE

MICHAEL KEANE RANKED AS TOP ECONOMIST
IN THE 1990 COHORT BY REPEC

HAL KENDIG DELIVERED THE GARY ANDREWS
MEMORIAL LECTURE AT THE INTERNATIONAL
ASSOCIATION OF GERONTOLOGY AND
GERIATRICS WORLD CONGRESS IN SEOUL

PETER MCDONALD DELIVERED THE KEYNOTE
ADDRESS AT THE NATIONAL CONFERENCE
OF THE MIGRATION INSTITUTE OF AUSTRALIA

JOHN PIGGOTT DELIVERED THE KEITH
HANCOCK LECTURE AT BOTH UNSW AND ANU

MICHAEL SHERRIS INVITED TO GIVE KEYNOTE
ADDRESS AT THE COLLOQUIUM OF THE
INTERNATIONAL ACTUARIAL ASSOCIATION
IN LYON, FRANCE

AI PETER BUTTERWORTH AWARDED A FUTURE
FELLOWSHIP TO LOOK AT THE LONG-TERM
MENTAL HEALTH AND EMPLOYMENT
CONSEQUENCES OF POOR QUALITY WORK

RESEARCH FELLOW YANG SHEN AWARDED
UNSW VICE-CHANCELLOR'S FELLOWSHIP

CHAIRMAN'S MESSAGE

MARC DE CURE

CEPAR was established to address the knowledge gaps that exist in the understanding of population ageing and its implications. Population ageing is now recognised as a mainstream issue of great significance to both the developed and developing world. Individuals, businesses and government are developing responses in many cases with imperfect knowledge about what is occurring and what is likely to occur. In this context 'the coming of age' for CEPAR referred to in the Director's report could not have come at a better time.

During 2013, as noted in John Piggott's Director's report, CEPAR has developed critical mass in research capability, a working model for undertaking multidisciplinary research, channels for dissemination, a passion for research impact, and a finely tuned strategy setting out where it wants to be and how it's going to get there. A key element of this strategy is engagement at all stages including informing the research agenda, providing input and support for the research process, helping to develop new research capability, dissemination of output and taking on the ideas in business and policy responses. A key role of the Advisory Board is to assist in this process and I'm pleased to report that considerable progress has been made in this area during 2013. In this regard thanks must go to our Advisory Board and also Leaders' Forum members.

During the year the Advisory Board and Leaders Forum' members collectively and individually assisted in the engagement process through their involvement in the development and review of the strategic plan, participating in conferences, as attendees and/or speakers (including CEPAR's 1st International conference and the CEPAR-RIPPA conference), organising and/or hosting forums to discuss ideas and share knowledge, and by supporting and/or participating in research. Of particular note:

- AMP hosted the 'Asia in the Ageing Century' Research Briefs release and worked closely with CEPAR on the development of an ARC Linkage grant proposal
- PwC worked closely with Michael Sherris on longevity research
- George Savvides, CEO of Medibank Private, and Heather Ridout, Reserve Bank Board Member, spoke at the Industry Day during the 1st CEPAR International Conference
- FaHCSIA invited CEPAR researchers to participate in its annual Social Policy Research Workshop and lent valuable support for a funding submission for an Australian Health and Retirement Survey
- Treasury invited John Piggott to give a seminar and participate in a roundtable on reform in the finance sector.
- Bain & Co and Evello Partners assisted with the development of the strategy
- National Seniors participated in our conferences and actively promoted CEPAR research through its members' network.

The Industry Day at the CEPAR Conference aimed to broaden the engagement process and was a great success attracting over 100 people from government, business, academia and community groups. More such events are planned for the future as is the use of all forms of media to spread the message and engage with the broader community.

The appointment in 2014 of CEPAR Directors of Research Engagement at both the UNSW and ANU nodes will facilitate an even greater level of engagement between the research community and end user stakeholders. The involvement of the Advisory Board in reviewing and informing future research briefs will enhance this important means of knowledge dissemination.

CEPAR, its researchers and administrative staff, deserve to be congratulated on what has been achieved so far and encouraged and supported as they seek to develop a sustainable model that will see CEPAR research continue beyond the first term of the ARC Centre of Excellence grant period.

The advisory bodies plan to continue and deepen their engagement through 2014 to assist CEPAR to realise the opportunities presented by its excellent research capability and influence matched against a pressing and significantly issue – population ageing.

Marc de Cure

ACTIVITY PLAN FOR 2014

In 2014, CEPAR will continue to harness the capabilities of its high quality and well-focused research team to consolidate its position as a leading authority in multidisciplinary population ageing research. We will focus on our priority areas of research; produce high quality research on issues that matter and disseminate output to those that can use it to drive impact; contribute to key agendas, policy initiatives, and product development; expand global collaborative networks; and build research capacity and capability to ensure CEPAR's sustainability.

RESEARCH

Research in 2014 will be advanced on a number of topics consistent with the five key areas of research focus identified in the CEPAR Strategic Plan:

1 UNDERSTANDING DEMOGRAPHIC CHANGE AND SUSTAINABILITY: POPULATION DYNAMICS, POLICY ANALYSIS AND ASSESSMENT OF REFORMS

Explaining cross-national differences in expectation of life by examining cohort trends in age, sex and cause-specific mortality

Developing a publicly accessible database containing a wide range of information about the Australian aged population and its characteristics. This database will be employed to develop estimates of future needs for aged care services, nationally and locally

Assessing current Australian retirement policy settings and the impacts of reforms

Analysing the implications of population change for taxation design including means-testing retirement transfers

Assessing the behavioural and welfare impacts of the means-tested Age Pension in overlapping generations models

Understanding ageing in Asia

- Pension reform in China
- Comparative analyses of healthy life expectancies in China, India and possibly other Asian countries
- The demography of population ageing across Asia, especially Indonesia

2 ANALYSING LONGEVITY AND MORBIDITY: DETERMINANTS, COVARIATES, PROJECTIONS AND RISK MANAGEMENT

Decomposing the fiscal impacts of demographic change into fertility, longevity and immigration influences

Modelling health states as well as systematic mortality improvement trends

Constructing longitudinal models of health and disability risk factors to determine the significance of systematic trends after allowing for time varying risk factors

Applying cohort based mortality models to innovations in the design of longevity insurance and pension products including variable annuities and group risk-sharing arrangements

Applying mortality forecasting methods to better understand macro-level drivers of increasing longevity

3 INVESTIGATING HEALTH AND WELLBEING IN LATER LIFE: DETERMINANTS AND IMPACTS

Examining the changes in and movements of older populations and neighbourhoods using small area data to inform analyses of the resources and access to services influencing independence, health outcomes and wellbeing of older people

Evaluating the burden of vision and hearing impairment and how this relates to cognitive decline, quality of life, cognitive health expectancy, driving and mobility

Assessing the impact of licensing laws on driving participation and its policy implications

Examining the impact of demographic and lifestyle factors on cognitive health expectancies

Assessing the impact of falling edentulism on oral health service use by older people, associated enablers and barriers, and health condition covariates

Continuing analysis of

- Lifestyle influences on healthy ageing and chronic disease using updated data from the Melbourne Longitudinal Studies on Healthy Ageing program (MELSHA) focusing on wellbeing, mental health, trajectories of change, and service use
- Attitudes to ageing using 2010 data plus preliminary planning for a follow up survey in 2015 or 2016 to identify the effects of recent economic and policy change
- Linked hospital use and 45 and Up data to investigate health and community care service use

4   EVALUATING RESOURCES IN RETIREMENT:
     INCOME, HEALTH AND SOCIAL SERVICES

Analysing optimal decision making about retirement and
product choice emphasising longevity and health risks

Mapping aged care and other service use in relation
to individual and contextual influences

Investigating investment strategies and the role of
housing in financing retirement and aged care needs

Exploring issues related to the construction of post-
retirement income in the framework of evolving longevity
and financial aspects of retirement risk and decision making

Reviewing the multi-dimensional literature on workplace
pensions to clarify their role in resourcing retirement
in the context of an ageing demographic

Assessing the elimination of retirement earnings
tests for labour force participation: The case of Norway's
pension reforms

Evaluating the effect of Age Pension policies on
retirement decisions, asset allocation, and bequest
behaviours in Australia

Investigating the implications of cognitive impairment
for current and proposed policies relating to Age
Pension eligibility

Examining ways to build behavioural economic models
incorporating confusion and cognitive limitation into
the choice process

Understanding the driving forces behind intergenerational
monetary transfers and informal care provided by
children in retirement

5   ASSESSING PRODUCTIVE AGEING: INCLUSION, HEALTH
     AND HUMAN CAPITAL, LABOUR FORCE PARTICIPATION
     AND SOCIAL PARTICIPATION

Assessing the costs and benefits of lifestyle risk reduction
in relation to healthy ageing outcomes such as cognitive
function and disability

Isolating the impacts of individual lifestyle and
health-promoting behaviours on preserving cognition
and quantifying these effects in terms of the economic
welfare of older individuals

Investigating the effect of intergenerational solidarity
on health dynamics and wealth decumulation in old age

Analysing levels and patterns of social participation
among demographic groups

Continued monitoring of trends in labour force participation
at older ages and their determinants

Developing and estimating stochastic models of lifetime
labour supply and asset allocation for Australian households

Assessing the effects of the human capital accumulation
process on labour supply and retirement decisions in
the Australian context

Simulating Australian tax policies and retirement benefit
schemes in the presence of human capital effects

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ACTIVITY PLAN FOR 2014

ENGAGEMENT AND OUTREACH

A number of events are planned in 2014 to stimulate discussion on the issue; engage with industry, government and the global research community; and raise the profile of the Centre.

A joint Policy Dialogue, hosted in conjunction with the Crawford School of Public Policy, is planned for July 2014. The event will follow the successful formula developed for the inaugural CEPAR-Crawford Policy Dialogue in late 2012 by bringing together researchers, policymakers and practitioners.

In November CEPAR Chief Investigators Kendig, Anstey, McDonald and Piggott together with colleague Jan Pakulski, will convene the 2014 Academy of Social Sciences Annual Symposium, working closely with the Academy's Policy and Advocacy Committee and all four disciplinary panels. CEPAR researchers will join national and international experts to address the long-term challenges and opportunities of an ageing Australia in a one day symposium on 'Population Ageing and Australia's Future.' It is expected that the Symposium will generate an edited book.

A roundtable with CEPAR's government partners is planned for mid-2014. The event will provide a forum for CEPAR researchers and policymakers to present their latest findings and engage in discussion about two issues of national importance: means-tested pensions and aged care policy.

CEPAR will sponsor two invited symposia, based on CEPAR research programs, as part of the International Association of Sociology World Congress in Yokohama, Japan. The symposium 'Life Course Influences on Inequalities in Later Life: Comparative Perspectives' is being organised by CEPAR Chief Investigator Hal Kendig and Partner Investigator James Nazroo. 'Population ageing, work and care-giving responsibilities in four liberal democracies' is being convened by CEPAR Associate Investigator Kate O'Loughlin in collaboration with international colleagues from England, Canada and New Zealand. Special journal issues based on the presentations are expected to be produced.

Work will continue on a *Handbook of Population Aging Research*, to be published by Elsevier, edited by John Piggott and Alan Woodland. Delivery of the final manuscript is expected in 2015. The book *Ageing Australia: Opportunities and Challenges*, edited by Kate O'Loughlin, Colette Browning, and Hal Kendig, will be submitted to the publisher, Springer, during 2014. These books will bring CEPAR research to a wider audience of professionals, policymakers, and advanced students.

CEPAR will also continue to support a number of regular events including the annual Colloquium of Superannuation Researchers, the Summer Workshop in the Economics of Health and Ageing and a monthly seminar series.

Two newly appointed Directors of Research Engagement, one based at the UNSW CEPAR node and the other at the ANU node, will crystallise our focus on encouraging engagement between Centre researchers and end users. The Directors will work with stakeholders to identify particular areas of interest and suitable modes of engagement (e.g., roundtable discussion, boardroom briefing) as well as organise the participation of CEPAR personnel in these activities. In particular, the Directors will actively promote the involvement of CEPAR students and Early Career Researchers (ECRS) in interactions with business and government.

INTERNATIONAL NETWORKS

Consistent with the recommendation of our Scientific Advisory Committee, we will continue to focus on building and enhancing links with Asia, particularly China and Indonesia. A possible link with the Oxford Institute of Ageing will also be explored.

Distinguished visitors expected in 2014 include Professors Carol Jagger (Newcastle, UK), Olivia Mitchell (Wharton), Robert Holzmann (Malaya), Becca Levy (Yale), Allan Walker (Sheffield), and Simen Markussen and Eric Hernaes (Frisch).

MENTORING

The suite of mentoring programs developed by CEPAR to engage ECRs, Higher Degree Research and Honours students will continue to be offered in 2014. Professor Carol Jagger will convene an ECR workshop on modelling health expectancies using longitudinal data in June; a Population Ageing Research stream of the National Honours Colloquium will be mounted in August; and we will continue to support the activities of the Emerging Researchers in Ageing initiative.

CEPAR will be the driving force behind the 2014 Graduate Conference on Population Ageing to be held at UNSW in November. An initiative of the Australian Group of Eight and Chinese 'C9' universities, the annual graduate conference offers an outstanding opportunity for Australian and Chinese PhD students to present and share their work on this important issue.

SECTION 1

GOVERNANCE & STRUCTURE

GOVERNANCE

The governance structure of the Centre supports strategic development as well as engagement between researchers, industry and 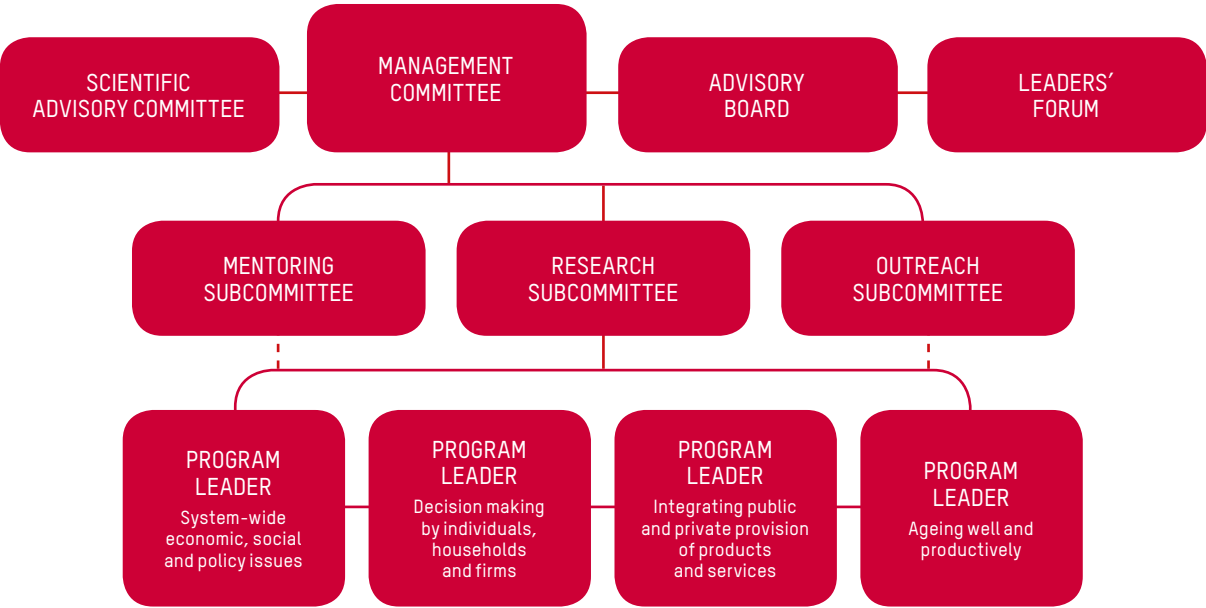government. Central to CEPAR's governance are the Centre Director and the Management Committee who have overall responsibility for Centre performance, holding ultimate accountability for all aspects of Centre activity. The Scientific Advisory Committee, Centre Advisory Board and the Leaders' Forum provide the Management Committee with external perspectives on the formulation of research programs, their implementation, and the dissemination of research outcomes. Three subcommittees – focused on research management, mentoring, and outreach – support the Management Committee.

CEPAR ORGANISATIONAL CHART

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│   SCIENTIFIC    │   │ MANAGEMENT  │   │  ADVISORY   │   │  LEADERS'   │
│ ADVISORY        │───│ COMMITTEE   │───│   BOARD     │───│   FORUM     │
│ COMMITTEE       │   │             │   │             │   │             │
└─────────────────┘   └─────────────┘   └─────────────┘   └─────────────┘

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    │  MENTORING   │   │   RESEARCH   │   │   OUTREACH   │
    │ SUBCOMMITTEE │   │ SUBCOMMITTEE │   │ SUBCOMMITTEE │
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┌──────────────┐ ┌──────────────┐ ┌──────────────┐ ┌──────────────┐
│   PROGRAM    │ │   PROGRAM    │ │   PROGRAM    │ │   PROGRAM    │
│   LEADER     │ │   LEADER     │ │   LEADER     │ │   LEADER     │
│ System-wide  │ │ Decision     │ │ Integrating  │ │ Ageing well  │
│ economic,    │ │ making       │ │ public       │ │ and          │
│ social       │ │ by           │ │ and private  │ │ productively │
│ and policy   │ │ individuals, │ │ provision    │ │              │
│ issues       │ │ households   │ │ of products  │ │              │
│              │ │ and firms    │ │ and services │ │              │
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SCIENTIFIC ADVISORY COMMITTEE

The Scientific Advisory Committee comprises a core group of international leaders in the area of population ageing, drawn from a range of fields reflecting the Centre's multidisciplinary nature.

It provides advice on the strategic direction of the Centre from a global perspective, with emphasis on research programs. Members of the Committee actively build the international profile of the Centre and identify potential international partners and linkage opportunities.

The Scientific Advisory Committee met for the first time in 2013. The Committee was asked to consider the extent to which CEPAR has fulfilled its mission and objectives; the strength of the research program and quality of outcomes to date; the Centre's strategy; and future directions for research.

The meeting took place during the Centre's inaugural international conference, providing an opportunity for some of the Committee members to participate in the conference as well as engage in depth with the Centre's research and personnel.

The Committee commended the 'leadership and staff of CEPAR for its rapid growth, high-quality research production, and sophisticated set of approaches in studying complex societal issues driven or caused by population ageing'. The Committee also noted that

much work is yet to be done and made a series of recommendations aimed at better positioning the Centre to generate greater long-term impact. In addition to making a number of suggestions regarding areas of increased research focus, the Committee also recommended the Centre:

- Reflect upon the process whereby the Centre's themes and programs were identified and how its research themes and programs will realise outcomes that are truly of international significance
- Move further towards realising the promise of interdisciplinary research by seeking ways to bridge the logic and methods of the social sciences with the insights and findings of the biological and medical sciences, within the parameters of an ARC funded centre
- Establish a longitudinal survey on ageing harmonised with comparable surveys from other countries, allowing CEPAR to be at the centre of the issue and support a holistic view of ageing

- Build a stronger international presence through publishing as a group in high quality respected journals
- Further develop research projects on matters that concern the private sector and what it has to offer
- Connect to other institutions and networks and more strongly focus on Asia.

The Scientific Advisory Committee comprises:

Professor David E. Bloom, Harvard School of Public Health

David E. Bloom is Clarence James Gamble Professor of Economics and Demography in the Department of Global Health and Population, Harvard School of Public Health and is Director of Harvard's NIA-funded Program on the Global Demography of Aging. He is also a Faculty Research Associate at the National Bureau of Economic Research, Research Fellow at IZA in Bonn, an elected Fellow of the American Academy of Arts and Sciences, a member of the Boards of Directors of PSI and JSI, and a member of the Board of Trustees of amfAR. In addition, Bloom currently

serves as Chair of the World Economic Forum's Global Agenda Council on Education and Skills. Dr Bloom is an economist and demographer whose work focuses on health, demography, education, and labour. In recent years, he has written extensively on primary, secondary, and tertiary education in developing countries and on the links among health status, population dynamics, and economic growth. Dr Bloom has published more than 350 articles, book chapters, and books.

Professor Gordon Clark, Oxford University

Gordon L. Clark DSc FBA is Professor and Director of the Smith School of Enterprise and the Environment at the University of Oxford with cross-appointments in the Saïd Business School and the School of Geography and the Environment. He holds a Professorial Fellowship at St Edmund Hall, is the Sir Louis Matheson Distinguished Visiting Professor at Monash University's Faculty of Business and Economics, and is a Visiting Professor at Stanford University's Global Projects Center. Previous academic

appointments have been at Harvard's Kennedy School of Government, the University of Chicago, Carnegie Mellon's Heinz School and Monash University. His research on the investment management industry focuses on the governance structure and decision making performance of pension funds, endowments, and sovereign wealth funds. He is interested in the behaviour of investors as regards long-term sustainable investment which involves research on institutions' proxy-voting, strategies of corporate engagement, the sensitivity of firms to brand image and reputation, and the regulation of corporate disclosure on issues related to environmental liabilities and social responsibility. His current research focuses upon the governance of investment decision making in the context of market volatility and long-term obligations.

Professor Yasuhiko Saito, Nihon University

Yasuhiko Saito is a Professor at the Advanced Research Institute for the Sciences and Humanities at Nihon University, Tokyo, Japan. His areas of specialisation are demography, ageing

and health. His collaborative work extends throughout more than 20 countries. Over the past 10 years, he has conducted a five-wave national longitudinal survey on ageing and health in Japan. More recently, he conducted a national survey in the Philippines and supported surveys in Singapore and India. He is currently participating in a five country comparative study of centenarians, including France, Denmark, Sweden, Switzerland, and Japan.

Professor Merril Silverstein, Syracuse University

Merril Silverstein, PhD, is the inaugural holder of the Marjorie Cantor Chair in Aging Studies at Syracuse University with appointments in the Department of Sociology at the Maxwell School of Citizenship and Public Affairs, and in the School of Social Work. He received his doctorate in sociology from Columbia University. His research primarily focuses on ageing within the context of family life, including intergenerational relationships over the life-course and international perspectives on ageing families. He has more than 140 publications on various topics in social gerontology,

GOVERNANCE

including the edited books *Intergenerational Relations across Time and Place*, *Handbook of Theories of Aging*, and *Kin and Cohort in an Aging Society*. He was until 2012 principal investigator of the Longitudinal Study of Generations, a project that tracked multigenerational families over four decades, and has projects in China, Sweden, the Netherlands, and Israel on topics of ageing and intergenerational relations. He is a Fellow of the Gerontological Society of America, the Brookdale National Fellowship Program, and the Fulbright International Senior Scholars Program, and currently serves as editor-in-chief of the *Journal of Gerontology: Social Sciences*.

ADVISORY BOARD

The chief role of the Advisory Board is to facilitate two-way engagement between stakeholders and researchers. Board members provide independent advice to the Management Committee with regard to strategy and external relations; facilitate the Centre's engagement with relevant stakeholders; identify new opportunities for engagement; and act as advocates and champions of CEPAR.

The Board comprises delegates of organisations providing financial support to CEPAR, along with a broader membership representing research, policy and community groups. Members are appointed by the Director in consultation with the Chair and Management Committee, for a term of three years.

Board members seek to both facilitate and enable the achievement of the Centre's mission and objectives by bringing their expertise and experience to bear. Members play an active role in strengthening links between academe, industry, government and the not-for-profit sector by participating in a range of activities which may include:

- Serving on a task force or working party to examine a specific issue
- Supporting executive development and corporate education programs
- Developing and hosting events such as symposia, fora, and conferences
- Participating in fundraising and sponsorship activities
- Mentoring staff and researchers

- Facilitating access to data, information or people to facilitate research projects
- Facilitating the transfer of knowledge from research into practical application in business, government, or the not-for-profit sector.

In 2013, the Board met as a group on August 6 to discuss CEPAR's strategic plan and opportunities for engagement. Feedback on the draft strategic plan was extremely constructive, with members providing advice on sustainability, long-term positioning, branding and end user needs. During a broad discussion on engagement, the Board commended CEPAR on the production of the research briefs and members expressed keen interest in being involved in the selection of future topics as well as the framing of content. Our government partners discussed the value of CEPAR delivering research in a format tailored for policymakers and agreed that briefing CEPAR on issues of potential concern to government over the medium and/or long-term horizon would be beneficial in shaping CEPAR's research program. Keeping community groups informed was also seen as an important goal

for CEPAR and the Board had a number of suggestions as to the best ways to facilitate this. The Board resolved that in future years it should meet biannually.

In addition to the 6 August meeting, the Director and Chair met bilaterally with individual members on a number of occasions to discuss particular issues.

LEADERS' FORUM

The Leaders' Forum provides engagement, leadership and support for CEPAR. It comprises the CEOs of some of Australia's largest corporations, professional and community organisations, and senior federal departmental Secretaries.

The Forum is a conduit for industry and government to help shape the research agenda on demographic change. Established in 2004 to support the Australian Institute for Population Ageing Research at UNSW, it provides high level strategic insight and facilitates engagement with end users. The Leaders' Forum was vital in securing industry and government support for the bid as well as being instrumental in the formulation of the CEPAR research agenda. Together with the Advisory Board, it will play an ongoing role in the engagement process.

> The calibre and breadth of representation of this group is strong testimony to the significance of population ageing as an issue and to the group's recognition of the need for transformational research

MARC DE CURE, CHAIR OF THE LEADERS' FORUM

ADVISORY BOARD MEMBERS

MARC DE CURE	Chair
HELEN BARTLETT	Pro Vice-Chancellor, Monash University Malaysia and Convenor, Emerging Researchers in Ageing Initiative
STEPHEN BUNKER	Research Consultant, Medibank
JONATHAN DEANE	General Manager Group Strategy, AMP
ANNE GORDON	CEPAR Director of Operations
ROB HEFEREN	Executive Director, Revenue Group, The Treasury
CATHERINE NANCE	Partner, PricewaterhouseCoopers
JOHN PIGGOTT	CEPAR Director
TIM ADAIR	Director, Productive Ageing Centre, National Seniors Australia
EDWARD WHITEHOUSE	CEPAR Associate Investigator (formerly Principal Administrator, Directorate for Employment, Labour and Social Affairs, OECD)
SERENA WILSON	Deputy Secretary, Department of Social Services (formerly FaHCSIA)

LEADERS' FORUM MEMBERS

MARC DE CURE	Chair
JENNIFER ALEXANDER	Royal Australasian College of Physician
CAMERON CLYNE	National Australia Bank
CRAIG DUNN	AMP
LES FIELD	UNSW
JANE HALTON	Department of Health
JEFF HARMER	formerly Department of Families, Housing, Community Services and Indigenous Affairs
KEN HENRY AC	Australian National Institute of Public Policy
MARK JOHNSON	formerly PricewaterhouseCoopers Australia
JOHN LAKER	Australian Prudential Regulatory Authority
JOHN PIGGOTT	CEPAR Director
MATTHEW QUINN	formerly Stockland
HEATHER RIDOUT	AustralianSuper
GEORGE SAVVIDES	Medibank Private
GLENN STEVENS	Reserve Bank of Australia

MARC DE CURE
CHAIR, ADVISORY BOARD
AND LEADERS' FORUM

Marc de Cure has long recognised the social and economic significance of demographic change and the need to undertake and promulgate research to inform government policy, and social and commercial responses. He played a key role in the establishment of the Leaders' Forum in 2004 and, as its Chair, was pivotal in securing industry and government support for the Centre of Excellence bid in 2010.

Marc is a non-executive company Director and business advisor and previously held senior executive roles in leading financial and professional services groups across Australia and Asia. He was AIA Group CFO and AMP Group CFO, Executive General Manager Strategy & Development and Executive Director of its main operating subsidiaries.

In professional services Marc was a senior Partner with PwC including Chairman of the Australian Financial Services practices, and more recently he was a Principal Advisor with Bain & Company.

Marc serves on the Business Advisory Council and the Executive Committee of the Australian School of Business at UNSW. He holds a Bachelor of Commerce (Honours) from UNSW, a Master of Wine Quality from UWS and is a Fellow of the Institute of Chartered Accountants in Australia.

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GOVERNANCE

MANAGEMENT COMMITTEE

The role of the Management Committee is to oversee all operational matters, including budget management, approval of specific major programs, selection of postdoctoral fellows and postgraduate students, approval of visitors and organisation of workshops and courses. In strategic planning, the Committee seeks high level advice from the Centre Advisory Board, Scientific Advisory Committee and Leaders' Forum.

In 2013, the Committee comprised

JOHN PIGGOTT	Centre Director (Chair)
ROBERT CUMMING	Chief Investigator and University of Sydney Node Leader
PETER MCDONALD	Deputy Director and Australian National University Node Leader
ALAN WOODLAND	Chief Investigator and University of New South Wales Node Leader
HAL KENDIG	Chief Investigator
ANNE GORDON	Director of Operations

The Committee meets formally at least four times a year. Consultation also takes place via email and teleconferencing. In 2013, the Committee met on 21 March, 4 July, 9 September and 3 December.

The Management Committee is supported by three subcommittees:

RESEARCH SUBCOMMITTEE

The Research subcommittee is responsible for reviewing the progress of the research programs on a regular basis, identifying opportunities for cross-program collaboration, and recommending remedial action where required. Chaired by the Centre Director, its membership comprises all the Chief Investigators and the Director of Operations.

In 2013, the subcommittee met on 7 May, 27 August and 4 November.

MENTORING SUBCOMMITTEE

The Mentoring subcommittee oversees the Honours, Higher Degree Research and Early Career Researcher (ECR) programs and events, and provides advice on innovation in these arenas. It is focused on developing policies and programs to support students and ECRs affiliated with CEPAR as well as those around the country working on ageing issues.

The subcommittee is chaired by CEPAR Deputy Director, Peter McDonald and in 2013 consisted of the Centre Director, the Director of Operations plus Associate Investigator Kate O'Loughlin and Early Career Researchers Daniel Alai, Craig Blackburn, Isabella Dobrescu and Katja Hanewald. The subcommittee met on 30 April, 20 August and 4 November, 2013.

OUTREACH SUBCOMMITTEE

The Outreach subcommittee oversees events, the distinguished visitors program, and monitors the production of research briefs and other initiatives designed to communicate research findings to the wider community.

Three meetings, chaired by Chief Investigator Michael Sherris, were held on 23 April, 13 August and 22 October 2013. Membership comprised the Centre Director, the Director of Operations, CEPAR's Communications and Marketing Manager, Melanie Brake, plus Early Career Researchers Rafal Chomik, Ramona Meyricke and Kerry Sargent-Cox.

STRUCTURE

CEPAR is based at the University of New South Wales (UNSW) with nodes at the University of Sydney and the Australian National University (ANU). It is strongly supported by a number of key government, industry and international university partners.

NODES

The UNSW node, led by Scientia Professor Alan Woodland, is hosted by the Australian School of Business.

The ANU node consists of teams based in the Centre for Research on Ageing, Health and Wellbeing and the Crawford School of Public Policy. Professor Peter McDonald, the Centre's Deputy Director, serves as ANU Node Leader.

The University of Sydney node consists of teams in the School of Public Health and the Ageing, Work and Health Research Unit. Professor Robert Cumming leads the University of Sydney node.

All eight Chief Investigators and many of the Centre's Associate Investigators are based at one of the three nodes. Within Australia, Associate Investigators are also based at Flinders University, Monash University, the University of Newcastle and the University of Technology, Sydney.

PROGRAM LEADERS

The research program is organised into four different, but intimately connected, strands each headed by a Program Leader.

SYSTEM-WIDE ECONOMIC, SOCIAL AND POLICY ISSUES

Program Leader: Scientia Professor Alan Woodland, School of Economics, Australian School of Business, University of New South Wales

DECISION MAKING BY INDIVIDUALS, HOUSEHOLDS AND FIRMS

Program Leader: Professor Michael Keane, School of Economics, Australian School of Business, University of New South Wales

INTEGRATING PUBLIC AND PRIVATE PROVISION OF PRODUCTS AND SERVICES

Program Leader: Professor Michael Sherris, School of Risk and Actuarial Studies, Australian School of Business, University of New South Wales

AGEING WELL AND PRODUCTIVELY

Program Leader: Professor Hal Kendig, Centre for Research on Ageing, Health and Wellbeing, Australian National University

INTERNATIONAL UNIVERSITY PARTNERS

Our partner investigators are drawn from five world-class research organisations:

The University of Manchester

The University of Newcastle, United Kingdom

The Institute for Fiscal Studies

The Wharton School

The University of Pennsylvania

Through our internationally based Associate Investigators and joint research initiatives we are connected to the following key research institutions:

Chinese Academy of Social Sciences

Harvard University

Indian Statistical Institute

Indonesian National Population and Family Planning Board

Network for Studies on Pensions, Aging and Retirement (Netspar)

Oxford University

Pennsylvania State University

Ragnar Frisch Centre for Economic Research, Oslo

Research Institute for Policies on Pension and Aging (RIPPA)

St Gallen University

Southwestern University of Finance and Economics

Statistics Indonesia

Tsinghua University

United Nations Population Fund

University of Naples Federico II

University of Parma

University of Trieste

Zhejiang University

INDUSTRY AND GOVERNMENT PARTNERS

CEPAR is actively engaged with a range of influential government and industry partners to cooperatively deliver outcomes to meet the challenges and opportunities of population ageing. These include:

The Treasury

Department of Health (formerly DoHA)

Department of Social Services (formerly FaHCSIA)

NSW Trade and Investment

AMP

Bain & Company

Medibank

NAB

PricewaterhouseCoopers

Stockland

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CENTRE PERSONNEL

CHIEF INVESTIGATORS

Scientia Professor John Piggott (Centre Director)
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

Professor Peter McDonald (Deputy Director)
Australian Demographic and Social Research Institute (until 30 June 2013)
Crawford School of Public Policy (from 1 July 2013)
AUSTRALIAN NATIONAL UNIVERSITY

Professor Kaarin J. Anstey
Centre for Research on Ageing, Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Professor Robert Cumming
School of Public Health and Centre for Education and Research on Ageing
UNIVERSITY OF SYDNEY

Professor Michael Keane
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES
Nuffield College
OXFORD UNIVERSITY

Professor Hal Kendig
Centre for Research on Ageing, Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Professor Michael Sherris
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

Scientia Professor Alan Woodland
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

PARTNER INVESTIGATORS

Professor Richard Disney
INSTITUTE FOR FISCAL STUDIES

Professor Hanming Fang
Department of Economics
UNIVERSITY OF PENNSYLVANIA

Professor Carol Jagger
Institute of Ageing and Health
UNIVERSITY OF NEWCASTLE, UK

Professor Olivia S. Mitchell
Wharton School
UNIVERSITY OF PENNSYLVANIA

Professor James Nazroo
School of Social Sciences
UNIVERSITY OF MANCHESTER

HONORARY PROFESSOR

Professor Robert Holzmann
Social Security Research Center
UNIVERSITY OF MALAYA

ASSOCIATE INVESTIGATORS[1]

Dr Daniel Alai
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

Professor Garry Barrett
School of Economics
UNIVERSITY OF SYDNEY

Professor Helen Bartlett
Emerging Researchers in Ageing (ERA) Initiative
MONASH UNIVERSITY

Professor Hazel Bateman
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

A/Professor Heather Booth
Australian Demographic and Social Research Institute
AUSTRALIAN NATIONAL UNIVERSITY

Professor Colette Browning
School of Primary Health Care
MONASH UNIVERSITY

Professor Monika Bütler
Department of Economics
UNIVERSITY OF ST GALLEN

A/Professor Peter Butterworth
Centre for Research on Ageing, Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Professor Julie Byles
Research Centre for Gender, Health and Ageing
UNIVERSITY OF NEWCASTLE

Dr Nicolas Cherbuin
Centre for Research on Ageing, Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Dr Dimitris Christelis
Centre for Studies in Economics and Finance
UNIVERSITY OF NAPLES FEDERICO II

Professor Lindy Clemson
Ageing, Work and Health Research Unit, Faculty of Health Sciences
UNIVERSITY OF SYDNEY

A/Professor John Evans
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

Professor Denzil Fiebig
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

Professor Bob Gregory
College of Business and Economics
AUSTRALIAN NATIONAL UNIVERSITY

Dr Katja Hanewald
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES (UNTIL JULY 2013)
GERMAN FEDERAL MINISTRY OF FINANCE (FROM AUGUST 2013)

Professor Erik Hernaes
Ragnar Frisch Centre for Economic Research
UNIVERSITY OF OSLO

A/Professor Elisabetta Magnani
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

Dr Simen Markussen
Ragnar Frisch Centre for Economic Research
UNIVERSITY OF OSLO

Dr Ramona Meyricke
SWISS RE LIFE & HEALTH AUSTRALIA (FROM JUNE 2013)

Professor Annamaria Olivieri
Department of Economics
UNIVERSITY OF PARMA

A/Professor Kate O'Loughlin
Ageing, Work and Health Research Unit, Faculty of Health Sciences
UNIVERSITY OF SYDNEY

Professor Ermanno Pitacco
Faculty of Economics
UNIVERSITY OF TRIESTE

Professor Pradeep Ray
Australian School of Business
UNIVERSITY OF NEW SOUTH WALES

Dr Renuka Sane
INDIAN STATISTICAL INSTITUTE

Dr Kerry Sargent-Cox
Centre for Research on Ageing, Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY (FROM OCTOBER 2013)

Professor Elizabeth Savage
Centre for the Study of Choice
UNIVERSITY OF TECHNOLOGY, SYDNEY

Professor Martin Sliwinski
Gerontology Center
PENNSYLVANIA STATE UNIVERSITY

Professor Noriyuki Takayama
RESEARCH INSTITUTE FOR POLICIES ON PENSION AND AGEING, JAPAN

Professor Peter Whiteford
Crawford School of Public Policy
AUSTRALIAN NATIONAL UNIVERSITY

Mr Edward Whitehouse
Pension Economist

Dr Tim Windsor
School of Psychology
FLINDERS UNIVERSITY

Dr Rong Zhu
National Institute of Labour Studies
FLINDERS UNIVERSITY

SENIOR RESEARCH FELLOWS

Rafal Chomik
UNIVERSITY OF NEW SOUTH WALES

Dr Fedor Iskhakov
UNIVERSITY OF NEW SOUTH WALES

Dr Ralph Stevens
UNIVERSITY OF NEW SOUTH WALES

Dr Chris Strickland
UNIVERSITY OF NEW SOUTH WALES

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[1]   Not all Associate Investigators were actively involved in the research program in 2013

RESEARCH FELLOWS

Dr Craig Blackburn
UNIVERSITY OF NEW SOUTH WALES
(FROM MAY 2013)

Dr Elena Capatina
UNIVERSITY OF NEW SOUTH WALES

Dr Xiaodong Fan
UNIVERSITY OF NEW SOUTH WALES

Dr Joelle Fong
UNIVERSITY OF NEW SOUTH WALES

Dr J Lynn Francis
UNIVERSITY OF NEWCASTLE

Dr Cathy Gong
AUSTRALIAN NATIONAL UNIVERSITY

Dr Vasant Hirani
UNIVERSITY OF SYDNEY

Dr George Kudrna
UNIVERSITY OF NEW SOUTH WALES

Dr Vanessa Loh
UNIVERSITY OF SYDNEY

Dr Bei Lu
UNIVERSITY OF NEW SOUTH WALES

Dr Shiko Maruyama
UNIVERSITY OF NEW SOUTH WALES
(UNTIL 4 DECEMBER 2013)

Dr Ramona Meyricke
UNIVERSITY OF NEW SOUTH WALES
(UNTIL JUNE 2013)

Dr Kerry Sargent-Cox
AUSTRALIAN NATIONAL UNIVERSITY
(UNTIL 14 OCTOBER 2013)

Dr Yang Shen
UNIVERSITY OF NEW SOUTH WALES

Dr Ariane Utomo
AUSTRALIAN NATIONAL UNIVERSITY
(UNTIL NOVEMBER 2013)

Dr Yan Yu
AUSTRALIAN NATIONAL UNIVERSITY

CEPAR – DECRA RESEARCH FELLOWS

Dr Richard Burns
AUSTRALIAN NATIONAL UNIVERSITY

Dr Loretti Isabella Dobrescu
UNIVERSITY OF NEW SOUTH WALES

Dr Meimanat Hosseini-Chavoshi
AUSTRALIAN NATIONAL UNIVERSITY

Dr Cagri Kumru
AUSTRALIAN NATIONAL UNIVERSITY

Dr Olena Stavrunova
UNIVERSITY OF TECHNOLOGY, SYDNEY

Dr Chung Tran
AUSTRALIAN NATIONAL UNIVERSITY

RESEARCH ASSISTANTS/ PROJECT MANAGERS

Craig Blackburn
Research Assistant
UNIVERSITY OF NEW SOUTH WALES
(UNTIL MARCH 2013)

Catherine Chojenta
Project Manager
UNIVERSITY OF NEWCASTLE

Trina Chuang
Research Assistant
AUSTRALIAN NATIONAL UNIVERSITY

Heather Crawford
Research Assistant
AUSTRALIAN NATIONAL UNIVERSITY

Lisa Enright
Research Assistant
AUSTRALIAN NATIONAL UNIVERSITY

Jun Feng
Research Assistant
UNIVERSITY OF NEW SOUTH WALES

Karla Heese
Research Assistant
UNIVERSITY OF SYDNEY

Vasvi Kapadia
Research Assistant
UNIVERSITY OF NEW SOUTH WALES

Andrew Kingston
Research Assistant
UNIVERSITY OF NEWCASTLE, UK

Alexandro Hoyen Lai
Research Assistant
UNIVERSITY OF NEW SOUTH WALES

Nina Lucas
Research Assistant
AUSTRALIAN NATIONAL UNIVERSITY

Mary MacLennan
Research Assistant
UNIVERSITY OF NEW SOUTH WALES
(UNTIL 5 NOVEMBER 2013)

Lei Shang
Research Assistant
UNIVERSITY OF NEW SOUTH WALES

Adam Wenqiang Shao
Research Assistant
UNIVERSITY OF NEW SOUTH WALES

ADMINISTRATIVE STAFF

Melanie Brake
Communications and
Marketing Manager
UNIVERSITY OF NEW SOUTH
WALES NODE

Amy Brushwood
Administrative Officer
UNIVERSITY OF NEW SOUTH
WALES NODE

Christel Cools
Executive Officer
AUSTRALIAN NATIONAL
UNIVERSITY NODE
(UNTIL 30 JUNE 2013)

Alicia Curtis
Administrative Assistant
AUSTRALIAN NATIONAL
UNIVERSITY NODE

Elsabè Edwards
Business Manager
AUSTRALIAN NATIONAL
UNIVERSITY NODE

Anne Gordon
Director of Operations
UNIVERSITY OF NEW SOUTH
WALES NODE

Jayne Groves
Program Administrator
UNIVERSITY OF SYDNEY NODE

Benjamin Li
Finance Officer
UNIVERSITY OF NEW SOUTH
WALES NODE

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Trina Merrell
Executive Assistant
AUSTRALIAN NATIONAL
UNIVERSITY NODE

Joyce Siu
Finance Officer
UNIVERSITY OF SYDNEY NODE

SECTION 2

RESEARCH &
RESEARCH TRAINING

STRAND 1

SYSTEM-WIDE ECONOMIC, SOCIAL AND POLICY ISSUES

Population ageing has national and global economic, social and policy impacts. It has implications for the economy through changes in wage rates, resource allocation, productivity and growth; for the social fabric in terms of changes in the spatial distribution of the population, the demand for social services and aged care, and social interactions; for financial product markets and retirement provision through changing longevity and morbidity; and for the government through increased expenditures required for age pensions, public health provision and the development of economic and social policy settings. Our research program covers these and other system-wide aspects of population ageing.

RESEARCH PROJECTS

STRAND 1   SYSTEM-WIDE ECONOMIC, SOCIAL AND POLICY ISSUES

Research pursued through 2013 continued to make significant inroads in penetrating and understanding trends in population dynamics, both in Australia and elsewhere. It included stochastic and forecasting models of population change, and investigations of causes of changes in mortality and fertility. System-wide policy analyses included modelling of the Australian economy with demographic uncertainty and fiscal impacts of population ageing. Policy oriented research emphasised aged care and housing. The impact of broadly held social attitudes towards ageing and the aged also received attention.

Two edited books are also being prepared which provide overarching perspectives on population ageing. The first focuses on the challenges of ageing in Australia. The second is a handbook for academics, policymakers and young researchers, providing the first analytic treatment of a range of topics in the Economics of Population Ageing.

- **POPULATION DYNAMICS AND FISCAL IMPACT**
Knowledge of population movements informs much CEPAR research. Projects focused on Australia's older population and the development of a database underpinning ageing research in Australia were considerably progressed through 2013. In addition, research on the impact of immigration on population ageing was completed. At the same time, new methods to improve forecasting and economy-wide assessment of policy are being developed. Stochastic forecasting of mortality, fertility and migration allow distributions of population and subpopulation outcomes to be generated which provide a firmer base for policy formulation. Innovations in complete models of the economy include the introduction of demographic uncertainty into such models, and the introduction of human capital decisions into economy-wide models. In separate work, demographic trends in Indonesia are being investigated. In addition, two specific projects study causative influences of change in both mortality and fertility.

- **AGED CARE**
Aged care policy continued as a major focus for both Government and CEPAR researchers throughout 2013. Projects progressed included microsimulation modelling of family based aged care, which explores the kinship structures most salient for informal care-giving using a large simulation model which captures health risk, and various age-related disabilities including cognitive impairment. Other projects examine the relationship between work and care, and explore the elements of the tension that many working people face between the demands of their employment and that of a family member with a disability, and how these tensions might be reduced with more flexible employment and retirement arrangements. Other projects refine the use of disability scales to improve their predictability of aged care use. A further project explores the feasibility of introducing I.T. infrastructure into aged care delivery.

- **ATTITUDES AND AGEING**
This topic captures attitudes in the broader community that have the potential to 'enable' (or not) policy and practice aimed to increasing productive and active ageing. It documents evidence that negative attitudes towards older people impinge on their opportunities as well as their social wellbeing. Population ageing places the relationship between generations under increasing strain, because the demands of informal care fall ever more heavily on the smaller number of children born in a low-fertility era, and because the fiscal demands associated with an ageing population mean either higher taxes or reduced non-age-related services. Research underway tries to relate negative views about older generations to fiscal stance, pointing to fiscal policy change that may support intergenerational relationships.

- **HOUSING**
Housing represents the highest-value asset class in Australia, but is routinely omitted from retirement studies. Two projects focus on housing – the first documenting housing demand in Australia, the second investigating equity release products such as reverse mortgages and their characteristics, especially relating to risk. The demand study uses projection methods to simulate housing demand for future demographic patterns. They therefore allow future supply shortfalls to be identified, suggesting either new initiatives on housing supply or redirected demand may be necessary. The equity release study shows that house price indices are a poor way of estimating the risk associated with idiosyncratic prices movements, and that failing to take into account cohort trends in longevity means that product providers underestimate longevity risk in pricing their products.

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STUDIES IN POPULATION DYNAMICS: FERTILITY, FAMILY AND LABOUR FORCE

RESEARCHERS
PETER MCDONALD
MEIMANAT HOSSEINI-CHAVOSHI

AUSTRALIA'S OLDER POPULATION: COHORT ANALYSIS OF DEMOGRAPHIC CHANGE AND DEVELOPMENT OF A DATABASE UNDERPINNING AGEING RESEARCH IN AUSTRALIA

These projects compile Australian aged population data related to ethnic background and citizenship, location, housing and living arrangements, extended family situation, health and disability status, income level and sources, wealth, education and work histories, labour force participation, expenditure patterns, engagement in volunteering and community activity, leisure and recreational activities, and values and attitudes of older Australians.

During 2013, work continued on the completion of these projects and the development of a tool through which other CEPAR researchers and researchers in general can access the database arising from these projects.

LABOUR FORCE PARTICIPATION AT OLDER AGES IN AUSTRALIA: TRENDS AND DIFFERENTIALS

In 2012, work was completed through this project on a comparison of the 2006 and 2011 censuses relating to labour force participation of Australians at older ages. This analysis was extended in 2013 to include analysis by state and territory, capital city and rest of state, and indigenous status. Increases in participation were observed for both sexes and for all age groups across all states and territories and in city and country areas. The increases were as great in geographic areas experiencing slow economic growth as in those experiencing more rapid growth. Indigenous people also experienced increases in labour force participation between the two censuses but the extent of growth was slower than for the non-indigenous population.

The results were presented in a public lecture at the Australian National University entitled 'Changes in Employment at Older Ages in Australia: Trends and Differentials' on 24 May 2013.

Work has continued on the monitoring of recent trends. While there were very strong upward movements in older-age labour force participation in the first decade of the 21st century, between July 2010 and July 2013, there was essentially no further increase in older-age participation for both men and women at all older ages. The next stage of analysis will be a consideration of why the strong early trend towards increased participation has stopped.

> While there were very strong upward movements in older-age labour force participation in the first decade of the 21st century, between July 2010 and July 2013, there was essentially no further increase in older-age participation for both men and women at all older ages

---

DR MEIMANAT HOSSEINI-CHAVOSHI
BS (Public Health) Isfahan University of Medical Sciences, MA (Population Studies) PhD (Demography) ANU
RESEARCH FELLOW

Meimanat Hosseini-Chavoshi is a CEPAR Research Fellow in the Crawford School of Public Policy at the Australian National University. Prior to moving to the Crawford School, she worked for a number of years at the ANU's Australian Demographic and Social Research Institute.

Before moving to Australia, she had a longstanding career with the Iran Ministry of Health and Medical Education as Head of the Population and Health Data Unit, and as a Senior Officer of Family Health. She was the focal point person for the design, implementation and data analysis for several national health surveys in the areas of demographic and health issues, fertility transition, adolescents, and ageing in Iran. Meimanat's research collaboration on Iran's fertility decline with McDonald and Abbasi-Shavazi has led to numerous publications including a prize-winning book on The Fertility Transition in Iran. She has been involved in policymaking on health and population, and has recently reviewed Iran's draft population policy. In addition to her ANU research, she has collaborated with various scholars on different projects funded by such agencies as the Wellcome Trust, World Health Organization, Global Development Network, and Gender, Economic, Research, and Policy Analysis, the latest being a comparative research study in several Islamic countries including Iran.

THE EVOLUTION OF POPULATION AND FAMILY POLICY IN AUSTRALIA

This project traces the evolution of population and family policy in Australia during the 20th and 21st centuries. This is a history with a concern about low fertility rates that covers over a century from the 1903 Royal Commission On the Decline in the Birth-rate and On the Mortality of Infants in New South Wales to the introduction of the baby bonus by the Howard Government in 2004. The paper notes the 2011 report from the Commonwealth Government that essentially rejected the notion of an 'optimum' population level and rather argued that the focus should be upon adaptation to the population that eventuates. Part of this adaptation, of course, is adaptation to ageing. Despite frequent historical emphasis upon the fertility rate and policies to support families with children, the paper concludes that, today, as in most past years in Australia's history, population policy effectively is policy about the size and nature of the migration program.

POPULATION POLICY IN IRAN

During 2013, Peter McDonald and Meimanat Hosseini-Chavoshi worked with Professor Jalal Abbasi in the analysis and critique of Iran's draft population law. There is concern in Iran about low fertility leading to rapid ageing of the Iranian population. The three researchers visited Iran in November 2013 and, in several presentations and meetings provided their views to the Vice President, the Minister for Health, members of parliament and the Population Association of Iran, among others. The process of the formulation of this law is ongoing. The three researchers concluded that the level of fertility in Iran has levelled off at a reasonable level and that population momentum would carry Iran's population to 100 million in the next 30 years. Population ageing would be a relatively slow process. However, in order to sustain Iranian fertility close to the replacement level, the researchers recommended changes to the Iran family planning program that would lead to somewhat shorter intervals between births and to acceptance of couples having more than two children. They also recommended the introduction of a fiscally sustainable program of support for families with children.

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THE IMPACT OF IMMIGRATION ON AGEING, LABOUR SUPPLY AND GDP PER CAPITA

RESEARCHER

PETER MCDONALD

External Collaborator

JEROMEY TEMPLE (DEMOGRAPHIC INSIGHT P/L)

This report, provided under contract to the Department of Immigration and Citizenship (now the Department of Immigration and Border Protection) examines the impact that varying levels of immigration have upon the ageing of the Australian population and hence upon the labour force and the growth rates of GDP and GDP per capita. The latest report was completed in 2013 and will be published by the Department in the near future.

Migration can have a very significant impact on the ageing of the population. If Australia were to experience zero net migration between 2013 and 2053, the percentage of the population aged 65 years and over would rise from its present level of 14 per cent to 28.4 per cent. With net migration of 100,000 per annum, the aged percentage would fall to 25.2 per cent, to 23.4 per cent with net migration of 180,000 and to 21.2 per cent with immigration of 300,000. The current level of net overseas migration is about 230,000 per annum. Immigration has a double effect upon ageing through the younger age of the immigrants themselves but also through the children that they have.

Not unexpectedly, immigration makes a considerable difference to the size of the Australian labour force. There would be essentially no further increase in the labour force in Australia with zero migration and the labour force would begin to fall from about 2040. With 180,000 immigrants each year, the Australian labour force would grow from around 12 million today to 19 million by 2053. The increase in the labour supply flows through to higher levels of economic growth (growth in GDP).

The more important consideration is the impact that immigration has upon GDP per capita. The report shows that immigration has strong positive effects upon the growth rate of GDP per capita in both the short and the long term. However, the strength of these effects falls as the level of immigration rises. This gives rise to the question as to the level of immigration that is 'best' from the perspective of long-term growth of GDP per capita. The report concludes that the best range for net overseas migration from this perspective is between 160,000 and 220,000. Of course, this analysis does not consider additional costs that may arise due to a larger population.

> The report shows that immigration has strong positive effects upon the growth rate of GDP per capita in both the short and the long term

PROFESSOR PETER MCDONALD
BCom UNSW, PhD ANU, FASSA, AM
DEPUTY DIRECTOR AND ANU NODE LEADER

Peter McDonald is Professor of Demography in the Crawford School of Public Policy at the Australian National University. He is a Member of the Council of Advisers of Population Europe and was President of the International Union for the Scientific Study of Population for the years, 2010–2013.

He is frequently consulted on the issue of population futures (causes, consequences and policies) by governments around the world, especially in Australia, Europe and East Asia.

In 2008, he was appointed as a Member of the Order of Australia. He is an inaugural ANU Public Policy Fellow and a member of the Australian Ministerial Advisory Council on Skilled Migration. He has

worked previously at the Australian Institute of Family Studies, the World Fertility Survey and the University of Indonesia.

ANALYSING THE EFFECTS OF POPULATION AGEING IN A DEMOGRAPHIC OVERLAPPING GENERATIONS MODEL

RESEARCHERS

GEORGE KUDRNA
CHUNG TRAN
ALAN WOODLAND

Australia, like most other developed countries, has an ageing population, which is attributed to falling mortality and fertility rates in the past. Projected mortality improvements in the next few decades will lead to further ageing. The size of Australia's population is also expected to increase, due largely to immigration. Such fundamental changes in the age structure and the size of the Australian population will have vast macroeconomic implications and place increasing demand on government spending. Fiscal reform will inevitably form part of the overall policy response to demographic change, but formulating such policy response requires a solid understanding of the evolution of demographic structure and its interaction with economic activities.

This project develops a framework to study the effects of the dynamic evolution of the age structure for the Australia economy. More specifically, our model consists of a population model with demographic projections and an economic general equilibrium model. The population projection model is fitted with input data on fertility, mortality and net immigration rates taken from the Productivity Commission's demographic model. The economic model is a small open-economy model with overlapping generations that embodies a rich fiscal structure with public expenditures on health care, education, aged care, family benefits and age pension. The benchmark economy is calibrated to match key macroeconomic and fiscal aggregates in Australia.

In 2013, we reported the results for the implications of population ageing in CEPAR Working Paper 2013/21, 'The dynamic fiscal effects of demographic shift: The case of Australia'. The paper was presented at the first CEPAR international conference, Sydney, UNSW, July 2013.

The main objective of the paper is to quantify the economic and fiscal effects of projected demographic shift and to examine the sensitivity of these effects with respect to alternative assumptions for fertility, mortality and net immigration rates. The simulation results can be summarised as follows. First, demographic shift results in lower per capita output and increased capital outflows. Second, the changes in demographic structure lead to a shift in the tax base from labour income to capital income and consumption. Third, there are substantial increases in old-age related expenditures including health, aged care and pensions and to finance these larger old-age benefits in the future, significant adjustments to other government expenditures and taxes will be required. Finally, increases in fertility and immigration are found not to be an effective solution to such budget challenges.

We further plan to decompose the total effects of demographic shift to emphasise the importance of (i) the implications of demographic shift for household life-cycle decisions on labour supply, consumption and asset accumulation; and (ii) general equilibrium effects on wages, intergenerational transfers and taxes. It is expected that the paper will be submitted for publication in early 2014.

In the follow-up paper that will result from this project, we will focus on the analysis of pension reforms in Australia during the projected demographic transitions. The extended version of the demographic OLG model that disaggregates households not only by age but also by income type is applied to quantify the macroeconomic and welfare effects of recent legislative changes to Australia's retirement income policy. Such changes examined include the gradual increases in the Age Pension age and in the mandatory superannuation contribution rate. Preliminary results indicate that both examined policy changes increase self-funding in retirement

and significantly limit the growth in public pension expenditures in the future. The paper 'Population ageing and pension reforms in Australia' is anticipated to be completed by July 2014 and submitted for publication in the second half of 2014.

> The extended version of the demographic OLG model that disaggregates households not only by age but also by income type is applied to quantify the macroeconomic and welfare effects of recent legislative changes to Australia's retirement income policy

STOCHASTIC DEMOGRAPHIC MODELLING AND FORECASTING

RESEARCHER

HEATHER BOOTH

External Collaborators

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HAN LING SHAN
(AUSTRALIAN
NATIONAL UNIVERSITY)

This ongoing research project addresses methods development and applications in stochastic demographic modelling and forecasting. The approach is based on functional principal components models with time series forecasting. The focus of methods development is mortality forecasting. Cohort forecasts of mortality have also been produced. The refined methods are also applied to fertility and migration, enabling fully-stochastic population forecasting. Applications of these methods include longevity estimates and survival probabilities at any age (such as age at retirement) and population forecasts that yield age-dependency probability bands that enhance understanding of the future of ageing. The extensive evaluation of forecasts and forecasting methods is an important aspect of this research.

New research includes an evaluation and application of cohort mortality forecasting, and an evaluation and application of model-averaging as a means for improving fertility forecasting, with implications for population forecasting and the future of structural ageing.

A current focus of this research is 'coherent' forecasting of the mortality of subpopulations. Coherent forecasts for subpopulations are constrained within broad structural relationships among subpopulations. For example, forecasts of male and female mortality are constrained such that male mortality exceeds female mortality in line with past experience. The product-ratio method for coherent forecasting, developed by Hyndman, Booth and Yasmeen (2013), takes the relationship between subpopulations into account by incorporating structural dependencies, so that mortality for each subpopulation is forecast while also taking into account the mortality experience of all other subpopulations.

Evaluations of the product-ratio method demonstrate that the coherent forecasts are at least as accurate in overall terms as comparable independent forecasts, and that forecast accuracy is generally homogenised across subpopulations. Further, the method incorporates short-term flexibility: the ranking of states by life expectancy at the beginning of the forecast period is not necessarily maintained, as structural dependencies relate to ratios of age-specific rates with changing influences in life expectancy calculations. Coherent forecasts are clearly advantageous in population forecasting where subpopulations are involved.

New research compares the accuracy of coherent forecasts for a population subdivided along two dimensions, such as sex and state. Such comparisons can inform forecasting practice to improve forecast accuracy. They can also inform theory by indicating which has been the dominant factor influencing mortality: if sex-coherence within state produces more accurate forecasts (than state-coherence within sex), it can be inferred that environment (state) has been a stronger influence than biology (sex) in the period in question.

New research compares the accuracy of coherent forecasts for a population subdivided along two dimensions, such as sex and state

THE DEMOGRAPHY OF INDONESIA

RESEARCHERS

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There is a great deal of hot political debate and uncertainty related to the demography of Indonesia in the last 20 years. The uncertainty has arisen in particular through doubts about the quality of the 2000 Census of Indonesia. While Indonesia has conducted a successful census in 2010, the lack of a reliable historical benchmark means that the demography of the world's fourth most populous country is disputed. As a result of this lack of consensus, social and economic planning in Indonesia today is problematic. The project brings together technical demographic expertise in Australia and Indonesia to resolve this dilemma and to inform evidence-based policymaking including policies related to the ageing of the population of Indonesia. Research for this project is being conducted through an ARC Linkage grant in cooperation with AusAID, the United Nations Population Fund, Statistics Indonesia, and the Indonesian National Population and Family Planning Board.

The first step in the project has been to obtain the individual record files from the 2010 Census of Indonesia. ANU already holds individual record files from previous censuses of Indonesia (1971, 1980, 1990 and 2000). The original census records were held in three files: 1. the personal records of 237 million individuals, 2. information relating to the dwellings in which they lived and 3. information on deaths in the household in the 15 months prior to the census. Our project requires that these three databases are merged. Statistics Indonesia has provided the three file types at the village level (two geographic levels lower than the district level) with information for ethnicity, religion and language excluded. This enables the team at ANU to put together a consolidated database at the village level from the 2010 Census and to merge the census file with the 2011 Village Census macro-data. This is a unique resource which will be of considerable benefit to researchers over many years. Statistics Indonesia was unable to provide records at a geographic level lower than the district level that provided information on ethnicity, language and religion of the census participants. Using the merged database in 2014, the researchers will undertake a program of analysis of the accuracy on the age and sex distributions and the total counts of population, estimation of mortality and fertility, estimation of international migration and analysis of the social and economic information provided by the census. Preliminary research indicates considerable uncertainty relating to the numbers of people at older ages and to mortality at older ages.

> The project brings together technical demographic expertise in Australia and Indonesia to… inform evidence-based policymaking including policies related to the ageing of the population of Indonesia

DR ARIANE UTOMO
PhD BAS, BEc (Hons) ANU
RESEARCH FELLOW

Ariane Utomo is a CEPAR Research Fellow at the Australian Demographic and Social Research Institute at the Australian National University. She was appointed in 2009 to work on the ARC Linkage project *Working Late and the Spectre of Uselessness: Sustaining Labour Supply in a Globalising Economy*.

'My involvement with CEPAR has enabled me to develop my core research interests in the area of gender, education, and the labour force, and extend these into the framework of population and workforce ageing.

'As a member of the teaching staff in the university, I have also been able to relay the knowledge and skills I have gained in this research area to my undergraduate and postgraduate students. Since I have maintained an interest in population issues in Indonesia and Asia, I am keen to collaborate in future comparative research looking into population and workforce ageing in the region.'

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AGEING IN AUSTRALIA: CHALLENGES AND OPPORTUNITIES

RESEARCHERS
KATE O'LOUGHLIN
HAL KENDIG
COLETTE BROWNING

An edited book commissioned by Springer and titled *Ageing in Australia: Challenges and Opportunities* will be published in 2014. It focuses on Australian research and case studies to provide a multidisciplinary overview of the social and individual dimensions of ageing, health and wellbeing and the transitions that occur in later life.

This edited textbook-style publication – written by Australia's leading researchers and policy analysts – will provide a strong evidence base for students in health sciences and related disciplines (e.g., social work, health policy) as they undertake education and training to take up practitioner roles in clinical and community health settings or policymaking roles in health and aged care services. It will also inform action by service providers and policymakers, and provide an overview of Australian developments in ageing for international audiences particularly in multidisciplinary gerontology and social policy.

Six of the key chapters in the book have been written by CEPAR-affiliated researchers. These include chapters on population ageing (McDonald and Booth); health and ageing (Browning and Byles); attitudes to ageing (O'Loughlin, Kendig and Browning); Australia's retirement income policy (Bateman, Chomik and Piggott); primary health care (Browning); and care and support policies (Kendig):

POPULATION AGEING AND DEMOGRAPHIC CHANGE: considers population ageing in the context of national and global trends and considers the challenges and opportunities these present in Australia. A particular focus will be the spatial patterns and geographic diversity of Australia's ageing population.

HEALTH AND AGEING: provides an overview of the health profile of older people in Australia including analysis and discussion of epidemiological evidence of changes in the pattern of health-related issues and the challenges and opportunities these present.

ASSOCIATE PROFESSOR KATE O'LOUGHLIN
BA (Hons) Macq., PhD Syd.
ASSOCIATE INVESTIGATOR

Kate O'Loughlin is an Associate Professor in Health Sociology, and a Principal Associate and leader of the Ageing and Health team in the Ageing, Work and Health Research Unit in the Faculty of Health Sciences at the University of Sydney.

Her research interests and expertise are in population ageing with a particular focus on the baby boom cohort and workforce participation, and social policy relating to ageing in Australia and globally. Her current research projects investigate the interplay between paid work and unpaid care-giving and its relationships with health and wellbeing; behaviours

and exposures across the life course and their effect on health outcomes in later life; and individual and community attitudes to ageing, with a specific focus on age discrimination in the workplace. She leads the CEPAR project on Work and Care-giving, an international collaboration with scholars from Canada, UK and New Zealand.

She has published widely in the gerontology/ageing and sociology literature and has a record of successful supervision and mentoring of higher degree students; she is primary supervisor of two CEPAR-affiliated students from the Faculty of Health Sciences. In 2013 she co-convened the Emerging Researchers in Ageing conference hosted by the Ageing, Work and Health Research Unit.

ATTITUDES TO AGEING: addresses what are age-based attitudes and stereotypes and examines available evidence on how these are manifested in the workplace, public institutions, health care system and policy discourses and strategies. Legislative and policy initiatives and older people's experiences will be drawn on in considering the challenges and opportunities in addressing attitudes and age-based stereotypes.

AUSTRALIA'S RETIREMENT INCOME POLICY: provides an overview of Australia's retirement income system – including pensions, superannuation, and taxation – and examines the available evidence on how this can provide equitable and sustainable standards of living for older people.

AGEING AND PRIMARY HEALTH CARE: provides an overview of the health services available and utilised by older people in hospital and community settings and critically reviews the focus on primary health care initiatives in terms of access, affordability and efficacy.

PARADIGMS AND POLICIES IN CARE AND SUPPORT FOR OLDER PEOPLE: considers what we mean by aged care (self-help, family, accommodation, other forms of assistance); provides a brief overview of the (inter)-governmental and interest group development of the policy area (and 'industry' and consumer perspectives); examines the pressures and forces that led to the latest Productivity Commission recommendations and reforms and whether they are acceptable or not; and provides an overview of new directions including regionalisation, enabling independence and consumer directed care.

The book focuses on Australian research and case studies to provide a multidisciplinary overview of the social and individual dimensions of ageing, health and wellbeing and the transitions that occur in later life

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FISCAL SUSTAINABILITY AND PENSION REFORMS IN THE PRESENCE OF DEMOGRAPHIC UNCERTAINTY: THE CASE OF AUSTRALIA

RESEARCHERS

GEORGE KUDRNA
CHUNG TRAN
ALAN WOODLAND

Economic analyses of population ageing in Australia have so far relied on deterministic population forecasts. However, both the scale and direction of future demographic developments are highly uncertain, making the variability in fiscal and broader economic outcomes much larger than anticipated from official population forecasts. Although the official forecasts provide low and high scenarios to account for future uncertainty, the volatility in fertility, mortality and net immigration rates is often much larger than suggested by this so-called scenario-based approach.

The alternative approach to forecast demographic outcomes is to apply stochastic population models. Such probabilistic models also use historical data, which serve as the basis for the future population projections. But future fertility, mortality and net immigration rates are considered as random variables that reflect the uncertainty of future population developments. The advantage of these forecasts compared to deterministic forecasts is that they provide a probability distribution of future population structures and that the uncertainty is dealt with in a coherent and interpretable manner.

The aim of this project is to incorporate stochastic population forecasts in the computable general equilibrium model

developed for Australia by Kudrna and Woodland (2011). These stochastic forecasts are based on future fertility, mortality and net immigration rates assumed by the Productivity Commission's MoDEM 2.0. Specifically, their future fertility, mortality and net immigration rates will serve as the median of the predictive distribution of these vital rates. We will then make use of the program for error propagation (PER) documented by Alho et al. (2005) to simulate these rates randomly. Using the age structure of Australia's population in 2010 with the randomly simulated vital rates, many population forecasts will be generated to provide a probability distribution of population structures over the projection period of 2011–2100.

We will apply the model to investigate the effects of these uncertain demographic transitions on the government's budgetary situation, including the implications for age-related transfers to households and expenditures by households and firms. Macroeconomic outcomes for the labour market, capital accumulation and the goods market as well as life-cycle effects for household consumption, labour supply and wealth will be also reported and discussed. Another application of the model is to evaluate the effects of recently adopted or proposed pension reforms, including the increases in the eligibility age for the Age Pension and the preservation age for accessing superannuation.

It is anticipated that this research will be written up as a CEPAR working paper and submitted for publication by the end of 2014.

> We will apply the model to investigate the effects of these uncertain demographic transitions on the government's budgetary situation, including the implications for age-related transfers to households and expenditures by households and firms

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SCIENTIA PROFESSOR ALAN WOODLAND

BA PhD UNE, FASSA, FES

CHIEF INVESTIGATOR AND UNSW NODE LEADER

Alan Woodland is Scientia Professor of Economics and ARC Australian Professorial Fellow in the School of Economics within the Australian School of Business at the University of New South Wales.

Woodland's primary research interests and publications are in the areas of international trade theory, applied econometrics and population ageing. He has published in leading journals including *Econometrica*, *Review of Economic Studies*, *Journal of Econometrics* and *Journal of International Economics*.

He is the recipient of the Distinguished Economist Award of the Economics Society of Australia. He is an Associate Editor of the *Review of International Economics*, a past editor of the *Economic Record*, and is currently on the editorial boards of *Empirical Economics*, the *International Journal of Economic Theory* and the *Economic Record*. Woodland has been a Reserve Bank of Australia Fellow in

Economic Policy and a Senior Fulbright Fellow. He is also on the scientific boards of the European Trade Study Group (ETSG), Asia Pacific Trade Seminars (APTS), Australasian Trade Workshop (ATW) and the Dynamics, Economic Growth, and International Trade (DEGIT) Research Centre.

A LIFE-CYCLE MODEL WITH HUMAN CAPITAL, LABOUR SUPPLY AND RETIREMENT

RESEARCHER

XIAODONG FAN

External Collaborators
ANANTH SESHADRI
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The economic and social consequences of population ageing are issues confronting most nations. As populations age, many developed and developing countries are suffering from declining labour supply as well as increasing pressure on social security and pension systems. A substantial research effort has focused on quantitatively estimating the economic consequences of an ageing population and evaluating policy response. In much of this work, the wage process is taken as given and the focus is on retirement itself. For example, when conducting counterfactual experiments involving delaying the retirement age from age 65 to age 67, all the previous literature takes the same wage-age profile as the baseline model where the retirement age is 65 and re-estimates retirement behaviour in the new environment where the retirement age is 67. However, if one is expecting to delay retirement, she or he will certainly adjust their investment in human capital which will affect the wage-age profile. Omitting such an effect is most likely to generate bias in various policy analyses.

In this paper, we incorporate endogenous wage formation to fill this gap. We develop and estimate a Ben-Porath human capital model in which workers make consumption, human capital investment, labour supply and retirement decisions. We estimate the model using the Method of Simulated Moments (MSM), matching the wage and hours profiles from the U.S. Survey of Income and Program Participation (SIPP) data. After estimating the baseline model, we conduct two sets of policy analyses. In the first experiment we remove the Social Security earnings test which applies to ages 62 to 70. In the second experiment we delay the retirement age two years (from age 62 to 65). We find in both policy experiments, workers invest more in their human capital at older ages, which leads to an increase of more than 20 per cent in wages and over 60 per cent in labour force participation rates near retirement.

We incorporate stochastic health status transition in the model and investigate how it affects each individual's human capital investment through the life-cycle. The effect of government transfers is also studied in various experiments.

> We find in both policy experiments, workers invest more in their human capital at older ages, which leads to an increase of more than 20 per cent in wages and over 60 per cent in labour force participation rates near retirement

DR XIAODONG FAN
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RESEARCH FELLOW

Xiaodong Fan is a CEPAR Research Fellow located in the Australian School of Business at the University of New South Wales. He joined the Centre in September 2012 after graduating with a PhD in Economics from the University of Wisconsin–Madison.

His research interests include labour economics, applied microeconomics, and computational economics. His current research studies the determinants of labour supply and retirement in the life-cycle context, as well as policy evaluations.

'Working at CEPAR provides me with a great opportunity to focus on my research in the next few years, as well as opening up windows to ageing related policy analysis.'

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RESEARCHERS

JOHN PIGGOTT
ALAN WOODLAND

In 2011, we secured a contract to produce a *Handbook in Population Ageing*, to be published by Elsevier. The Elsevier handbook series is the most prestigious in the Economics discipline: in the past these handbooks have helped define new fields of research. We see this as an opportunity to provide a platform to inform future research.

This is a major project, planned to be executed over several years. Final delivery is scheduled for 2015. From a CEPAR perspective it is exciting because it is an opportunity to explore the dimensions of the field of the Economics of Population Ageing. The economic impacts of population ageing fall into two categories – those that are driven by the fact of an ageing baby boomer cohort; and those that derive from changing demographic structures. Both forces are analysed in the volume.

We joined forces with Harvard University to organise a contributor workshop, which took place in September this year. Participation was high, with about 75 per cent of the Handbook authors taking part. This gave us a much clearer view of the issues and these economists, many of whom are internationally distinguished scholars. It also enriched our understanding of what the Economics of Population Ageing might actually encompass. David Bloom, who was the Harvard host of the workshop, will also contribute the opening chapter, providing what might be called an anatomy of population ageing.

A series of papers focusing on households will follow. Labour force participation, ageing and the family, consumption and saving, portfolio choice, and issues in decision making, are all covered. We then turn to markets. Chapters in this part of the volume will treat macroeconomic impacts of demographic change, insurance markets, pensions, migration, and longevity. Other papers in this section will review the literature on the political economy of population ageing, and equity aspects, including intergenerational equity. A final section analyses policy issues, including taxation, poverty, social security, and health.

This will be a volume of contributions that will simultaneously provide an authoritative reference for scholars and other professionals interested in demographic change and its implications, and help shape the future research agenda in the field.

In addition to the Introduction written by CEPAR Scientific Advisory Board member, David Bloom, there are another five papers in the volume being written by CEPAR-affiliated researchers. These include chapters on taxation (Woodland and Piggott); decision making (Keane); insurance markets (Fang); workplace pensions (Mitchell and Piggott); and longevity and morbidity (Sherris):

SCIENTIA PROFESSOR JOHN PIGGOTT
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John Piggott is Scientia Professor of Economics and ARC Australian Professorial Fellow in the Australian School of Business at the University of New South Wales.

He has a long standing interest in retirement and pension economics and finance, and in public finance. His publications include more than 90 journal articles and chapters in books, which have appeared in the leading international academic journals as well as in highly cited conference volumes. In addition, he has co-authored two books, both published by Cambridge University Press.

His policy experience includes membership of both the Henry Tax Review Panel (2008–2009) and the Australian Ministerial Superannuation Advisory Committee (2007–2011). For nearly a decade, from 1999, he worked with the Japanese Government (Cabinet Level) on pension and population ageing issues, and in 2004 was tasked with evaluating World Bank assistance on pension reform in the Asian region for the Bank's Operations Evaluation Department. In 2007 he was appointed Visiting Professor, Zhejiang University, China, and from 2008–2010 was Visiting Scholar with the Department of Insurance and Risk Management, Wharton School of Business, University of Pennsylvania.

John serves as book review editor of the *Journal of Pension Economics and Finance* and is an Associate Editor of the new Elsevier journal, *The Journal of the Economics of Ageing*.

TAXATION:
This paper will examine the analytic and policy literature linking demographic change and taxation under three broad heads. First, it will examine the implications of population ageing for the tax revenue requirement. Second, it will ask whether, and in what ways, an ageing population impacts the robustness and revenue base of the tax mix. Third, it will examine what lessons can be drawn from the recent literature on capital taxation and aged based taxes for dynamic tax design in an economy with a changing demographic.

DECISION MAKING:
This chapter embraces an emerging area of research focusing on the relationship between choice, markets, and functional capacity, especially where complex decision making is required. It assesses the 'more choice is better' position taken as given by many economists. There is considerable evidence that people have problems making judgments involving probability and risk, which means they generally have problems making good choices about insurance or investment products. And there is evidence that these difficulties increase with age. If many people have difficulty making rational decisions in these areas, all of which are crucial for the wellbeing of the older population, then this is a serious source of concern with respect to population ageing. If there is 'confusion' in these choices, then this suggests theoretical innovation and empirical analysis to incorporate this feature in choice models.

INSURANCE MARKETS:
Retirement risks provide challenges to insurance markets globally. Market failures are ubiquitous: In many cases markets don't exist at all, or are 'residual' in nature. Yet exposure to retirement risks – longevity, health, investment, employment – occurs at a time when there is little remaining human capital to draw upon in the event of unexpectedly poor outcomes. As well, the interplay between age-phasing strategies and aggregate risk taking may impact on financial markets. This contribution will examine the issue of risks in retirement and at older ages.

WORKPLACE PENSIONS:
The fiscal stress that demographic ageing brings to pay-as-you-go pensions has led to governments moderating their public pension promises. To offset the impact of these changes, policymakers have sought to strengthen private workplace or occupational pension plans. This chapter explores recent developments in pension plan structure and function, and examines the roles of defaults, auto-enrolment, commitment devices and financial literacy in pension plan participation. It will review research on what today's workplace pensions look like and how they function, identifying challenges and opportunities as well as the impacts of policy interventions. Our goal is to evaluate the future potential for workplace pensions in light of current and forecast population ageing.

LONGEVITY AND MORBIDITY:
Relatively little attention has been paid to uncertainty around future projections in longevity and morbidity trends. This has major implications for financial and insurance markets, which are the natural mediators of these risks. Ignorance can lead to inappropriate solvency requirements for such products, leading to prices which many find unaffordable. At the same time, longevity risk exposure on new products may be under-appreciated by regulatory authorities. Longevity risk will become more important as populations age. This chapter reviews this relatively new research, and points to the most urgent directions for new research.

The material outcome will be a volume of contributions that will… help shape the future research agenda in the field

MICROSIMULATION MODELLING OF FAMILY-BASED AGED CARE

RESEARCHERS
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External Collaborators
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SOPHIE PENNEC
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Modelling the supply and demand for family-based or informal aged care is addressed through two projects. The first models kinship structure. The second models disability at older ages.

Understanding kinship structure is fundamental to the development and successful implementation of community-based aged care programs. Population-based microsimulation is used to model detailed family structures in order to examine the availability (supply) of potential carers by kin-relationship within the families of older individuals (potential demand). An aim is to understand how changing marriage, fertility (including childlessness) and longevity determine both the potential supply of and potential demand for aged care within families, with a view to informing the future balance of supply and demand and ongoing feasibility of current community-based care. The modelling also enables a better understanding of heterogeneity. Specialist software for demographic microsimulation (SOCSIM) is employed. This project received funding from the ANU College of Arts and Social Sciences, as part of a larger research project 'Using dynamic microsimulation to understand the evolution and structure of kin- and community-based populations in the past, present and future'. The project has built capacity in two sophisticated dynamic microsimulation systems for demographic modelling, SOCSIM and CAMSIM, forming the basis of ongoing research.

Microsimulation modelling of disability at older ages involves the ongoing development of the DYNOPTA-SIM model. With a base population of some 50,000 nationally-representative community-living synthetic individuals aged 45+ in 1996, this model simulates risk-factor status and disability status until death. The model focuses on the age-related disabilities of cognitive impairment, depression, hearing impairment, visual impairment, physical impairment and falls. Risk factors cover the socio-demographic, behavioural and bio-medical domains, and include 13 variables. Transitions in both risk factor status and disability status are modelled from longitudinal data for the period 1996–2001/6, and the results are validated against relevant external survey data for 2001–2009. This project is an extension of the NHMRC-ARC-funded DYNOPTA project (http://dynopta.anu.edu.au/), which provides the harmonised data on which the model is based.

> Understanding kinship structure is fundamental to the development and successful implementation of community-based aged care programs

ASSOCIATE PROFESSOR HEATHER BOOTH
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ASSOCIATE INVESTIGATOR

Heather Booth is Associate Professor of Demography at the Australian Demographic and Social Research Institute (ADSRI) at the Australian National University. She is the ADSRI Research Director and leads the ADSRI Group on Longevity, Ageing and Mortality.

Heather's interests in ageing research concern the demand and supply of informal care of the elderly and how these are mediated in practice. She conducts research in three key areas: kinship microsimulation modelling with a focus on the availability of kin as the potential supply of elder care; disability microsimulation modelling of the older population to determine the demand for care; and the relationship between family-based social support through social networks and the wellbeing of older Australians as the mediating mechanism.

Additionally, Heather works at the forefront of demographic forecasting. The future of mortality at very old ages defines the extent of the demand for aged care, both informal and formal, and is of considerable international interest. This research provides the macro-environment for the micro-modelling of supply and demand.

Heather also has interests in agent-based modelling as a means of incorporating the demand, supply and mediating mechanism in a single model. Heather supervises seven doctoral students conducting research on ageing.

READINESS AND ADOPTION OF I.T. IN RESIDENTIAL AGED CARE COORDINATION

RESEARCHER

PRADEEP RAY

With population ageing, the demand for care and support services for the elderly has been increasing. The application of appropriate information technologies (I.T.) can facilitate the delivery of these services and its benefits have been well documented in the literature. Compared with some other industries, aged care still lags behind in I.T. adoption. This collaborative project aims to:

1   Understand service delivery models in residential care
2   Collect and analyse the evidence of I.C.T. applications in aged care
3   Map I.C.T. requirements of aged care services based on available technologies
4   Build a prototype system for aged care I.T. services.

To understand I.T. service delivery models for residential care, a systematic literature review was conducted in the first phase of this project, the results of which were presented at the 1st CEPAR International Conference. This systematic review identified three groups of issues associated with I.T. implementation:

Issues from an organisational perspective such as leadership and available resources. Leaders often failed in the provision of necessary support to end users due to their insufficient knowledge of I.T. innovation and change management

2   Issues from an end user's perspective, such as limited I.T. knowledge and operational experience and privacy concerns. The end users included doctors, nurses, care workers and the elderly
3   Technological issues such as I.T. integration and I.T. alignment with business processes.

These findings could help aged care service providers to better understand facilitating forces and inhibiting factors to I.T. implementation.

Our researchers interviewed health professionals employed by a large aged care provider to collect and analyse the evidence of I.C.T. applications in aged care coordination. Information on aged care services was collected from multiple sources such as relevant government policies at the federal and state levels. Two major problems in care coordination in Australia are the multiplicity and heterogeneity of parties involved (family members, GPs, pharmacies, allied health professionals, hospitals etc.) and the complexity of financial processes related to charging for services and reimbursements. Hence the objectives were to:

1   Understand the patient pathway for residential aged care (process of admission, transfers across different levels of care etc.) and the regulations for financial matters

Understand aged care practices. Based on the analysis results, three scenarios were selected and developed for initial requirements elicitation of I.T. solutions.

As an exemplar I.T. solution, we developed (as part of a project funded by the Smart Services CRC) a prototype 'Electronic Photo Frame' which enables wellbeing checks for the elderly living alone at home. This photo frame (typically a tablet computer), when touched, automatically sends a message to family members that the elderly person is okay.

> Compared with some other industries, aged care still lags behind in I.T. adoption

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PROFESSOR PRADEEP RAY
BTech BHU-IT India, MTech IIT, Kanpur India, PhD UTS
ASSOCIATE INVESTIGATOR

Pradeep Ray is a Professor of Information Systems at the Australian School of Business and the Director of the Asia Pacific ubiquitous Healthcare Research Centre (APuHC) at the University of New South Wales.

He leads a number of collaborative research projects on eHealth (healthcare using information and communication technologies) involving global organisations, industry and academia in Australia, Europe, North America and Asia.

His work on the WHO project (involving four countries in the Asia-Pacific) on the assessment of eHealth for Health Care Delivery led to the designation of APuHC as a WHO Collaborating Centre on eHealth in 2013 with a focus on mHealth (healthcare using mobile phones) for Aged Care. Pradeep is the Chair of the eHealth Committee of the Institute of Electrical and Electronic Engineers (IEEE) Communication Society and the IEEE global spokesman on telemedicine. He has been appointed as a Distinguished Lecturer of eHealth at IEEE for 2014–2015. Under his leadership, APuHC was invited in 2010 by the Aged Care Industry I.T. Council that represents all aged care providers in Australia, to develop a long-term strategic I.T. plan for the aged care sector in Australia. This led to the ongoing $1million collaborative initiative on I.T. in aged care involving academic and industry organisations in Australia, Europe, Asia and USA.

WORK AND CARE

RESEARCHERS

KATE O'LOUGHLIN
VANESSA LOH
HAL KENDIG

Workforce participation and informal care-giving are central to global capacities to respond constructively to rapid population ageing yet they are inadequately researched and understood. Policymakers need to better understand how the societal and policy context influences working and care-giving, transitions between them, and impacts on ageing individuals, families, and the broader economy.

This project has two key objectives:

1   To build international comparative knowledge on older workers and care-giving to inform global initiatives in socio-economic policies
2   To establish an international collaborative network to work towards sustainability in policy-relevant population ageing research.

The specific aims of the project are to determine how individual circumstances and social and economic policy can impact on productivity (labour force participation, care-giving activities, voluntary work) and its relationships with health, wealth and wellbeing. This will be achieved through cross-sectional analyses of Australian data on work and care-giving as well as comparative analyses with the English Longitudinal Study of Ageing and other national data where available.

The project examines the nexus between paid work and care-giving and the impact on individuals, families and the broader economy with a particular focus on the baby boomer cohort and the gendered nature of care-giving. The specific research questions being addressed include:

1   Do retirement schemes offer any flexibility for care-givers who need to leave the workforce?
2   To what extent do cross-national differences in retirement schemes impact on care-givers' work choices?
3   How do care-giving activities and work status interact to affect other forms of productivity, health, and financial stability in a cross-national context?
4   Do the relationships between care-giving, work, and health differ across gender? How do these relationships compare across different groups of women (e.g. blue versus white collar workers)?
5   Do policy provisions benefit certain groups while disadvantaging others?

In 2013 cross-sectional analysis of Australian data on work and care-giving was carried out and findings presented at:

1   Second international workshop – Older workers and care-giving: Statistical evidence from the UK, Australia, Canada and New Zealand, University of Sydney, 14–15 February 2013. Collaborating partners, with the addition of two New Zealand universities (Massey and Otago), presented analyses of their existing data based on the agreed core set of variables. A revised work plan and timeframe were developed for conference presentations and publication schedule for the cross-national comparisons.

2   Third international workshop – Older workers and care-giving: Statistical evidence from the UK, Australia, Canada and New Zealand, University of Alberta, 6–9 May 2013. Update on collaborating partners' data analyses; discussion and agreement on testable hypotheses to be applied to each data set; individual/comparative papers to be conceptualised as a problem not just for individual care-givers but at the social, economic and policy level.
3   20th IAGG World Congress of Gerontology and Geriatrics, June 23–27, 2013, Seoul, Korea. Paper presented on 'Care-giving, paid work and health status among Australia's baby boomers' (O'Loughlin, Loh and Kendig).

4   20th IAGG World Congress of Gerontology and Geriatrics, June 23–27, 2013, Seoul, Korea. Paper on 'Reflections on Australian and New Zealand policy initiatives in the interface between work and care' (O'Loughlin, Alpass, Keeling and Kendig) presented in Symposium on *Global Approaches to Policy Supporting Work and Care in Late Middle Age*.

5   CEPAR-sponsored post-IAGG conference seminar (28–29 June) which brought together invited international scholars to present their research findings on paid work and care-giving in varying geographic, social, economic and political contexts. Abstracts for peer-reviewed papers from presenters have been received for a Special Edition of the international journal, *Ageing and Society*.

6   1st CEPAR International Conference, University of New South Wales, 2–3 July 2013. Paper presented on 'Interrelations between care-giving, paid work, and health status for Australia's baby boomers' (O'Loughlin, Loh and Kendig).

In the next stage we plan to continue the cross-national comparisons and disseminate findings and expand the collaborative focus through the following planned activities:

1   Submission of proposal (due 28 February 2014) for a Special Edition of the international journal, *Ageing and Society*.

2   Paper titled 'The interrelations between care-giving, paid work, and health status for Australia's baby boomers' (O'Loughlin, Loh and Kendig) to be included in the proposal for a Special Edition of *Ageing and Society*.

3   XVIII ISA World Congress of Sociology, Yokohama, Japan, July 13–19, 2014. Abstract accepted (4 June 2013) for Invited Symposium on 'Population ageing, work and caregiving responsibilities in four liberal democracies' [Convenor/presenter O'Loughlin (Sydney); other presenters Keeling (Otago); Fast (Alberta); Yeandle (Leeds)].

4   Collaboration on proposed grant applications related to the global context of combining paid work and unpaid care-giving for 2014: Proposal to Social Sciences and Humanities Research Council (Canada) on Care, Work and Sustainability (led by Fast, Alberta); NHMRC Partnership Project on the potential benefits of assistive technology to care providers and care recipients (O'Loughlin, Clemson, Yeandle).

HIERARCHICAL STRUCTURES OF OLD-AGE DISABILITY

RESEARCHERS
JOELLE H. FONG
JUN FENG

Difficulty in performing activities of daily living has been found to be a significant predictor of long-term care use. A large body of research focuses on how age-adjusted chronic disability among older Americans has changed over time and across cohorts. Most analysts agree that, for adults age 65+, there have been improvements in many measures of late-life functioning. This decline in late-life functional disability among older Americans has important implications for long-term care provision. Hierarchical scales of disability can be used to predict long-term care use among older adults and allow clinicians to more fully understand the course of activities of daily living (ADL) disabilities in the ageing process.

In this project we apply several techniques to evaluate the hierarchical structure of ADL disability, including ordering by (i) age of disability onset estimated using a discrete time hazards model, (ii) compatibility rate of the various permutations of disability sequencing, and (iii) hierarchical scaling methods that are widely adopted in prior studies. The aim is to examine whether different ordering techniques produce similar hierarchical structures in a given dataset. We also investigate the sensitivity of the ordering to cultural differences by using both U.S. and Chinese longitudinal data, and whether the ordering of ability in activities ultimately informs subsequent care needs.

In 2013, information on ADL disabilities, mortality, and long-term care usage was collated and preliminary analyses were performed. Specifically, we obtained nationally representative samples from the U.S. Asset and Health Dynamics of the Oldest Old (AHEAD) survey and the Chinese Longitudinal Healthy Longevity Survey (CLHLS). This project will continue into 2014 and is expected to result in a peer-reviewed journal paper.

> Hierarchical scales of disability can be used to predict long-term care use among older adults

DR JOELLE H FONG
PhD Wharton School, University of Pennsylvania
RESEARCH FELLOW

Joelle Fong was a CEPAR Research Fellow located in the Australian School of Business at the University of New South Wales until February 2014.

She joined CEPAR in August 2011 after graduating with a PhD in Insurance and Risk Management from the Wharton School of the University of Pennsylvania. She holds masters degrees from Wharton and Singapore Management University (SMU), and is currently an affiliate researcher with SMU's Sim Kee Boon Institute for Financial Economics. Prior to commencing her PhD, she also held several positions in the Singaporean Civil Service.

Joelle's research interests include the economics of pensions and retirement; private and public insurance; annuities; and risk management of morbidity and longevity. Her research has been published in the *Journal of Risk and Insurance* and the *Journal of Pension Economics and Finance*.

Joelle joined the Singapore Institute of Management in February 2014 and will continue her association with CEPAR as an Associate Investigator.

MODELLING CAUSAL MORTALITY AND THE IMPACT OF CAUSE-ELIMINATION

RESEARCHERS

DANIEL ALAI
MICHAEL SHERRIS

External Collaborator
SEVERINE GAILLE
(UNIVERSITY OF LAUSANNE)

Cause-of-death analysis provides new insights into mortality changes over time. For insurers, a major risk faced in offering life annuities is the 'cure for cancer' risk where a major cause of death may be significantly reduced or eliminated because of medical advances. These potential changes in underlying mortality rates because of cause-of-death trends not only impact life insurance and annuity business but also private and public pension systems. Cause-of-death trends also have

dependence between causes since if one cause is reduced then deaths from other causes will increase over time. Understanding this dependence and its impact is also an important research issue. Using individual mortality data to study mortality trends have limitations because of a lack of data. At the same time aggregate mortality studies of systematic trends miss out many of the finer details of the factors that impact these trends. Causal, or cause-of-death, mortality has the advantage of providing a better understanding of mortality trends at a finer level than aggregate studies.

This project uses internationally classified cause-of-death categories and data obtained from the World Health Organization in two related projects. In the first we model causal mortality simultaneously in a multinomial logistic framework. This framework allows for inherent dependence amongst the competing causes. It also allows us to investigate the effects of improvements in, or the elimination of, cause-specific mortality. This is of particular interest for scenario-based forecasting purposes. The impact of cause-elimination on aggregate mortality using residual life expectancy is considered by applying the model to a French case study. The research appears in CEPAR

Working Paper 2013/07, 'Modelling Cause-of-Death Mortality and the Impact of Cause-Elimination'.

In a second study, appearing in 'Forecasting Mortality Trends Allowing for Cause-of-Death Mortality Dependence', *North American Actuarial Journal*, 17(4), 1–10, 2013 by Gaille, S. and M. Sherris, we analyse the five main causes of death in Switzerland and confirm the existence of a long-run relationship between these five causes. This estimated relationship is then used to forecast mortality rates, which are shown to be an improvement over forecasts from more traditional time series processes, which do not allow for cause-of-death dependencies.

This estimated relationship is then used to forecast mortality rates, which are shown to be an improvement over forecasts from more traditional time series processes, which do not allow for cause-of-death dependencies

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DR DANIEL ALAI
BMath Waterloo, PhD ETH Zurich
ASSOCIATE INVESTIGATOR

Daniel Alai was a Senior Research Associate in the Australian Institute for Population Ageing Research at the Australian School of Business, University of New South Wales until December 2013.

Daniel joined UNSW in June 2010 following his graduation from the Department of Mathematics at ETH Zurich. Prior to this he obtained a Bachelor of Mathematics, with double honours in Actuarial Science and Statistics, from the University of Waterloo. He has also worked for insurance companies such as Sun Life (Waterloo) and Manulife (Waterloo), as well as for

consulting companies KPMG (Toronto) and Tillinghast-Towers Perrin (New York City).

He has expertise in actuarial risk management and loss modelling, development and assessment of models for longevity risk and application to product developments, risk management and regulatory requirements.

In January 2014 Daniel commenced an appointment as a Lecturer in the Centre for Actuarial Science, Risk and Investment at the University of Kent.

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INNOVATIVE HEALTH FINANCING
SYSTEMS UNDER DEMOGRAPHIC SHIFT

RESEARCHER

CHUNG TRAN

External Collaborator
JUERGON JUNG
(TOWSON UNIVERSITY)

Under this project,
a portfolio of four
subprojects was
developed to examine
health financing
systems under an
ageing demographic.

LIFE-CYCLE PATTERNS OF HEALTH AND INCOME: IS AUSTRALIA DIFFERENT?

Knowledge of the dynamics
between health and income
over the course of the
life-cycle is important
to the understanding
of individual behaviour
with respect to retirement,
saving, health insurance and
the utilisation of health care,
and, consequently, to the
formation of public policy
concerning financing
of health and social care.
This paper documents
the joint distribution
of health and income over
the life-cycle in Australia
and the U.S. using household
survey data. Our results
are summarised as follows:
First, we find that the
average health status is
depreciated, but the health
inequality displays a hump
shape as Australians age.
Second, we find that the
life-cycle patterns of health

in Australia vary significantly
across income groups,
skills and labour market
status. Third, we find that
the average health status
follows a similar life-cycle
trend in both countries.
However, the life-cycle
pattern of health inequality
does not decline at old ages
in the U.S. Fourth, we find
the correlation between
health and income is
much smaller in Australia.
Finally, we construct the
age profiles of health and
income using an advanced
semi-nonparametric partial
linear estimation method.
We assess the quantitative
importance of the time
and cohort effects on the
evolution of health over
the life-cycle.

MEDICAL CONSUMPTION OVER THE LIFE-CYCLE: FACTS FROM U.S. HOUSEHOLD SURVEY DATA

Households spend a
significant share of their
income on health care.
Upward trends in health
expenditures have been
widely observed across
all OECD countries over
the last few decades.
In particular, total aggregate
spending on health care
amounted to about 17
per cent of GDP in 2010
and is expected to increase
to 20 per cent of GDP by 2020
in the U.S. Population ageing
and the introduction of
new technology intensive
treatment techniques have
been identified as some
of the main contributing
factors to this increase.
The natural process
of health depreciation
implies that the use
of health services varies
significantly by age. These
age effects are not easily
identified as there are
many other factors that
drive health spending,
and many of them correlate
with age in a non-causal
way. Constructing life-
cycle profiles of medical
consumption that can
isolate the pure age effect
is therefore a crucial step
towards our understanding
of how ageing shapes the
demand for health and the
utilisation of health care.

This will inform projections
about future increases in
health expenditures and will
help with building efficient
health insurance systems.

In this project, we
investigate the association
between age and medical
spending in the U.S. using
data from the Medical
Expenditure Panel Survey
(MEPS) and a partially linear
seminonparametric model.
We estimate 'pure' life-
cycle profiles of health
spending while controlling
simultaneously for time
effects (i.e. institutional
changes and business
cycles effects) and cohort
effects (i.e. generation
specific conditions).
We find that time and cohort
effects together introduce
a significant estimation bias
into predictions of health
expenditures per age group,
especially for individuals
older than 60 years. We also
find that the estimation bias
introduced by cohort effects
increases monotonically
with age, while the bias
due to time effects is not
significant. The overall
effect of Medicare on the
cohort and time effects
biases is negligible.

INCOMPLETE MARKETS AND SOCIAL HEALTH INSURANCE: A QUANTITATIVE ANALYSIS

Australia has a mixed
healthcare financing system
that is dominated by the
public sector. Specifically,
the public health insurance
system i.e. Medicare is
compulsory and universally
covers all residents;
on the other hand,
the private health insurance
system is voluntary and
only covers a fraction of
high income individuals.
Why does social health
insurance exist, and why
does it dominate private
health insurance? In this
paper we address this
question in a standard
incomplete market, using a
stochastic dynamic general
equilibrium, overlapping
generations (OLG) model with
endogenous health capital
accumulation and insurance
choice. Our results suggest
that public income
insurance through social
health insurance systems
improves the allocation
of risk in an economy
where private risk sharing
is incomplete. Specifically,
the welfare gains resulting
from the positive insurance/
redistribution effects
dominate the welfare
losses associated with the
negative incentive effects
(tax distortions and moral
hazard). Our results highlight

the importance of a universal public health insurance system such as Australia's Medicare. In addition, our results indicate that a mix of public and private health insurance appears to be a more effective way to share health risks. This has implications for health insurance policy in Australia. It emphasises the role of fiscal policy such as the Medicare levy surcharge and tax rebates to subsidise the private insurance market.

MARKET INEFFICIENCY, INSURANCE MANDATE AND WELFARE: U.S. HEALTH CARE REFORM 2010

Unlike Australia and other OECD countries, the U.S. has a different health care financing system that is dominated by the private health insurance sector. In particular, a large part of the working age population obtains health insurance from their employers who benefit from a tax deduction when purchasing private health insurance for their employees. Government-run health insurance programs, for the most part, are limited to covering the retired population (Medicare) and the poor (Medicaid). This fragmented health insurance system exposes households to considerable financial risk and leaves over 45 million people uninsured. In addition the U.S. health care system is the most expensive in the world with health care spending reaching 17.6 per cent of GDP in 2010. In this project, we investigate the effects of the Affordable Care Act (ACA) on insurance take up rates, health spending levels, growth and other market aggregates using a stochastic dynamic general equilibrium OLG model with endogenous health capital calibrated to U.S. data. We find that the expansion of Medicaid, the introduction of subsidies, and the enforcement of penalties increases the health insurance coverage rates significantly but does not achieve full coverage. In addition, we find that the fiscal distortions created by the healthcare reform result in efficiency losses. Overall we find that the ACA reform results in small welfare losses.

> ...we find that the life-cycle patterns of health in Australia vary significantly across income groups, skills and labour market status

DR CHUNG TRAN

BA Hanoi National Economics University, PhD Indiana University
ASSOCIATE INVESTIGATOR

Chung Tran is a Senior Lecturer in the Research School of Economics at the Australian National University. Prior to his appointment at ANU, he worked as a postdoctoral fellow at the University of New South Wales.

Chung's primary research interests lie in the areas of macroeconomics and public economics. Much of his current work explores the role and macroeconomic aspects of public policy. Specific research topics include: evaluating trade-offs in designing tax-transfer systems; analysing the dynamic effects of fiscal policy; and understanding the implications of debt financing and fiscal austerity measures. His work appears in leading academic journals including *European Economic Review, Journal of Development Economics* and *Journal of Economic Dynamics and Control*.

Chung is one of six researchers funded by an ARC award to support Early Career Researchers in the Centre.

HOUSING DEMAND IN AUSTRALIA BY HOUSEHOLD TYPE AND AGE OF REFERENCE PERSON

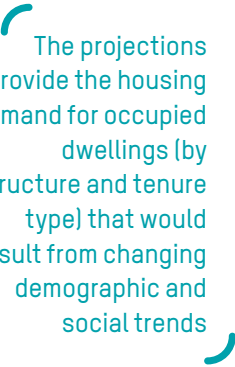RESEARCHER

PETER MCDONALD

External Collaborator
JEROMEY TEMPLE
(DEMOGRAPHIC INSIGHT P/L)

In association with Demographic Insight P/L, CEPAR Deputy Director, Peter McDonald has provided estimates of housing demand on four occasions during the life of the National Housing Supply Council (Department of the Treasury). The latest projections were completed in May 2013 and a report provided to the Department of the Treasury.

The projections provide the housing demand for occupied dwellings (by structure and tenure type) that would result from changing demographic and social trends (population size, births, deaths, international migration, internal migration, age structure changes and family and household formation and dissolution). These are all demand-side factors. The projections are not constrained by any supply-side factors such as availability of land, the number of vacant dwellings, construction of new dwellings and affordability. The approach used is to project housing demand on the basis of current and recent trends in demand inputs. These demand projections should then be assessed in supply terms, that is, the results from the projections of demand for housing can be compared with existing and planned supply of housing and assessments made of what corrections for demand-supply discrepancies need to be made. Where meeting demand would create supply difficulties, consideration would need to be given to how this demand is re-directed. Do the projected households maintain their dwelling preference but change their location or do they change their dwelling preference within the location. The fact that supply cannot meet housing preferences could also conceivably lead to the household not being formed at all.

The projection method makes use of transitions from one household type to another as people age. The latest report provides an analysis of the changes in the transitions across three intercensal periods, 1996–2001, 2001–06 and 2006–11. Reflecting a longer term trend of joint survival, older persons are increasingly likely to live in couple households across the three intercensal periods.

> The projections provide the housing demand for occupied dwellings (by structure and tenure type) that would result from changing demographic and social trends

HOME EQUITY RELEASE PRODUCTS ALLOWING FOR IDIOSYNCRATIC HOUSE PRICE RISK

RESEARCHERS

ADAM WENQIANG SHAO
MICHAEL SHERRIS
KATJA HANEWALD

Home equity is a significant component of individual wealth of Australians as they reach retirement. Recently there has been increased attention given to the possibility of using home equity to finance health and other costs in retirement. Reverse mortgages provide an alternative source of funding for retirement income and health care costs. In Australia, the Productivity Commission has proposed the use of reverse mortgages as a way of unlocking equity in housing, with special reference to aged care provision. Most of the analysis of reverse mortgages is based on the market index of residential houses and does not reflect the wide variation in price and growth trends of houses observed in practice. The two main risks that reverse mortgage providers face are house price risk and longevity risk.

Recent real estate literature has shown that the idiosyncratic component of house price risk is large. This project provides an analysis of the combined impact of house price risk and longevity risk on the pricing and risks of reverse mortgage loans in a stochastic multi-period model. The model incorporates a new hybrid hedonic-repeat-sales pricing model for houses allowing for individual characteristics, as well as a stochastic mortality model for mortality improvements along the cohort direction (the Wills-Sherris model). We show that pricing based on an aggregate house price index does not accurately assess the risks underwritten by reverse mortgage lenders, and that failing to take into account cohort trends in mortality improvements substantially underestimates the longevity risk involved in reverse mortgage loans.

The results are being written up for a forthcoming CEPAR Working Paper: 'Reverse Mortgage Pricing and Risk Analysis Allowing for Idiosyncratic House Price Risk and Longevity Risk'.

> We show that pricing based on an aggregate house price index does not accurately assess the risks underwritten by reverse mortgage lenders, and that failing to take into account cohort trends in mortality improvements substantially underestimates the longevity risk involved in reverse mortgage loans

ATTITUDES, AGEING AND INTERGENERATIONAL RELATIONS

RESEARCHERS

HAL KENDIG
KATE O'LOUGHLIN
COLETTE BROWNING
KERRY SARGENT-COX

The rights and self-respect of older people depend largely on their 'social treatment' in everyday life, but there is growing evidence that they face negative attitudes and discrimination that limits their contributions and wellbeing. Negative views on ageing are increasing along with rising public concerns about the costs to government of an ageing population (The Treasurer's Intergenerational Report (IGR)). Negative attitudes are considered to be a major factor influencing older people in the workplace and in poor quality of care experienced in the health system.

The Australian Government aims to increase productivity by encouraging people to work longer (Productivity Commission, 2005) and to limit health and social expenditure in order to reduce fiscal costs associated with rapid population ageing over the coming decades (IGR, 2010). However, these actions will depend heavily on the practices of employers and governments. The Age Discrimination Act (2004) aims to address these problems but there is little evidence to date on its effectiveness or on the knowledge required to guide effective action against age discrimination and promote positive attitudes towards ageing.

As part of the research program investigating issues of ageing and attitudes, this project aims to determine the influence of attitudes specific to the different life situations of older workers, recent retirees, and those in advanced old age and identify societal attitudes to ageing, intergenerational justice, and related policies.

In 2013, analysis of the 2009–10 Australian Social Survey of Attitudes (AuSSA) data has been conducted on the attitudes of different age groups, possible social and economic influences on them, and how they relate to political and social views relevant to older people (e.g., support (or not) for raising the pension age eligibility to 67 years). Retirement and workforce participation issues for

those aged 50–64 years have been investigated, including age discrimination. Articles are under review on intergenerational equity. Presentations were made to the Older Australians Working Group of the Department of Human Services and various community groups.

Related presentations and publications appearing in 2013 include 'Individuals, families and the state: Changing responsibilities in an ageing Australia' (CEPAR Working Paper 2013/14), also to be published in the proceedings from the 20th Biennial General Conference of the Association of Asian Social Science Research Councils at Cebu in the Philippines; and 'Thirty years of the United Nations and Global Ageing – An Australian

Perspective' published in the *Australasian Journal on Ageing*.

Analyses of the 2010 data and publications will continue in 2014. Preliminary planning has begun on a possible follow-up survey in 2015 or 2016 to identify the effects in prevailing social attitudes of recent economic and policy change. We will examine in greater depth ageing people's experiences and perceptions of ageist treatment as well as younger people's experiences and perceptions that may give rise to them. Building on the relationship established by O'Loughlin, Sargent-Cox and Kendig with the Australian Human Rights Commission and employers, a Discovery or Linkage proposal for further work on attitudes will be submitted.

PROFESSOR COLETTE BROWNING
BSc (Hons) MSc Monash, PhD La Trobe
ASSOCIATE INVESTIGATOR

Colette Browning is Professor of Healthy Ageing and Director of the Monash Research for an Ageing Society and Director of Primary Care Research in the School of Primary Health Care, Monash University.

She is recognised as a national and international leader in psychology and health. Professor Browning is a Fellow of the Australian Psychological Society. Together with Hal Kendig, she co-directs the Melbourne Longitudinal Studies on Healthy Ageing program. Previously she convened the Healthy Ageing theme of the ARC/NHMRC Research Network in Ageing Well.

Her research focuses on healthy ageing and improving quality of life for older people, chronic disease self-management and consumer involvement in health care decision making. She leads a large program of research in China on chronic illness management supported by the China Ministry of Health. She is an Honorary Professor at Peking University and is Co-Director

of the Peking University Centre for Ageing and Health Services. She is a member of the China Family Panel Study Advisory Committee and a Member of the Ministerial Advisory Committee for Senior Victorians.

INTERGENERATIONAL SOLIDARITY AND POPULATION AGEING: ATTITUDES IN EUROPE

RESEARCHERS
JOHN PIGGOTT
ED WHITEHOUSE

'Intergenerational solidarity' (IGS) is a term used to describe the linkages between generations, in their exchanges of time and money, and in their risk-sharing. Because needs and resources vary across the life-cycle, each generation gains from such exchanges.

The family and the government are the only institutions that can ensure this intergenerational exchange works. The market is not able to do so because minors and the unborn cannot sign contracts, and because intergenerational investment is irreversible – for example, education cannot be returned.

IGS embodies the trust necessary to ensure that these non-market mechanisms of exchange continue to work smoothly as conduits for intergenerational exchange.

IGS structures can be very complicated. The implicit contracts in many social security systems tend to be quite complicated, and have been changing with demographic shift. Even family exchanges can be complex – bequests, informal care for aged parents, caring for grandchildren, all appear to be governed by notions of both efficiency and fairness that are hard to pin down. Population ageing, and social and economic changes such as the labour force participation of women, place IGS under stress.

This project aims to determine in what social and economic circumstances IGS is most robust, and in what circumstances it might be most threatened. It brings together two new databases to determine how demographic, social and economic changes impact people's perceptions of IGS, reflected in attitudes across a number of dimensions of intergenerational interaction.

The project had its origins in the April 2011 OECD Social Security Ministerial meetings in Paris. Both authors were involved in preparing background briefing papers on IGS, which was one of three major topics discussed at the meetings. In the time since, we have married attitudinal (Eurobarometer survey data) and economic data from more than 20 countries in Europe (OECD databases), to examine whether imbalances at the level of the nation, generated by economic policy and demographic shift are related to national attitudes towards solidarity between generations.

The project is ongoing, with progress report presentations delivered at various academic meetings, most recently at the SWUFE-CEPAR conference in December 2013. Data revisions and statistical analysis continue. We are currently revising our estimates of money transfers between generations, drawn from SHARE data, and hope to have a paper ready for journal submission by the end of 2014.

> This project aims to determine in what social and economic circumstances IGS is most robust, and in what circumstances it might be most threatened

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EDWARD WHITEHOUSE
MA Oxford
ASSOCIATE INVESTIGATOR

Edward Whitehouse is an economist, and a world authority on pension systems. For many years he held the position of Principal Economist in the Social Policy division of the OECD, where he coordinated the Organization's models of pension entitlements. He was also co-editor of the World Bank's Pension Reform Primer and director of Axia Economics, a consultancy specialising in the microeconomic analysis of public policy, where he advised governments on pension reform in numerous countries, including Hungary, Mauritius, Pakistan, Poland and Senegal.

He has also worked as an editorial writer for the *Financial Times* and for the Institute for Fiscal Studies in London and has taught at University College, London and the University of Oxford. He has published over 20 journal articles and numerous books on pensions, retirement, labour markets and tax policy. He has an MA in Philosophy, Politics and Economics from the University of Oxford.

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THE LONG-TERM DECLINE IN
BMI AMONG JAPANESE WOMEN

RESEARCHER

SHIKO MARUYAMA

External Collaborator

SAYAKA NAKAMURA
(NAGOYA UNIVERSITY)

Men and women are rapidly gaining body weight in most parts of the world – a phenomenon called the global obesity pandemic. Conventional explanations for this trend include the availability of high-caloric food, the higher opportunity costs of preparing healthy food, decreased energy consumption at work due to automation and motorisation, and decreased costs associated with obesity due to medical progress. In sharp contrast to this global trend, however, the Japanese have a body mass index (BMI) significantly lower than those in other high-income countries, and the thinness of Japanese women is particularly prominent. Moreover, the age-specific BMI of adult Japanese women has steadily decreased over a half century, in contrast to the consistent increase in that of Japanese men. The conventional explanations cannot rationalise this gender difference in BMI trends in Japan. But there are other unusual behavioural features among Japanese women – they have a lower marriage rate than women in most other countries, and their fertility is very low. This latter decision, in particular, has led to Japan being the world's oldest significant economy.

This project aims to investigate the mechanism underlying the BMI trend among Japanese women. The salient gender difference cannot be explained by the standard theories based on nutrition, public health, or food prices. Instead, it reflects long-term socio-economic structural changes in terms of the formation of families and the role of gender in Japan. We hypothesise that the peculiar BMI trend among Japanese women has concurred with the long-term trends in the fertility rate, female labour force participation, and marriage market in Japan.

The project consists of the following three stages. First, we provide a comprehensive description of the BMI trends over the last 100 years in Japan, studying several nationally representative historical data sources. Second, we conduct decomposition analysis using micro data to identify the factors most closely related to the BMI trend. Based on the results from the second stage, we conduct more detailed analysis to shed light on the mechanism. For example, if the results from the second stage indicate the importance of the marriage market, we will analyse the marriage market in more detail. If the BMI decline is closely related to the decline in fertility, we will investigate the underlying cause of the fertility decline in Japan and the causal relationship between the declines in fertility and BMI.

> We hypothesise that the peculiar BMI trend among Japanese women has concurred with the long-term trends in the fertility rate, female labour force participation, and marriage market in Japan

DR SHIKO MARUYAMA
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RESEARCH FELLOW

Shiko Maruyama joined CEPAR as a Research Fellow located in the Australian School of Business at the University of New South Wales in October 2012. He left CEPAR in December 2013 to take up a senior lectureship at UTS Business School. He continues his association with CEPAR as an Associate Investigator.

His research interests include empirical applied microeconomics and a wide range of health economics topics, such as health insurance, informal care, elderly care and intergenerational transfers and preventive health behaviour.

Previously he has held Visiting Scholar positions at the Department of Economics at Queen's University, the Department of Management and Strategy at the Kellogg School of Management and the Institute of Economic Research at Hitotsubashi University.

STRAND 2

DECISION MAKING BY INDIVIDUALS, HOUSEHOLDS AND FIRMS

The ageing of individuals potentially involves changes in competency that may affect decision making and social interactions. Examples include changing driving competency and ability to make rational choices concerning retirement plans, aged care and health insurance. Younger cohorts may also experience difficulties choosing future retirement plans. Our research assembles economic, social and psychology expertise to address the challenges posed by age transitions in cognitive and functional competencies and health and financial literacies.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

STRAND 2 DECISION MAKING BY INDIVIDUALS, HOUSEHOLDS AND FIRMS

Decision making can take many forms, and is open to many analytic approaches. Choices over the life-cycle, in a context where people choose what's best for themselves, allows the impacts of policy changes on those choices to be analysed. In 2013, this 'life-cycle' modelling strategy was employed to examine retirement, human capital accumulation, and their inter-relationship. The impact of systematic longevity risk on life choices was also assessed. Perceptions of life expectancy, the accuracy of which impacts annuity markets and retirement choices, were analysed. As well, decision making where confusion or commitment issues influenced choice were given attention.

- LIFE-CYCLE MODELLING
This type of modelling takes as its starting point the observation that many decisions are taken with the future in mind. Modelling a life-cycle, and introducing major choices, generates insights into how choices over a lifetime are interconnected. From a policy perspective, it provides indications of how changing policies may influence such choices. One of these projects focuses particularly on human capital investment, which might involve outlays on health or education, in addition to more standard choices around consumption saving, labour supply, and retirement. These are introduced into a model incorporating

uncertainty. Because many choices are simultaneously modelled, solution procedures are complex, and a challenge in the project is to develop efficient solution algorithms. Other projects examine investment in health over the life-cycle, the role of bequest motives in a model with intergenerational interactions, and retirement and saving behaviour in an Australian context. This last project has just begun – so far, a baseline structural model has been constructed.

- SUBJECTIVE LIFE EXPECTANCIES
Decisions and choices with a lifetime context inevitably depend in some way on people's views about how long they expect to live. While this is never known with certainty, individuals do have expectations about life expectancy which may be compared with estimates derived from mortality data. For an annuity market to function well, for example, people need to have realistic views about their life expectancy. Two projects have focused on this question as a possible source of bias in decision making, especially with regard to saving for retirement and annuity purchase at retirement. Often, it is found that individuals

will say their life expectancy is quite low, but when asked what chance they have of living to an advanced age, will report a high probability. One of the projects is the first to deal with this question in China, and is based on recently collected data. Overall, it appears that more information about life expectancy at different ages would help people planning their retirement.

- CHOICES, COMMITMENT, AND CONFUSION
It is now commonplace to say that choices over retirement saving and retirement incomes are complex. Two projects were progressed in 2013 to better understand why these choices are so often made poorly. The first is an advanced project led by Hazel Bateman and her

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colleagues. In this, experimental and survey techniques were used to advance understanding about how people processed information about retirement and risk, and how they ended up making a choice. Frequently, when confused, people would make ad hoc choices, or would rely on defaults. Many factors have been considered – how people view financial advisors, for example, how financially competent they themselves are, how information is presented, all influence the decision making process and the choices made. In a second project, the idea of poor self-control and commitment is made operational in a stylised

overlapping generations model. This approach allows new insights into the role of mandatory saving and retirement policies – these serve as a commitment device for those with self-control difficulties. Specifically, the question of how this kind of behaviour interacts with means-tested pensions such as the Australian Age Pension is explored. This project is still in its early stages, with results expected through 2014.

• OTHER CHOICES
AND DECISIONS
Several other projects falling within this strand address a range of issues relevant to choice and population ageing. These include choices over transfers between generations in a household; investment and retirement product choices in an environment where longevity risk varies systematically; health insurance choices of seniors; and the influence of health status on occupational choice. All these contribute to our understanding of how life-choices are made, and how these influence the evolution of an economy under pressure from population ageing.

LIFE-CYCLE MODELLING OF HUMAN CAPITAL INVESTMENT, SAVING, LABOUR SUPPLY AND RETIREMENT

RESEARCHERS

MICHAEL KEANE
ALAN WOODLAND
FEDOR ISKHAKOV

This project studies how consumption and savings choices throughout the life-cycle interact with labour supply decisions and the decision to retire. Human capital accumulation has been shown to be an important part of these processes in the previous literature. Yet the majority of work in this field concentrates solely on labour supply choices and the timing of retirement, because of the computational complexity of dynamic life-cycle models. Many of the existing papers on retirement abstract from consumption choice and take the consumption-savings process as exogenously given.

In this project we build a comprehensive life-cycle model that comprises labour supply decisions, consumption-savings choices and human capital accumulation. We investigate how inclusion of human capital in the model affects optimal behaviour under different institutional settings.

Considering all four decisions simultaneously allows us to draw conclusions about how different choices interconnect, in particular how investments in human capital throughout the life-cycle are affected by various aspects of the pension system and taxation. Including both labour supply during working ages and the retirement decision (intensive and extensive margins) into the model with human capital allows us to shed light on the mechanics of low estimates of labour supply elasticity that are usually obtained in microeconometric models.

This project is in its final stage with all major sections completed. In 2012 the main structure of the model was built and an innovative solution method was developed to cope with the high computational complexity of the model. During 2013 the theoretical model together with the computational procedure were analysed and developed further to ensure that the numerical simulations produced by this construct could be given sensible economic interpretations. Empirical work on the HILDA panel data was carried out in parallel, and the matching of the theoretical model with the observed data has started. In 2014 the estimation of the model will be completed, and the estimation results will be used to analyse the induced effects of the Australian pension system on labour supply and human capital accumulation processes.

This project is expected to produce several publications in leading refereed international journals in Economics.

> This project studies how consumption and savings choices throughout the life-cycle interact with labour supply decisions and the decision to retire

PROFESSOR MICHAEL KEANE
BS MIT, MA PhD Brown, FES, FASSA
CHIEF INVESTIGATOR

Michael Keane is an Australian Laureate Fellow and Professor of Economics in the Australian School of Business at the University of New South Wales. He is also a Professor of Economics at the University of Oxford.

Several independent sources have placed Michael Keane among the top 50 economists internationally in terms of citations and the impact of his work. He is considered to be a world leader in choice modelling and his expertise is sought both nationally and internationally. He has had a long association with two agencies of the U.S. Department of Health and Human Services: as a member of the Institute for Research on Poverty's Working Group on Problems of the Low Income Population since 1992 and as a member of the Peer Review Panel of the National Institutes of Health (NIH) in 1995–6, 1999 and 2001–5. In November 2009 he prepared a report on tax transfers and labour supply for the Australian Treasury's Commission on Australia's Future Tax System. He has been a visiting scholar at the International Monetary Fund at various times throughout his career.

He was elected to the Council of the Econometric Society in 2009 and is also a member of the American Economic Association and the American Statistical Association. He is an Associate Editor of the *Journal of Econometrics* and *Quantitative Marketing and Economics*.

ESTIMATION OF LIFE-CYCLE MODELS OF AUSTRALIAN HOUSEHOLDS WITH RETIREMENT POLICY

RESEARCHERS

CHRIS STRICKLAND
ALAN WOODLAND

One of the important aspects of the study of population ageing concerns the behaviour of individuals and households over their life-cycle (life course) and how this behaviour is affected by market forces and by retirement and tax policy settings of governments. This project aims at using panel data on Australian individuals and households drawn from the Household, Income and Labour Dynamics in Australia (HILDA) project to estimate structural models of life-cycle behaviour and to use the estimates to simulate the impacts of policy upon life-cycle behaviour. The expected outcome from the project is a better understanding of how individuals behave and how changes in policy arising from population ageing affect the household sector.

The household behaviour that is the focus of the project research includes decisions about the hours of work, consumption and saving at each age, including the decision to retire, based upon current information and expectations about uncertain future wage rates and mortality. The policy instruments of main concern include the personal tax schedule, age pension rates and rules and superannuation rules. Population ageing in Australia is likely to lead to changes in these policy settings to maintain government budget constraints. In turn, consequent changes in the behaviour of households will affect the aggregate labour supply, aggregate consumption of goods and the level of national saving. Accordingly, it is important to understand how policy affects household behaviour using available household data.

A structural model of household behaviour over the life-cycle that is firmly based upon economic theory and which is estimable using econometric techniques is constructed. The estimation methods being investigated include maximum likelihood estimation and Bayesian estimation techniques. These and other methods are then used on data for Australian households to estimate, test and simulate the structural models. The data are drawn from the HILDA Survey, a household-based panel study which began in 2001. This data set covers a large number of randomly sampled households and now covers 12 waves.

Progress made during 2013 has been largely to do with the construction of a baseline structural model and with its econometric estimation via maximum likelihood and Bayesian methods. Some initial progress has been made on constructing a data set from HILDA.

Overall, the project aims to contribute to the structural modelling of life-cycle behaviour, to knowledge about the life-cycle decisions of Australian households and to the evaluation of retirement and tax policy impacts arising from population ageing.

> ...the project aims to contribute to the structural modelling of life-cycle behaviour, to knowledge about the life-cycle decisions of Australian households and to the evaluation of retirement and tax policy impacts arising from population ageing

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DR CHRIS STRICKLAND
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SENIOR RESEARCH FELLOW

Chris Strickland is a CEPAR Senior Research Fellow located in the Australian School of Business at the University of New South Wales.

Prior to joining CEPAR in 2013, he held Research Fellow and Senior Research Fellow positions in the School of Mathematics at the Queensland University of Technology. He completed his PhD in Econometrics at Monash University in 2007.

His current interests include statistical methodology and applied statistical research. His main areas of interest are in time series, space-time analysis, mixed models and mixture models.

OPTIMAL INDIVIDUAL PRE AND POST RETIREMENT DECISION MAKING UNDER SYSTEMATIC LONGEVITY RISK

RESEARCHERS

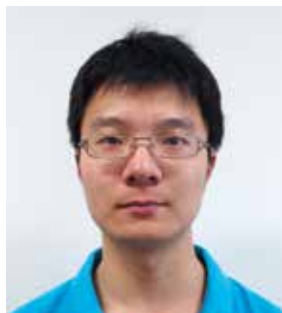YANG SHEN
MICHAEL SHERRIS
YU SUN

With the shift in retirement funding away from defined benefit plans towards defined contribution plans over the last two decades, individuals need to make their own decisions on the allocation of their wealth to different asset classes and financial products. Systematic mortality improvements and individual longevity risk are difficult for individuals to manage and their implications for post-retirement product and investment choices are not well understood. Individuals need to consider pre and post retirement decision making, taking into account the impact of systematic longevity risk.

This research project will study the optimal investment, consumption, leisure, insurance and retirement choice problem of an individual investor, whose mortality evolves in a stochastic manner over time. The project uses stochastic optimal control theory, including the dynamic programming principle, maximum principle, optimal stopping theory and convex duality martingale methods, to analyse the individual's decision problem. The aim is to determine analytical and numerical solutions to the problem in both a continuous-time setting and a multi-period discrete-time setting with a focus on the impact of systematic improvements. This project will extend over the next three years.

As preliminary to the full project, an honours project by CEPAR student Yu Sun titled 'Optimal Investment-Consumption under Systematic Longevity Risk' was undertaken in 2013 to consider the consumption-investment problem of an individual in discrete time and discrete state space with stochastic mortality. A recombining binomial lattice was used for stochastic mortality generating survival curves at each age. A range of longevity products based on state contingent securities were included in a complete market setting. The impact of systematic longevity risk on the consumption and investment behaviour of the individual was quantified along with the demand for various types of longevity products. The multi-period consumption-investment problem was solved using the Risk Neutral Computation method in Pliska (1997) which allows the derivation of a closed form solution for optimal consumption and bequests for the complete market case allowing only for stochastic mortality. The state and time dependent optimal consumption and bequest values were then used to determine the investment portfolio of the individual to replicate the consumption and bequests allowing for mortality uncertainty.

> The project uses stochastic optimal control theory, including the dynamic programming principle, maximum principle, optimal stopping theory and convex duality martingale methods, to analyse the individual's decision problem

YANG SHEN
BE E.China Normal University, MS PKU
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Yang Shen is a CEPAR Research Fellow located in the Australian School of Business at the University of New South Wales.

He joined the Centre in September 2013 after submitting his PhD thesis at Macquarie University.

His research interests include Actuarial Science, Financial Mathematics, and Stochastic Control.

He has published research articles in journals including the *Journal of Futures Markets, Insurance: Mathematics and Economics,* and *Nonlinear Analysis: Theory, Methods & Applications*. His current research at CEPAR focuses on optimal retirement decision making with systematic longevity risk.

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RETIRING COLD TURKEY

RESEARCHER

XIAODONG FAN

This project first documents 'sharp retirement' – retirement accompanied by a discontinuous decline in labour supply – across three U.S. data sets: the Current Population Survey (CPS), the Panel Study of Income Dynamics (PSID), and the Health and Retirement Study (HRS). As is widely acknowledged, most individuals in the U.S. directly retire from their full-time jobs without going through any period of part-time work. Such sharp retirement is hard – if not impossible – to explain with a standard labour supply model, where both preference and productivity change gradually over time.

This project proposes and estimates a life-cycle labour supply model with habit persistence wherein sharp retirement can be explained by workers quitting 'cold turkey' to break their 'working habit.' In much the same way that one might quit smoking, workers with an accumulated working habit exit the labour force with a pronounced, discontinuous decline in labour supply. The model produces reasonable parameter estimates with good model fits. The estimated fixed time costs from the model are 157 hours per year, comparable to actual commute time in the data but much smaller than other estimates in previous literature. Comparison with the fixed costs approach shows the working habit model produces more empirically plausible results. In particular, I show that, on average, individuals gradually reduce hours worked per week and keep weeks worked per year relatively constant. This is the opposite of what a model with fixed costs would predict, but is consistent with a model featuring adjacent complementarity, as is proposed in the project.

The model enables me to estimate how individual labour supply and retirement behaviour respond to changes in Social Security rules. Counterfactual experiments suggest that increasing the Early Retirement Age or eliminating the Social Security earnings test has moderate or little effect on labour supply or retirement ages, while universally reducing the generosity of Social Security benefits has much larger effects on the labour supply and retirement ages due to the income effect. In particular, reducing Social Security benefits by 20 per cent makes individuals work an additional 8.6 months per lifetime. Individuals choosing sharp retirement respond mostly on the extensive margin by delaying retirement eight months, while individuals choosing smooth retirement respond mostly on the intensive margin by increasing yearly labour supply and delaying retirement only one month.

In much the same way that one might quit smoking, workers with an accumulated working habit exit the labour force with a pronounced, discontinuous decline in labour supply

RESOURCE TESTING AND TEMPTATION

RESEARCHERS

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JOHN PIGGOTT

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Many social security systems across the world subject pension benefits to some form of earnings and assets test. Typically, this takes the form of a reduction in accrued pension benefits according to a specific rate ('taper rate') when an individual's earnings/assets exceed a certain threshold. Sometimes this is designed to limit social security take-up among workers who have decided to work beyond the access age for the pension. In other cases, means testing has appeared as a simple device to provide adequate insurance to lower income households in a budget-neutral way. The rules (taper rates, thresholds and type of earnings that are subject to the test) vary significantly across countries and pension schemes.

Recent empirical and experimental findings in the economics literature have highlighted the important impediments to savings that agents may face when their preferences depart from the standard 'rational' specification. Preferences reflecting difficulties of self-control generate very different policy prescriptions from standard formulations, and provide an economic case for policy interventions which are widespread, but which cannot be justified using conventional preference specifications.

This project will assess, in a fairly precise and quantifiable manner, the economic and welfare implications of resource testing with preferences capturing self-control issues. To this end, we use a general equilibrium overlapping generations (OLG) model with labour-leisure choice, uninsurable individual income shocks, borrowing constraints and missing annuity markets, and calibrate our economy to that of the U.S. We conduct our analysis in two stages involving two economies that only differ in agents' preference specifications, but are otherwise identical. We first conduct our analysis in a partial equilibrium framework in order to control for the general equilibrium feedback effects and subsequently extend to a general equilibrium. Our ultimate goal is to assess from a welfare standpoint the scope of the introduction of means testing to an earnings dependent and progressive 'unfunded' (Pay-As-You-Go) scheme, without altering the expected present value cost (EPVC) of the latter. We restrict our analysis to PAYG systems since the different logic and mechanics of 'unfunded' versus 'funded' systems eventually induce entirely different risk-sharing properties as well as savings incentives.

It is still unknown whether and to what extent welfare and aggregate implications of means-tested pension programs are sensitive to individuals' self-control problems and this is the project's contribution.

In order to capture our agents' temptation towards current consumption, our model economies make use of the preference structure pioneered by Strotz (1956) and Phelps and Pollak (1968) and further elaborated by Gul and Pesendorfer (2004) to model self-control issues.

The findings have been presented at two international conferences in July and August 2013. Athanasios Thanopoulos visited the ANU node of CEPAR in October 2013 for 3 weeks to work on the project, and further simulations were developed. It is expected that the project will generate a journal paper for submission in 2014.

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Cagri Kumru is a Senior Lecturer in the Research School of Economics at the Australian National University. He is one of six Early Career Researchers funded by an ARC award to support Early Career Researchers in the Centre.

Prior to his appointment at ANU, he was a Postdoctoral Fellow in the School of Economics at the University of New South Wales working with Professors Piggott, Woodland and McDonald on the project 'Working Longer: Policy Reforms and Practice Innovations' funded by a large ARC/NHMRC Ageing Well, Ageing Productively Grant. From 2006–2007, he was a lecturer in the School of Economics, Celal Bayar University.

He brings to the project a unique mix of behavioural analysis, institutional pension expertise, and high level technical skills in overlapping generations modelling. His research interests include macroeconomic theory; public economics; computational economics; and behavioural economics.

'The infrastructure and networks that CEPAR provides are very beneficial to my research. I receive enormous support from the Centre which allows me to complete a number of papers, attend various conferences and workshops and most importantly receive instant feedback from top-notch researchers in the field.'

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COMPLEX FINANCIAL DECISIONS FOR RETIREMENT SAVING

RESEARCHERS

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In 2013 CEPAR researchers, in conjunction with their external collaborators, continued to investigate aspects of retirement saving choices in research funded primarily by a five year ARC Discovery Grant 'The paradox of choice: Unravelling complex superannuation decisions' and a three year ARC Linkage Grant with partner UniSuper 'Reconnecting and engaging superannuation fund members'.

Among many behavioural explanations for the annuity puzzle is the observation that when people are confronted with complex and irreversible annuitisation decisions, choices can degenerate to ad-hoc diversification strategies or reliance on defaults. In order to investigate these phenomena Bateman, Eckert, Iskhakov, Louviere, Satchell and Thorp (2013) analysed observed choices from a discrete choice experiment of allocations of retirement wealth implemented online to a representative sample of 923 near-to-retirement superannuation fund members. Participants were asked to allocate their accumulated retirement wealth into an annuity product and/or a phased withdrawal product using a 'configurator'. Allocations were made at four different levels of risk of exhausting the phased withdrawal balance before end of life, and the initial (default) position of the configurator slider varied between subjects: 50/50, 25/75, 75/25. Four heuristics were identified in the annuity decisions: staying with the default (16 per cent of the sample), the 1/n diversification heuristic (10 per cent) and 2 'extreme' heuristics – 0 per cent annuity (7 per cent) and 100 per cent annuity (3 per cent) with segment membership determined by financial competence, self-assessed financial knowledge, education level and knowledge of retirement benefit products.

In a complementary study Agnew, Bateman, Eckert, Iskhakov, Louviere, Satchell and Thorp (2013) implemented an online incentivised discrete choice experiment to study how well individuals judge financial advice and whether factors other than advice quality influence their evaluations. To develop the experimental stimuli, professional actors playing financial advisers were filmed, each providing correct and incorrect advice on each of four advice topics – paying down debt, consolidating retirement accounts, choosing a low-fee index fund and diversifying a stock portfolio. For each advice topic, respondents were asked to nominate the advice they would follow. The advisers differed by age, gender and whether they had a professional certification. Results suggest that some individuals rely on extraneous signals to judge advice (such as age and certification) and provided evidence of persistence in adviser choice over time, due to the interplay between formation of trust and the quality of advice, the difficulty of the advice topic,

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PROFESSOR HAZEL BATEMAN

BEc (Hons) Qld., PhD UNSW
ASSOCIATE INVESTIGATOR

Hazel Bateman was Associate Head of the School of Risk and Actuarial Studies in the Australian School of Business at the University of New South Wales in 2013. In 2014 she became Head of the School.

She is one of Australia's leading experts in superannuation and pensions and is widely published in the area of the economics and finance of retirement incomes. The overall themes of her research are the adequacy and security of retirement saving and retirement benefits and issues associated with the increasing risk and responsibility faced by retirement savers under defined contributions arrangements. Her work on administrative costs and charges of superannuation funds has informed global pension policy developments, including the financial product disclosure legislation in Australia. Over the past eight years, Hazel Bateman has jointly held six ARC Discovery Grants, including an ARC Discovery Grant of $960,000 over 2010–2014 to undertake research to better understand complex retirement and superannuation decision making.

Hazel has been a consultant on retirement income issues to a range of Australian and international organisations including the OECD, the World Bank, the Social Insurance Administration (China) and the Korean Institute of Health and Social Affairs. She has served on the Australia Government's Superannuation Roundtable and is currently a member of the editorial board of the *Journal of Pension Economics and Finance*.

and the order the advice topics were presented. Our finding that trust is relatively easily established and maintained, even in an online context, shows that consumers with low financial literacy are especially vulnerable.

Low levels of non-default decision making among superannuation members in Australia are assumed to be evidence of a lack of engagement or interest in superannuation. Using an administrative dataset of superannuation actions and the results of a marketing survey of superannuation attitudes (both provided by the ARC Linkage grant partner, UniSuper) Bateman, Deetlefs, Dobrescu, Newell, Ortmann and Thorp (2013) investigated the relationship between attitudes (specifically personal interest or involvement in superannuation) and observable levels of non-default activities (such as making voluntary contributions, choosing or changing investment options and changing insurance cover). A key finding was that individuals who rate their own personal interest in superannuation affairs as very high are more likely to be active online but not more likely to make a non-default action such as investment or insurance choice. The study revealed a complex relationship between engagement (or interest) in superannuation and specific actions, suggesting that non-default activity is not a reliable proxy for member engagement.

Finally, the Linkage grant research team considered the effectiveness of prescribed financial product disclosures which have been designed to assist people make appropriate retirement investment choices. The specific context was Australia's shorter financial product disclosure statement which had been revised to include the key information considered to be necessary for selecting a retirement savings investment. Similar legislation has been introduced or is being considered worldwide. Using two incentivised laboratory experiments, the team studied how UniSuper members and students drawn from a student panel, chose investment options from the new short eight-page product disclosure statement. Despite careful consideration of design by the regulator (Australian Securities and Investment Commission) and industry advisory groups, the subjects largely ignored the risk and return information with a pie-chart showing asset allocation having the largest marginal impact on investment choices. In fact, participants preferred options with more segmented pies (lower concentration) and with equally sized segments (lower deviation from a 1/n allocation), which suggested the application of a simple diversification heuristic. The results highlight that information contained in prescribed investment disclosures may not be used in the manner intended by the regulator and raise questions about the way 'user-friendly' information prescribed by regulators is validated before being legislated.

The research has produced three working papers:

1   Agnew, Bateman, Eckert, Iskhakov, Louviere and Thorp (2013), 'Individual judgment and trust formation: An experimental investigation of online financial advice', CEPAR Working Paper 2013/26.
2   Bateman, Deetlefs, Dobrescu, Newell, Ortmann and Thorp (2013), 'Just interested or getting involved? An analysis of superannuation attitudes and actions', CEPAR Working Paper 2013/23.
3   Bateman, Dobrescu, Newell, Ortmann and Thorp (2013), 'As easy as pie: How retirement savers use prescribed investment disclosures', CEPAR Working Paper 2013/10.

A manuscript is also being prepared:

•   Bateman, Eckert, Iskhakov, Louviere, Satchell and Thorp (2013), 'Default and diversification heuristics in retirement annuity choice'.

The results highlight that information contained in prescribed investment disclosures may not be used in the manner intended by the regulator and raise questions about the way 'user-friendly' information prescribed by regulators is validated before being legislated

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INVESTMENT IN HEALTH OVER THE LIFE-CYCLE

RESEARCHERS
MICHAEL KEANE
ELENA CAPATINA
SHIKO MARUYAMA

The project studies the relationship between socio-economic status (SES) and health focusing on individuals' decisions to invest in health and human capital over the life-cycle. While many previous papers have established a strong correlation between socio-economic variables and health, little is understood about the causal pathways behind it. The challenge lies in the ability to empirically identify the effect of SES on health, the effect of health on SES and the effect of common factors systematically correlated with both SES and health. Due to the present limited understanding of the SES-health relationship, most existing life-cycle models make drastic simplification assumptions, for example assuming that health evolves exogenously over the life-cycle and modelling human capital accumulation independent of health. However, given the rising health care costs and ageing populations in most countries, it is becoming increasingly important to develop the tools needed for the design of effective policy aimed at improving health outcomes. Therefore, we aim to fill this gap in the literature by building and estimating a model of health formation over the life-cycle in the spirit of Grossman (1972), emphasising the role of decisions regarding investment in health and human capital.[2] It is important to consider these decisions jointly since a large literature suggests that human capital (and the income that it generates) affects health, and vice-versa. The magnitudes of these effects are very controversial and one of the aims of our project is to develop new methods to estimate these effects.

We build a life-cycle model with endogenous labour supply and investment in health capital. Individuals accumulate human capital (experience) while working, and can invest in health capital through effort such as seeing a doctor regularly and exercise. The incentives to invest in health and human capital are analysed in relationship to one another. A key feature of the project is to model a realistic health process over the life-cycle using data from the Medical Expenditure Panel Survey. In particular, we use data on respondents' detailed medical conditions to distinguish between different types of health shocks with different causes and effects: Shocks that affect the ability to work and those that do not, shocks that affect future health and those that are transitory, and shocks that are predictable in the sense that they are correlated with previous health and health behaviour and those that are unpredictable. In addition, this paper is the first to study the medical expenditure shocks associated with detailed medical conditions. This modelling and estimation are important since they enable us to accurately capture how people form expectations regarding the evolution of health and the degree of health risk they face throughout their lives in order to estimate how health impacts individuals' economic decisions such as the allocation of resources

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ELENA CAPATINA
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RESEARCH FELLOW

Elena Capatina is a CEPAR Research Fellow located in the Australian School of Business at the University of New South Wales. She joined the Centre in July 2011 after graduating with a PhD from the University of Toronto. Her research interests include macroeconomics, health and labour economics.

'Since my arrival at CEPAR, I have been continuing my research on health risk in the context of life-cycle models of labour supply and saving. CEPAR has been an ideal environment to conduct research in this area. I have met with many other researchers affiliated with CEPAR with interests and experience in this area, and have benefited greatly from their suggestions and ideas. Also, since CEPAR is a multidisciplinary environment, I receive valuable feedback from researchers in other fields, including Actuarial Sciences and Demographics, who provide me with new and exciting perspectives.

'It has been very interesting to participate in several conferences, workshops and seminar series organised by CEPAR. At these events, I gained insights into potential research topics that are highly relevant today by talking with researchers from other fields, policymakers and professionals working in industry.

'I have started several new projects on the topics of health investment over the life-cycle, health and occupational mobility, private health insurance in the presence of universal health insurance over the life-cycle, and demographic change and medical innovation'.

between consumption, leisure, work and health investment. We also emphasise that health impacts human capital accumulation over the life-cycle through its effect on labour supply decisions. After estimating the model, we apply it to conduct several counterfactual experiments. For example, we study how improvements in treatments of particular major diseases affect individual decisions and welfare.

We anticipate having a working paper finished by the end of 2014. The paper will be presented at international conferences and will be sent for publication in a peer reviewed top rated journal in Economics.

[2] Grossman, Michael (1972). On the Concept of Health Capital and the Demand for Health, *Journal of Political Economy* 80 (2): 223–255

…we use data on respondents' detailed medical conditions to distinguish between different types of health shocks with different causes and effects: Shocks that affect the ability to work and those that do not, shocks that affect future health and those that are transitory, and shocks that are predictable in the sense that they are correlated with previous health and health behaviour and those that are unpredictable

HEALTH AND OCCUPATIONAL MOBILITY

RESEARCHERS

ELENA CAPATINA
OLENA STAVRUNOVA

Existing research shows that there are large returns to occupational tenure consistent with the fact that human capital is specific to the occupation in which an individual works. Yet occupational mobility in the United States is high and has increased over time. High rates of occupational switches imply high levels of destroyed human capital, with negative effects on wage growth. In this paper, we study the importance of health shocks for occupational mobility. Adverse health shocks, both physical and mental, can lead to sharp declines in individuals' accumulated physical and cognitive skills. These declines imply lower abilities to perform different job tasks, and can therefore lead to a mismatch between workers' skills and occupational requirements. The mismatch in turn leads to lower productivities or complete inability to perform in the current occupation, and is therefore a potential important factor in occupational mobility decisions as well as labour market exit. While a large literature has studied the link between heath and

incomes, relatively little attention has been given to the roles of the mismatch between workers' skills and occupational requirements and occupation switches in generating the negative relationship between the two. Increasing our understanding of these issues is particularly important in the context of countries experiencing rapid population ageing where policies are needed to keep older workers (who are relatively more likely to face health shocks) productive and integrated in the labour force. For example, knowing the consequences of health generated mismatches between workers' skills and occupational requirements on employment and earnings is important for understanding the effects of employment protection policies such as the Americans with Disabilities Act of 2009.

We document the importance of health shocks for occupational mobility using data from the Panel Study of Income Dynamics (PSID). In addition, we study patterns in workers' specific occupational skill requirements induced by changes in health status using data from the Dictionary of Occupational Titles (DOT). We then construct a model of individual labour supply and occupational mobility decisions where agents with different specific skills select occupations with different requirements, accumulate general and occupation specific human capital as they work, and face health risks associated with declines in specific skills. We show that the patterns of occupational mobility in the PSID are consistent with the model predictions. Finally, we use the model to determine how various programs such as employer health insurance, regulation on wage discrimination against workers of different health status, disability insurance and government skill training programs affect the efficiency of occupational choices of workers experiencing health shocks, drawing welfare implications associated with reforms in these programs.

We will continue our research in the next year and aim to have a completed working paper by the end of 2014.

This project studies one particular channel through which health affects life-cycle employment and earnings profiles, focusing on skills and occupational requirements. It is closely related to the project 'Investment in Health over the Life-Cycle' involving Michael Keane, Shiko Maruyama and Elena Capatina which studies the relationship between health and human capital accumulation (see page 54). In 'Health and Occupational Mobility' we do not consider individual decisions to invest in health, but instead dig deeper into why health affects the ability to work and earn income over the life-cycle. Occupational switches and labour market interruptions are key for the accumulation of human capital over the life-cycle, and understanding the contribution of health shocks to these closely complements the research in 'Investment in Health over the Life-Cycle'.

> While a large literature has studied the link between heath and incomes, relatively little attention has been given to the roles of the mismatch between workers' skills and occupational requirements and occupation switches in generating the negative relationship between the two

HEALTH INSURANCE CHOICES OF SENIOR CITIZENS

RESEARCHERS

MICHAEL KEANE
OLENA STAVRUNOVA

In many countries health care of seniors is only partially subsidised by the government, implying significant out-of-pocket expenditures incurred by individuals. Supplementary private health insurance can thus offer valuable benefits to seniors, making it important to understand how efficiently markets for this type of health insurance function.

It is well known that adverse selection and moral hazard can distort the functioning of insurance markets. Both effects manifest themselves in a positive relationship between expenditure risk and insurance coverage, but from a policy point of view the distinction between the two is very important. Policies that can deal with adverse selection (e.g., mandatory enrolment) can lead to greatly increased aggregate health care costs if the moral hazard effect is strong.

This project studies adverse selection and moral hazard in the U.S. Medigap health insurance market. We develop an econometric model of insurance demand and health care expenditure, where adverse selection is measured by sensitivity of the demand for Medigap insurance to health care expenditure risk. The expenditure risk is defined as the amount of medical costs the person would expect to bear if they are uninsured. This year the model has been further developed. In particular, a new measure of health expenditure risk has been developed that does not include costs of elective procedures that Medigap insurance will not cover but which are sensitive to an individual's income, or any extra spending induced by insurance coverage itself. The moral hazard is measured as the difference in health care expenditure between individuals with and without Medigap who have the same expenditure risk.

Using the revised model we still find that lower health expenditure risk individuals are more likely to purchase Medigap insurance; hence the selection into Medigap is in fact advantageous. Income and cognitive ability are the most important factors explaining why higher-risk individuals are less likely to buy insurance. This suggests that informational policies might be needed to encourage low cognitive ability/high risk individuals to purchase supplemental insurance.

We also find a moderate moral hazard effect of Medigap insurance. On average, an individual with Medigap spends about 25 per cent more on health care than his/her counterpart who does not have Medigap. We simulate the effect of a universal Medigap coverage on health care expenditures and find that it would increase per capita health care expenditures of seniors due to moral hazard effect.

The revised research paper is currently under second review in a major Economics journal.

> Income and cognitive ability are the most important factors explaining why higher-risk individuals are less likely to buy insurance. This suggests that informational policies might be needed to encourage low cognitive ability/high risk individuals to purchase supplemental insurance

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RESEARCH FELLOW

Olena Stavrunova is a Lecturer in the Economics Discipline Group at the University of Technology, Sydney and a CEPAR Research Fellow.

Olena joined UTS in July 2007 after completing her PhD in Economics at the University of Iowa. Olena's research interests include applied econometrics, bayesian econometrics, health economics and labour economics.

She has published in international and Australian journals on a variety of topics in applied econometrics and health economics, including econometric modelling of health care expenditures and hospital waiting times; the impact of hospital waiting times on patient utilisation of health care services; econometric modelling of the demand for private health insurance in Australia, and others.

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INTRA-HOUSEHOLD INTERGENERATIONAL RESOURCE ALLOCATION IN CHINA: LABOUR SUPPLY, EDUCATION AND HUMAN CAPITAL TRANSMISSION

RESEARCHERS
ELISABETTA MAGNANI
RONG ZHU

The purpose of this study is to investigate the intra-household allocation of resources (particularly care and time resources between generations) in the face of the rapidly and dramatically changing labour markets in China. In the last few decades China has witnessed sizeable improvement in education with a remarkable increase in the opportunities to go to school for both primary school and older children between 1980 and 2000. At the same time the returns to education in China have increased from less than 5 per cent to about 10 per cent during 1988–2001. These broad labour market changes combine with rapid population ageing and deteriorating labour market opportunities for older workers. We expect these changes to alter the intergenerational transmission of education from parents to children and that household organisation informs this process.

Using the 1990 and 2000 Chinese Population Censuses, we address two sets of related questions, (i) whether the intra-household intergenerational persistence in education between parents and children has declined and if so for which groups of children; (ii) what intra-household factors contribute to the transmission of education from parents to children?

We use census data to address the question of how human capital transmission differs in rural and urban areas, across ethnic groups, and between male and female children.

We report substantial heterogeneity in the intergenerational education transmission in China, and this result supports the finding by Grawe (2004) and Bratsberg et al. (2007) that intergenerational economic mobility between parents and children may be non-linear. Our stochastic dominance test results show that the magnitude of the persistence has declined for the overall sample between 1990 and 2000. These findings indicate that young people in the 2000 census have more equal access to education than those in the 1990 census, and parental education backgrounds are playing a declining role in children's educational attainment. This is an important improvement in China's education system: Children coming from low education backgrounds can now achieve higher education levels and so face better labour market prospects. The declining intergenerational education transmission is particularly visible in rural China, where declining parent-child educational correlations can be attributed to the continuing expansion of government intervention in education (for example, the nine-year compulsory education policy launched in the late 1980s). Although noteworthy, these aggregate results hide important differences across groups: Girls vs. boys, mothers vs. fathers, rural vs. urban households. While mother-child educational persistence has declined in urban and rural households between 1990 and 2000, we find that father-child educational persistence has increased between 1990 and 2000 in urban households. This paper also illustrates that a child's years of schooling have higher correlations with the schooling of the parent with the same gender, so the schooling correlations primarily run along the gender lines (father-son and mother-daughter). Given the

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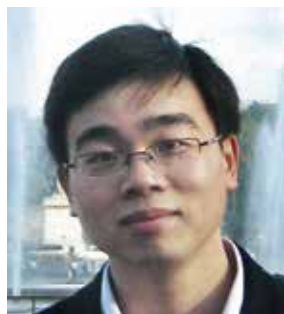
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Rong Zhu is a Research Fellow at the National Institute of Labour Studies, Flinders University.

He is an academic researcher with expertise in labour economics, education economics and health economics whose work appears in international economics journals. He has extensive experience in conducting micro-econometric analysis using data from Australia, China and the United Kingdom. He has been awarded a Young Scholar Fellowship by the Pacific Trade and Development International Steering Committee (Canada), and an Early Career Research Fellowship by the National Centre for Vocational Education Research (Australia).

potential significance of this last result for social mobility in China, we focus on the observation-specific transmission coefficients that were obtained by means of non-parametric estimations to identify some intra-household patterns in the process of intergenerational education transmission. The regression analysis of intergenerational educational correlations in rural and urban households indicates that educational transmission coefficients increase with parents' education in urban households in 2000. In light of the finding of an increasing father-child educational persistence in urban households between 1990 and 2000, these last results raise some concerns. A positive impact of the father's education

on the 2000 father-child educational correlations indicates that those urban children already coming from high education-high income families will benefit from high and rising returns to education in urban labour markets, a fact that could magnify the next generation's income inequality in urban environments. Other sources of concern are the statistically significant positive impact that minority ethnicity has on parents' transmission coefficients in both rural and urban households, although such an impact appears to be declining over time in urban households. A second important result is that the presence of elders in the household contributes to reduce the parent-child educational persistence.

A few caveats apply to these results. One limitation is that we can only match children to parents co-residing in the same households due to data constraints. Our data relies on information concerning co-residing household members, and thus ignores children who are not co-residing with parents. Rural-urban migration can thus be a source of selection bias for estimating the education transmission for rural children. We have argued that our estimated 1990–2000 changes in educational transmission coefficients in rural households are a lower bound of the actual progress made in children's educational attainments.

We expect these changes to alter the intergenerational transmission of education from parents to children and that household organisation informs this process

ASSOCIATE PROFESSOR ELISABETTA MAGNANI

Laurea Economics and Statistics and PhD Bologna, MEcon PhD Yale
ASSOCIATE INVESTIGATOR

Elisabetta Magnani is Associate Professor of Economics in the Australian School of Business at the University of New South Wales.

She is interested in the demand side of labour economics, particularly the effect of technological and organisational change, and the effect of demographic transition on labour markets and its broad societal effects. She is also working on the intra-household effects of population ageing with a focus on low and middle income countries. She has published widely in major

economics journals such as *Labour Economics, Economic Inquiry* and the *Industrial and Labor Relations Review*.

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VOTING ON ALTERNATIVE HEALTH CARE REFORMS:
HOW DO THE ELDERLY DECIDE?

RESEARCHERS
LORETTI I. DOBRESCU
FEDOR ISKHAKOV

External Collaborators
ALBERTO MOTTA
(UNIVERSITY OF
NEW SOUTH WALES)
BENEDETTO GUI
(UNIVERSITY OF PADUA)

The effect of ageing on political support for health care reforms has deep policy implications. In fact, health care systems will have to be modified in order to maintain financial sustainability. But will future voters support such policies? To answer this question, this three year project will develop several models that ultimately identify and explain the determinants of the voting mechanism for health care reforms, and assess their effect on individual decisions.

The project will be developed in three stages. First, we will identify and investigate the interactions between different sources of health costs financing. We will study the role of health insurance (public and private) and intergenerational transfers in shaping savings patterns and wellbeing in old age. Second, social interactions have been shown to strongly affect both mental and physical health and so we will also consider the joint impact of social activities and health on an individual's decision making. Third, based on the findings of the first two stages, a fully-fledged model of political support for health care reform will be formulated. The balance between different interests

(preferences over policies regarding health care systems components or characteristics) will determine the political economy equilibrium.

The first sub-project, 'Bequest Motives in a Life-cycle Model with Intergenerational Interactions' is described on the opposite page.

Work on the second sub-project, 'Staying Home or Dining Out? Social Interactions and Old-age Consumption', was ongoing in 2013 with the model being further developed to make it increasingly realistic. In this work, Dobrescu, Motta and Gui developed a dynamic structural life-cycle model, wherein single retired individuals can choose

to consume and engage in social activities. The project's aim is to study the impact of being socially active and in good health on an individual's consumption and savings patterns. Results showed that social interactions affect consumption to a degree comparable with the impact of health status and this holds true especially for phone bills and food outside the home. Moreover, it appeared that these two factors weaken each other in enhancing utility of food at home and, finally, have the opposite joint effect on food outside the home and phone bills.

> The project's aim is to study the impact of being socially active and in good health on an individual's consumption and savings patterns

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DR. LORETTI I. DOBRESCU
BA Hons Nottingham Trent University; MSc West University of Timisoara; PhD University of Padua
ASSOCIATE INVESTIGATOR

Loretti I. Dobrescu is a Lecturer in the School of Economics, University of New South Wales. She is one of six researchers funded by an ARC award to support Early Career Researchers in the Centre.

She is an established researcher with expertise in developing structural models and using panel data methods to study various issues related to savings and cognition in older age. She has published significantly in international journals of economics and mathematical modelling and is generally active in the research fields of microeconometrics, with particular emphasis on

the economics of ageing, health economics and mathematics. Loretti was also part of the backbone team that developed the first comprehensive dataset of ageing in Europe – the Survey of Health, Ageing and Retirement in Europe, being operatively involved in the 'Earnings and Pensions' section and in the development of the dataset's imputation phase.

BEQUEST MOTIVES IN A LIFE-CYCLE MODEL WITH INTERGENERATIONAL INTERACTIONS

RESEARCHERS

LORETTI I. DOBRESCU
FEDOR ISKHAKOV

This project builds on a previous CEPAR project, 'To Love or to Pay: Savings and Health Care in Older Age', in which Dobrescu studied how heterogeneous health and medical spending shocks affect the savings behaviour of elderly Europeans.

The current project revisits the debate on whether altruism or exchange (strategic) considerations motivate bequests and investigates the role of intergenerational transfers in shaping the savings patterns in old age.

To this purpose, we develop a structural model with two overlapping generations, namely elderly parents and their adult children. For each generation, we formulate a separate life-cycle model in which individuals consume and save. Children care about their elderly parents' health and may choose to support them via money transfers and time assistance. The health costs of parents, resulting from heterogeneous health and medical spending shocks, must be covered, through formal insurance (purchased beforehand), informal insurance (provided through time and money transfers by their children) and out-of-pocket. Finally, we join the two models in a dynamic game between parents and children. We use the Survey of Health, Ageing and Retirement in Europe (SHARE) data to estimate the developed model using simulation-based estimation, to gain insight into which of these motives is more important, and in what circumstances.

Preliminary results show a significant bequest motive for savings in Europe. In an altruistic world, children have a considerable incentive to provide both time and financial help, and this greatly impacts the parents' savings behaviour. Moreover, health, medical spending and health insurance also appear to be crucial in determining the old age saving patterns. Finally, counterfactual experiments show that considering only the strategic motive for bequest cannot explain the slow wealth decumulation in old age or the patterns of transfers from children.

This project will provide a framework for discussions about the importance of intra-family transfers and social cohesion in retirement, the role of health insurance, and the degree of substitution between formal and informal care. Moreover, it will provide a better understanding of the impact of these factors on savings patterns in old age and the process of intergenerational transfer of wealth. Most importantly, the aim is to shed light on the nature of the bequest motive and explain the heterogeneity observed in the data. By the end of 2014, we expect to have a paper ready for submission to a top-rated economics journal.

This project will provide a framework for discussions about the importance of intra-family transfers and social cohesion in retirement, the role of public and private health insurance, and the degree of substitution between formal and informal care

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DIE YOUNG OR LIVE LONG: MODELLING SUBJECTIVE SURVIVAL PROBABILITIES

RESEARCHERS

RALPH STEVENS
SHANG WU

External Collaborator

SUSAN THORP
(UNIVERSITY OF
TECHNOLOGY, SYDNEY)

Modelling of subjective survival is critical to the use of mortality expectations in economic models and the life insurance industry. Because of a lack of detailed data, it is common practice to estimate a whole individual survival curve from a single point estimate of life expectancy or a survival probability. Standard methods therefore treat each person's pattern of deviation from population life tables as constant.

This project uses rich data on the subjective survival beliefs of 855 survey respondents to test the assumption that subjective scalings of objective population survival probabilities are constant. Using survey data on subjective survival probabilities over a range of target ages and from an array of age cohorts, we estimate individual subjective scalings of population mortality probabilities. The results indicate that both cohort age and target age matter: comparing subjective survival probabilities with the cohort life table, the results indicate that respondents are generally pessimistic when asked about overall life expectancy, but are optimistic when asked about their probability of surviving to advanced ages. Older respondents in our middle-aged sample are more optimistic than younger ones. Hence, our data suggests that individuals tend to expect to either die young or to live long. The project also proposes a new model to incorporate cohort- and target age-varying subjective survival beliefs and illustrates the effect of these variations on optimal life-cycle consumption plans. The proposed model contributes to the explanation of both the retirement savings puzzle and conservative spending patterns in retirement.

The results in this project have wide-ranging implications for explaining individual decision making in life-cycle modelling as well as retirement policy and myriad other applications. For example, the peak of pessimism among females at age 50 in projecting to a target age of 80, combined with the general pessimism among most groups, can partially explain the annuity puzzle and may be a factor in apparently irrational choices around social security. It follows that efforts by government and industry to inform and educate people about their survival prospects are likely to result in real benefits for baby boomers entering retirement. Moreover, subjective survival beliefs can contribute to the explanation of both the retirement savings puzzle, where individuals save too little, and conservative spending patterns, where individuals spend too slowly later in retirement.

...the peak of pessimism among females at age 50 in projecting to a target age of 80, combined with the general pessimism among most groups, can partially explain the annuity puzzle and may be a factor in apparently irrational choices around social security

HOW DO PEOPLE PREDICT THEIR LIFE EXPECTANCY?
A SURVEY IN RURAL CHINA: IMPLICATIONS FOR
PENSION POLICY AND INSURANCE PRODUCTS

RESEARCHERS

LU BEI
JOHN PIGGOTT

External Collaborators

ZHENZHEN YANG
MI HONG
(BOTH ZHEJIANG UNIVERSITY)

Subjective life expectancy (SLE) is the term given to the estimates people report of their own life expectancies. Understanding SLE is critical for pension design and longevity insurance markets. Yet there are very few studies that focus on this question. This project is the first of its kind to analyse subjective life expectancy in China. It draws on a recent longitudinal survey undertaken in rural China in which participants were asked about their life expectancies.

This paper statistically analyses the relationship between subjective life expectancy and various demographic, social and economic factors. We compare SLE with census-based life expectancy. Results suggest that both sexes aged from their late 30s to their late 60s in general underestimate their life expectancy relative to national data. But while younger women also underestimate life expectancy, younger men over-estimate time to death relative to national estimates. Econometric analysis focuses on provincial levels covering age, sex, education, health, marital, income and social status, and retirement arrangements. The results

indicate that demographics and family relationships are more important than economic status in people's perceptions of their life expectancy.

The findings are important for policy design as well and for the insurance industry. A paper based on this research was presented at the first CEPAR International Conference in July 2013.

> The results indicate that demographics and family relationships are more important than economic status in people's perceptions of their life expectancy

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DR LU BEI

BA Tsinghua, MBA S. Aust., PhD UNSW

POSTDOCTORAL FELLOW

Lu Bei is a CEPAR Postdoctoral Fellow located in the Australian School of Business at the University of New South Wales, and a Research Fellow with Zhejiang University, China.

After graduating from Tsinghua University in Beijing, she worked as an international trader in the metal industry for 12 years. She returned to academia in 2002 to undertake a PhD in Economics at the University of New South Wales. Her thesis and subsequent research focuses on pensions and related social welfare and economic issues.

Bei has been very successful in developing international linkages over the past ten

years. In 2003, she initiated a research project with the provincial government of Zhejiang province, China, which examined the impacts of various pension reform proposals in that province, and this has formed the basis of an ongoing engagement with pension economists and policymakers in China. In 2004, she assisted the World Bank's Operations Evaluation Department in evaluating the Bank's

support of pension reform in the Asian region. Most recently, she spearheaded a research project with Zhejiang University which formed the basis of a successful Linkage grant application in 2010.

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EXTENDING THE ENDOGENOUS GRID METHOD FOR SOLVING DISCRETE-CONTINUOUS SEQUENTIAL DECISION PROBLEMS

RESEARCHER

FEDOR ISKHAKOV

External Collaborators

JOHN RUST
(UNIVERSITY OF MARYLAND)
BERTEL SCHJERNING
(UNIVERSITY OF COPENHAGEN)

This project develops a new method of solving computationally demanding life-cycle models involving simultaneous discrete and continuous choices.

Computational tractability has always been a limiting factor in studying realistic models of this class, which has essentially led to oversimplification and limited policy relevance. A typical focus of life-cycle models is the retirement choice, where the dynamic nature of the decisions made by people approaching retirement is very evident. Retirement choices are usually modelled within a discrete choice framework, and most studies disregard the underlying choices of consumption and savings. By moving the boundary of computational tractability this project will facilitate the development of more realistic and accurate dynamic models of retirement choices.

In this project we extend Carroll's[3] endogenous grid method for models with simultaneous discrete and continuing choices. We propose an algorithm which both avoids costly root-finding operations with respect to continuous decision variables and replaces optimisation across discrete decisions with more efficient calculation of the upper envelope of a finite set of piece-wise linear functions. Unlike previous literature we formulate the algorithm relying as little as possible on a particular model specification, and precisely define the class of dynamic stochastic optimal control problems to which it can be applied.

The core elements of the solution algorithms were developed in 2012. During 2013 the new method was tested in a variety of projects. The results showed that in the majority of the applications the methods perform exceptionally well but there are more complex models of interest in which the method fails to perform consistently. During the next stage of this project a more systematic assessment of the performance characteristics of the endogenous grid point method for discrete-continuous choice will be undertaken.

The results of this project will be written up for submission to peer-reviewed, top-rated international journals in economics. The software package for solving sequential discrete-continuous choice models produced by this project will facilitate faster and easier model development in related CEPAR projects.

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3 Carroll, C. (2006) The method of endogenous grid- points for solving dynamic stochastic optimisation problems, *Economic Letters* 91(3):312–320

> By moving the boundary of computational tractability this project will facilitate the development of more realistic and accurate dynamic models of retirement choices

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SENIOR RESEARCH FELLOW

Fedor Iskhakov is a Senior Research Fellow at CEPAR located in the Australian School of Business at the University of New South Wales. Previously he was a Research Fellow at the Centre for the Study of Choice, University of Technology Sydney (2010–2012), lecturer in the Graduate School of Management at St Petersburg University (2009–2010) and a Visiting Research Scholar at the University of Maryland in 2006 and 2010. Between 2002 and 2011 he had an association with the Frisch Centre for Economic Research at the University of Oslo where he has held the positions of Research Fellow and Postdoctoral Research Fellow.

His doctoral thesis, 'A dynamic structural analysis of health and retirement,' was awarded His Majesty the King of Norway's gold medal, for the best research in social sciences among young researchers in Norway in 2008.

His research interests lie in the area of structural microeconometrics, and more specifically in dynamic modelling of individual choice.

'Working at CEPAR gives me a unique chance to participate in research projects of the highest theoretical and methodological quality which have substantial relevance for economic policy in Australia and the world.'

STRAND 3

INTEGRATING PUBLIC AND PRIVATE PROVISION OF PRODUCTS AND SERVICES

Effective integration of public and private sources for retirement income, health insurance and aged care will become increasingly important as populations age. This research covers retirement products and the decisions households take regarding their purchase; health behaviour choices, including choices regarding preventive health; and purchases of aged related products and services. The analysis is designed to discover what innovations, by government and business, might improve outcomes.

RESEARCH PROJECTS

STRAND 3 INTEGRATING PUBLIC AND PRIVATE PROVISION OF PRODUCTS AND SERVICES

In this strand, 2013 saw new research into the link between health status and mortality, and its implications for retirement financing, both public and private, and aged care funding. Our knowledge of pensions and annuity products, pension reform in China, and taxation of pensions, was advanced, along with the properties of reverse mortgages and reverse mortgage markets, and income-contingent loans in later life.

• HEALTH AND MORTALITY MODELLING
Public-private coordination in provision of products or services requires good information about the context of the relevant market. For longevity insurance products, the evolution of mortality, and its interaction with health status, is critical. Four related projects aim at assessing this, using a range of sophisticated stochastic techniques. They deal with the mortality-health status relationship; the link with systematic mortality improvements; and with applications to long-term care. In addition, mortality dependence and its relationship to financial products are investigated. These approaches allow the integration of market and product features into pricing. For example, the impact of heterogeneity on solvency risk of a life insurer offering annuities can be assessed using these models, along with implications for levels of capital reserve requirements. Similar approaches to long-term care generate other insights. Using U.S. data, it is estimated that the elderly face a 10 per cent chance of becoming long-term-care disabled only at ages past 90, suggesting longer healthy life expectancies.

• PENSIONS IN CHINA
China is one of the world's most rapidly ageing economies, and CEPAR researchers have been working on various aspects of population ageing in China for some time. A major initiative in 2013 saw CEPAR spearhead conferences aimed at young researchers in population ageing in China, along with a range of policy and academic interactions. Research focused heavily on pension reform, especially policy reform to increase coverage for the disenfranchised. One paper focuses on coverage for migrants, an especially challenging policy issue because the vesting rules in most provinces for the urban pension system largely preclude migrants from receiving significant benefits. Some 150 million migrants have no significant pension coverage. As well, many workers in the rural sector have only minimal coverage, through the rural pensions system – but the default payout is only RMB55 a month, less than a meaningful amount. A second project therefore analyses the fiscal costs of introducing a social pension for those without formal pension coverage. A third project examines intergenerational transfers (from adult children to their parents), and analyses whether these are affected by public policy.

• ANNUITIES AND RETIREMENT INSURANCE
A range of projects and research papers investigates issues in the pricing and risk management in the retirement insurance market. These range from reverse mortgage pricing and payout design, through price efficiency in the Dutch annuity market (relevant to Australia because of the strong similarity in retirement policy design), to examining public-private coordination to support asset liability matching for retirement insurance products. These include the issue of long duration inflation indexed bonds, for example.

• TAXATION AND PRIVATE RETIREMENT PROVISION
Two papers tackle the question of taxation and pensions. In the first, progressive taxation of private pensions is analysed using an overlapping generations model built for Australia – one of the few countries to have a flat rate tax on pensions. In the second paper, the idea of income-contingent loans – of which the most famous example is the Australian Higher Education Contribution Scheme (HECS) – is extended to re-interpret the Australian means-tested Age Pension.

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MODELLING HEALTH STATUS AND MORTALITY WITH PHASE-TYPE MARKOV-AGEING MODELS

RESEARCHERS
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Recent developments in mortality models have included stochastic trends and systematic risk. Mortality heterogeneity is not usually taken into account in these stochastic mortality models. Heterogeneity has been modelled with frailty models and more recently with Markov multiple state ageing models. These multiple state models have advantages over frailty models in that they can be calibrated to aggregate health data as well as mortality data. They lead to closed form expressions for survival probabilities which can then be used to price life annuities.

Modelling health status provides a richer modelling framework to consider a range of issues around population ageing than standard survival models and life tables. Health status is a significant factor explaining mortality heterogeneity. Adverse selection and underwriting can be assessed using models with heterogeneity by analysing the financial outcomes of a life annuity fund. In particular the impact of heterogeneity on life annuity pricing and the solvency risk of a life insurer offering annuities can be assessed using Markov ageing models.

This project reviews recent developments in models for mortality heterogeneity including Markov ageing models. A model including both systematic risk and heterogeneity, calibrated to both population mortality and health condition data, is proposed and used to assess the impact of heterogeneity on solvency and tail risk for longevity risk products. A paper covering the details of the model, its calibration and application to assessing life annuity pricing will be finalised in early 2014. A paper applying the model titled 'Model Risk, Mortality Heterogeneity and Implications for Solvency and Tail Risk' by Sherris, M and Zhou, Q. (2013) was presented as an invited talk at the 2013 Symposium: Recreating

Sustainable Retirement: Resilience, Solvency, and Tail Risk conference held April 25–26 at the Wharton School, University of Pennsylvania. The paper will be included in a book of the proceedings of the conference.

> In particular the impact of heterogeneity on life annuity pricing and the solvency risk of a life insurer offering annuities can be assessed using Markov ageing models

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Michael Sherris is Professor of Actuarial Studies in the Australian School of Business at the University of New South Wales. His research sits at the intersection of actuarial science and financial economics, and has attracted a number of international and Australian awards.

He has published in leading international risk and actuarial studies journals, including *Journal of Risk and Insurance, Insurance: Mathematics and Economics, Journal of Economic Dynamics and Control* and *Geneva Papers on Risk and Insurance*. He is on the editorial board of the *Annals of Actuarial Science* and served on the editorial board of the *North American Actuarial Journal*.

Prior to becoming an academic he worked in the banking and finance industry for a number of major banks and a life insurance company. He has been an active member of the Australian actuarial profession having served on the Council of the Institute of Actuaries of Australia. He was President (2008–2009) of the Asia Pacific Risk and Insurance Association and a Board and Executive Member

of the Enterprise Risk Management Institute International. He was named Australian Actuary of the Year 2007 in recognition of his contributions to actuarial research and education both internationally and within Australia.

MODELLING HEALTH STATUS AND SYSTEMATIC MORTALITY IMPROVEMENTS WITH LONGITUDINAL DATA

REASEARCHERS

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Health status has significant implications for pricing life annuities in addition to the allowance for systematic improvements in longevity. Panel data, such as the Health and Retirement Study (HRS) in the U.S., provides a rich source of information about individual health status and risk factors that impact mortality. This project considers the modelling of health status and mortality using the HRS longitudinal data in two papers. In the first paper a model including underwriting risk factors and frailty is calibrated to HRS data and used to assess the implications for pricing underwritten life annuities. In the second paper models are developed to assess the significance of mortality risk factors and systematic improvement trends taking into account time varying risk factors using individual level data from the HRS.

The paper 'The determinants of mortality heterogeneity and implications for pricing annuities' that appeared in *Insurance: Mathematics and Economics,* Volume 53, Issue 2, September 2013, 379–387 by Meyricke, R., and M. Sherris, quantifies the financial impact of health status and frailty on underwritten annuities. The heterogeneity implied by underwriting factors and frailty is estimated using Generalized Linear Mixed Models applied to the HRS longitudinal data.

The results show that heterogeneity remains after allowing for risk factors used in underwriting, creating significant variation in the prices of underwritten annuities. A method to adjust annuity prices for frailty is presented.

Systematic improvements and heterogeneity are considered using longitudinal modelling of HRS panel mortality data and by extending the Lee-Carter model to allow for heterogeneity. The results are presented in an honours thesis, 'Modelling the mortality of heterogeneous populations', by CEPAR Honours student Mengyi Xu. They confirm the significance of differences in systematic improvements across subpopulations, and at the same time highlight the challenges of quantifying statistical differences of systematic improvements across groups of individuals using individual-level survey data. The results quantify the impact of individual-level characteristics on mortality heterogeneity and systematic time trends in mortality rates. Systematic improvements are shown to have a significant impact on mortality rates even after allowing for individual-level factors.

> The results show that heterogeneity remains after allowing for risk factors used in underwriting, creating significant variation in the prices of underwritten annuities

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Ramona Meyricke is an Associate Investigator with the Centre of Excellence in Population Ageing Research and an Actuary at Swiss Re Life & Health Australia.

Ramona spent one year at CEPAR as a Research Fellow following completion of her PhD at the University of Cambridge before moving to Swiss Re. She continues to research matters of financial risk management for pension plans and life insurers, as well as methodologies for modelling longevity risk, morbidity and mortality. Other research interests include coordinating private and public insurance for longevity and aged care.

She is a Fellow of the Institute of Actuaries Australia and has completed a PhD in Financial Economics at the University of Cambridge. Prior to commencing her PhD, Ramona worked for PwC Australia for five years as a Pensions Actuary.

MULTIPLE-STATE MODELS FOR HEALTH STATUS
WITH APPLICATIONS TO HEALTH AND LONG-TERM CARE

RESEARCHERS
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ADAM WENQIANG SHAO
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JAMES YAP

Long-term care costs are expected to significantly increase over the coming decades as the baby boom generation enters retirement. In Australia, long-term care and its financing has been a policy issue. Recent policy discussions in the U.S. have focused on expanding the private long-term care insurance market so as to alleviate some of the pressure on public programs. At the same time future costs of disability are expected to increase with the ageing of populations. Identifying the changing levels of life expectancy

and health is important to understand the future costs of disability. They impact disability trends resulting in morbidity expansion or compression. This project develops and fits multiple state models to address these issues in two papers.

In CEPAR Working Paper 2013/16, 'Multi-state Actuarial Models of Functional Disability' by Fong, Shao, and Sherris, age- and sex-specific functional status transition rates are estimated that take into account alternative benefit qualification conditions in terms of Activities of Daily Living (ADLs). Generalized linear models are used to evaluate disability transitions for individuals in old age based on the Health and Retirement Survey (HRS) data, a large

sample of the U.S. elderly. A multi-state actuarial model for long-term care insurance applications is estimated. Significant differences in disability rate patterns and levels are shown between our set of estimates and those estimated using an earlier approach developed by the Society of Actuaries. The results suggest that the elderly face a 10 per cent chance of becoming long-term care disabled only at ages past 90, rather than in their 80s. Age patterns of recovery are found to differ significantly between the sexes. The estimates of transition probability are sensitive to the definition of 'long-term care disability', which has implications for the design of benefit

qualifications for private and public long-term care insurance programs.

In an Honours thesis titled 'The Australian Disability Trend and Projections', James Yap studies the type and magnitude of the Australian disability trend, and the impact of these trends on disability costs. Since public longitudinal data for Australia is not available to carry out an extensive individual level study, a multiple state mortality model based on the concept of biological ageing is applied to Australian male and female cohort mortality data from the Human Mortality Database. This model provides implied frailty, as a basis for differing levels of disability, from cohort mortality experience.

This is then related to available disability data at an aggregate level, and then projected, for future cohorts. The disability projections are then related to potential disability costs.

> The results suggest that the elderly face a 10 per cent chance of becoming long-term care disabled only at ages past 90, rather than in their 80s

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Annamaria Olivieri is Professor of Mathematical Methods for Economics, Actuarial Science and Finance in the Department of Economics at the University of Parma.

Her areas of research include life and health insurance modelling and risk management. She is an actuary and full member of the *Istituto Italiano degli Attuari* (Italy) and Associate Editor of the *European Actuarial Journal*. In 2011 she was awarded the Bob Alting von Geusau Memorial Prize, together with Ermanno Pitacco, for the best paper published in the *ASTIN Bulletin*

on an AFIR related topic. She has presented in continuous professional development courses and master programs (in Italy and abroad) for both actuaries and non-actuaries, in the field of actuarial mathematics and risk management techniques. She is an author and co-author of many research articles and the recent textbooks:

- Olivieri, A. and Pitacco, E. (2011), *Introduction to Insurance Mathematics. Technical and Financial Features of Risk Transfers*, Springer.
- Pitacco, E., Denuit, M., Haberman, S. and Olivieri, A. (2009), *Modelling Longevity Dynamics for Pensions and Annuity Business*, Oxford University Press.

PUBLIC-PRIVATE STRATEGIES TO SUPPORT ASSET-LIABILITY MANAGEMENT FOR RETIREMENT INSURANCE PRODUCTS

RESEARCHERS

CRAIG BLACKBURN
KATJA HANEWALD
RAMONA MEYRICKE
ANNAMARIA OLIVIERI
MICHAEL SHERRIS

This project has examined the underlying risk management and capital requirements for a life insurer issuing life annuities. Private life annuity markets have the potential to supplement aged pension income through the annuitisation of superannuation savings. Similar risk management issues arise for a pension fund providing defined benefit pensions faced with the financial impact of longevity risk. In this project we consider these issues in two research papers.

In the first paper, 'Longevity Risk, Cost of Capital and Hedging for Life Insurers Under Solvency II' by Meyricke and Sherris, we assess the costs of longevity risk management using longevity swaps compared to costs of holding capital under Solvency II. We show that, using a reasonable market price of longevity risk, the market cost of hedging longevity risk for earlier ages is lower than the cost of capital required under Solvency II. Longevity swaps covering higher ages, around 90 and above, have higher market hedging costs than the saving in the cost of regulatory capital. The Solvency II capital regulations for longevity risk generate an incentive for life insurers to hold longevity tail risk on their own balance sheets, rather than transfer this to the reinsurance or the capital markets. This aspect of the Solvency II capital requirements is not well understood.

In a second paper, 'Life Insurer Longevity Risk Management, Solvency and Shareholder Value' by Blackburn, Hanewald, Olivieri and Sherris, we assess the impact of longevity risk management on insurer shareholder value and solvency for an annuity portfolio in a richer setting. The analysis uses a multi-period stochastic mortality model with both systematic and idiosyncratic longevity risk. We consider both survivor (or longevity) swaps that provide a full longevity risk hedge, and index-based survivor (or longevity) bonds that only hedge systematic longevity risk. Shareholder value is determined allowing for the costs of transferring longevity risk, policyholder demand elasticity, regulatory capital requirements, capital relief, and frictional costs including the insolvency put option, agency costs, and financial distress costs. Shareholder value is calculated based on an Economic Valuation (EV) and a Market-Consistent Embedded Value (MCEV) approach. Capital management is also assessed based on a recapitalisation and dividend strategy that complies with regulatory capital requirements, as defined under Solvency II.

We demonstrate how longevity risk management strategies significantly reduce the volatility of shareholder value and frictional costs. Longevity risk management is shown to reduce the probability of insolvency, increase policyholder demand and hence increase shareholder value.

> We demonstrate how longevity risk management strategies significantly reduce the volatility of shareholder value and frictional costs

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DR CRAIG BLACKBURN
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Craig Blackburn is a CEPAR Research Fellow located in the Australian School of Business at the University of New South Wales (UNSW). Craig joined CEPAR full-time in May 2013 after completing a PhD in Actuarial Studies at UNSW. While studying for his PhD, Craig received scholarships from the Australian School of Business and CEPAR.

His research interests include longevity modelling, pricing, and risk management, including the effects of Solvency II on an insurer's firm value. Craig has published articles in *Insurance: Mathematics and Economics*. His current research projects involve multiple cohort population modelling and hedging, and risk minimisation of longevity risk in an incomplete market.

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MODELS FOR DEPENDENCE IN MORTALITY WITH FINANCIAL APPLICATIONS

RESEARCHERS

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External Collaborators

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ZINOVIY LANDSMAN
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Systematic improvements in mortality have resulted in dependence in the survival distributions of insured lives. Stochastic mortality models have been developed for a range of applications from demographic projections to financial management. Financial risk-based models build on methods used for interest rates and apply these to mortality rates. Models have been proposed based on the forward-rate mortality framework with stochastic factors driven by univariate gamma random variables irrespective of age or duration. Although dependence between ages is an observed characteristic of mortality rate improvements, these models have not been well developed to capture such dependence. Similarly, static mortality models as reflected in the standard life tables used for annuity pricing and reserving do

not reflect dependence between lives. In practice, future lifetimes are uncertain for lives of similar ages and systematic longevity risk undermines the law of large numbers usually relied on for actuarial calculations in the risk management of life insurance and annuity portfolios.

This project assesses issues of dependence in mortality modelling in two areas. In the first, we assess and further develop a forward mortality model where random shocks from a univariate gamma are generalised to a univariate Tweedie distribution. This allows for a broader class of distributions and potential for a better fit to mortality data. We then consider a multivariate Tweedie framework that incorporates distributions differing by age. Such a model provides a more realistic basis for capturing the risk of mortality improvements and serves to enhance longevity risk management for pension and insurance funds. This project involves Daniel Alai, Katja Ignatieva and Michael Sherris and a working paper is being completed for early 2014.

In another part of the project, the modelling of dependence and its impact on the valuation of a portfolio, or cohort, of life annuitants with similar risk characteristics is investigated. Lifetimes are modelled using a truncated multi-variate gamma distribution that induces dependence through a shared gamma distributed component or common factor. Model parameter estimation is developed based on the method of moments. The model's application is demonstrated using life annuity valuation for portfolios. The impact of dependence is shown to be significant when compared with the traditional approach of assuming independence. This project involves Daniel Alai, Zinoviy Landsman and Michael Sherris and another working paper is being completed for early 2014.

> Such a model provides a more realistic basis for capturing the risk of mortality improvements and serves to enhance longevity risk management for pension and insurance funds

RISK MANAGEMENT AND PAYOUT
DESIGN OF REVERSE MORTGAGES

RESEARCHERS

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Reverse mortgages are increasingly being considered as a way to unlock equity in an individual's home to provide additional funding in retirement. Most reverse mortgages in Australia are taken in lump sum form yet individuals may be better off using these loans to generate an income to fund care costs and other ongoing costs. Providers of reverse mortgages must consider the risks and the capital cost of these loans since they effectively include health, longevity, house price and interest rate risk.

This project analyses the risk and profitability of reverse mortgages from the lender's perspective for both lump-sum and income stream payments. In order to model the risks involved, a multi-period cash flow model is developed and calibrated. Reverse mortgage cash flows and loan balances are modelled in a multi-period stochastic framework that allows for house price risk, interest rate risk and risk of delayed loan termination. A Vector Auto-regressive (VAR) model is used to simulate economic scenarios and to derive stochastic discount factors for pricing the no-negative-equity guarantee embedded in reverse mortgage contracts.

The results show that lump-sum reverse mortgages are more profitable and require less risk-based capital than income stream reverse mortgages, which is a factor that may explain why this product design dominates in many markets. The loan-to-value ratio, the borrower's age, mortality improvements and the lender's financing structure are shown to be important drivers of the profitability and riskiness of reverse mortgages, but changes in these parameters do not change the main conclusions. The results of the project were presented as a working paper in 2013 at the Western Risk and Insurance Association Annual 47th Meeting and the National

Conference on 'Recent Advances in Statistics with Application to Finance and Actuarial Science' at the Central University of Rajasthan, India.

> The results show that lump-sum reverse mortgages are more profitable and require less risk-based capital than income stream reverse mortgages

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Katja Hanewald was a Senior Research Associate in the Australian Institute for Population Ageing Research at the Australian School of Business, University of New South Wales, from January 2011 to July 2013. She now lives in Berlin and works as an executive officer in the German Federal Ministry of Finance.

Her research interests include optimal risk management decisions of households and firms facing longevity risk and financial risk; pricing and risk management of equity release products; and solvency capital requirements for banks, insurers and pension funds.

'I am always interested in a number of research topics beyond the projects I am currently working on. CEPAR provides the perfect setting for me to develop my projects and deepen my interest in other economic, demographic and actuarial areas.'

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PRICE EFFICIENCY IN THE DUTCH ANNUITY MARKET

RESEARCHER

RALPH STEVENS

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In this project we investigate the price efficiency of the Dutch annuity market for the period 2001–2012. In the Netherlands tax-favoured pension accrual is required to be annuitised at retirement. This leads to a sizeable and mature annuity market within the context of a large and modern financial sector. During this period, the number of annuity providers was high and stable and we find that falls in annuity rates can be explained entirely by changes in yields and life expectancy.

The results show that annuitants could have increased their annuity income by about 5 per cent by shopping around and purchasing their annuities from alternative providers.

Our money's worth calculations suggest that Dutch annuities are fairly priced, with the money's worth being above 0.9 for the entire period. During the period 2008 to 2010, the money's worth appears to be greater than one. This may be an artefact of using new mortality tables before they were used by Dutch annuity providers or it may be that Dutch insurance companies felt confident that they could earn higher rates of return than on government bonds. In contrast, the market for annuities in Australia has disappeared, which might be partly due to a framing effect where financial advisors are incentivised to promote investment-style products. But high money's worth does not guarantee a large demand for annuities.

The theory of adverse selection predicts money's worth should be lower at higher ages and for larger purchases, on the basis that older people can better estimate their own mortality, and individuals who expect to live longer will annuitise a larger percentage of their pension wealth. In these data for the Netherlands, we find that money's worth is higher for larger purchases – in contrast to the adverse selection prediction; although we do find lower money's worth for higher ages – supporting the asymmetric information assumption. So although these data do not allow us to perform powerful tests for adverse selection, what little evidence that they might provide is conflicting.

The findings in this project give an indication of the prospect for the potential development of the annuity market in Australia. The Netherlands and Australia – partly due to mandatory pension accrual – both have a large and modern financial sector. In contrast to Australia, the Netherlands has mandatory annuitisation of pension wealth at retirement. For the Netherlands this has led to a sizeable and mature annuity market which is efficient. The results of this project were published in the *Journal of Pension Economics and Finance*.

> The findings in this project give an indication of the prospect for the potential development of the annuity market in Australia

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DR RALPH STEVENS
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SENIOR RESEARCH FELLOW

Ralph Stevens joined the UNSW CEPAR node in July 2012 as a Senior Research Fellow. Previously he held the position of Lecturer in the School of Risk and Actuarial Studies at the University of New South Wales. He holds a PhD degree from CentER, Tilburg University where his research was focused on the Network for Studies on Pensions, Aging, and Retirement (Netspar) theme: Living Longer in Good Health. He is also a Netspar Fellow.

His current research focuses on the effects of systematic longevity risk on annuities. This includes managing and measuring systematic longevity risk in a portfolio of life insurance and pension products and calculating the capital reserves for systematic longevity risk. He is also interested in retirement choices. This incorporates optimal decision making in life-cycle models as well as describing, understanding and improving choices related to the individual retirement decision.

SUSTAINABLE FULL RETIREMENT
AGE POLICIES IN AN AGEING SOCIETY

RESEARCHER

RALPH STEVENS

Life expectancy has been steadily increasing in most of the western world over the past century. For example, the (population) life expectancy at birth in the U.S. has increased from 47.3 years in 1900 to 68.2 years in 1950; 72.6 years in 1975; 76.8 years in 2000; and 77.7 years in 2006. The increase in life expectancy at retirement is placing increased pressure on the sustainability of pension systems around the world. In this project we propose policies to automatically link the mandatory retirement age to life expectancy at retirement age. We investigate their effects on the actual retirement age, expected remaining lifetime at retirement and pension liabilities.

The results of this project suggest that in order to evaluate policies to set the retirement age dependent on the evolution of the mortality probabilities one should take into account not only process risk and parameter longevity risk but also model risk. Model risk adds considerably to the uncertainty in life expectancy, and therefore to changes in full retirement age. Using process risk, parameter risk, and model risk we observe that the forecast uncertainty in the yearly changes in the full retirement age is of the same magnitude as the past experience would suggest. All six investigated policies in this project significantly reduce longevity risk in the value of pension liabilities. This is especially true for policies for which the sensitivity of changes in the mortality probabilities on the retirement age is large.

We investigate the policies in the case where life expectancy is determined by the observed mortality probabilities in a given year (period mortality table) and by using forecast mortality probabilities (cohort mortality table). Using a cohort mortality table implies that observed unexpected year to year changes in mortality probabilities also have an effect on the forecast future trend of decrease in mortality probabilities. This implies that using a cohort mortality table to set the retirement age would substantially increase the uncertainty in the evolution of future retirement age. However, using a period mortality table to set the retirement age leads to biased estimates.

...in order to evaluate policies to set the retirement age dependent on the evolution of the mortality probabilities one should take into account not only process risk and parameter longevity risk but also model risk

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In the last decades of last century, Chinese economic growth significantly reduced poverty. But in more recent times the incomes of the least well-off Chinese have not increased as much as average incomes. With regard to resources in later life, sharply increasing life expectancies among middle-aged and older cohorts in China risk impoverishing many of those without entitlement to established and substantial pensions. This circumstance is made more critical because the one-child policy and massive regional migration are placing new strains on family based intergenerational support mechanisms.

While China's major pension structures theoretically cover much of the country, the largest of them, the new rural pension, offers a very low contributory payment at barely a quarter of the poverty line. Further, as many as half of the urban workforce are migrants, and we estimate that as many as 150 million migrant workers will likely have no significant formal pension entitlement and would retire poor if they stay in the urban sector.

Two related projects focused on different aspects of this challenge have been completed in 2013. The first, on migrant pensions, offered a pension design emphasising mobility of entitlement. The second, undertakes a costing exercise for providing a poverty alleviating social pension to all elderly Chinese not in receipt of a significant formal pension (the urban pension and civil service pension).

A third project looks at the impact the introduction of the new Rural Pension scheme may have on intergenerational transfers and inequality.

A fourth project steps back to undertake a broader assessment of the challenges confronting China's retirement income systems.

PENSIONS FOR THE DISENFRANCHISED: SOCIAL AND MIGRANT PENSIONS

Migrant pensions in China

There are at least three separate circumstances which make providing social security for migrant workers in China especially challenging. First, China's social security system is extremely decentralised, involving more than 2000 jurisdictions. There is no centralised record-keeping. This makes portability difficult, and vesting for migrant workers challenging. Of those (the majority) who return to their rural base to retire, the estimated pension is currently only about 38 per cent of the corresponding urban rate for a worker with an urban Hukou5, even though both have done the same work with the same income for the same period of time.

Yet the academic research literature on China's migrant pensions is sparse. Most economic models treat pension reform in China generically, and either explicitly or implicitly include migrants with urban residents and assume they will receive the same benefit as urban residents once they join the urban enterprise pension system.

By contrast, this project focuses on the pension entitlements of rural migrant workers, leaving aside the question of broader pension reform. We explore the feasibility and implications of a separate migrant pension scheme, based on Notional Defined Contribution (NDC) principles. The transparent and portable record-keeping implicit in the implementation of the NDC paradigm renders it especially suitable for dealing with large regional migrant populations.

A preliminary paper, 'Meeting the Migrant Pension Challenge in China' was presented in July 2012 at the CESifo Venice Workshop and a revised and resubmitted paper is now under consideration at *CESifo Economic Studies*.

A social pension for China?

This project assesses the economic feasibility of introducing a social pension at levels which will meet poverty line requirements, available to those without a formal pension entitlement. We estimate the financial cost, currently and through time, of introducing a universal, non-contributory social pension in China, providing poverty line payments to all older residents of China who are not receiving a formal pension. We use the national poverty line as the social payment standard, which we index to GDP per capita growth to simplify computation, and demographic projections based on the 2010 national census. We estimate our population model using the Lee Carter model for mortality improvement, separately estimating remaining life expectancy at retirement age, as this is crucial for our cost calculations.

Our central case results indicate that a social pension set equal to the national poverty line, indexed to per capita GDP growth, would cost less than 1 per cent of GDP even in 2050.

An early version of this paper was presented to the Harvard-Stanford conference on 'Economic Aspects of Population Aging in China and India' on March 7–8, 2013 at Stanford University. A revised version has been accepted for publication in the *Journal of the Economics of Aging*.

RURAL PENSION, INCOME INEQUALITY AND FAMILY TRANSFERS IN CHINA

China's new Rural Pension scheme, announced in October 2009 is motivated by concern about the widening income gap between the urban and the rural sectors, the rich and the poor in China. But it is unclear that the rural elderly will benefit by the full amount of the pension, because many currently receive private transfers from their children, and these may be adjusted after the introduction of pension benefits.

This paper uses data from the pilot China Health and Retirement Longitudinal Study (CHARLS) survey, conducted in Zhejiang and Gansu provinces, to investigate the net impact on old age household income inequality when the new rural pension plan is in place. Logit and OLS analyses are used to estimate the changes in the probability and value of family transfers when other variables change. Results indicate that net private transfers are in most cases uncorrelated with household income, suggesting that the current public transfer (the new Rural Pension) will not crowd out private transfers. Income inequality with and without the rural public pension is then calculated, using the Gini coefficient as the benchmark index. The improvement in rural income inequality in the poor province of Gansu is significant while there is only slight improvement in the rich province of Zhejiang. Transfers to low income regions from migrants are found to significantly improve income inequality for rural elders as well.

The paper then employs a second recent survey, undertaken in 2011 in Zhejiang, to further explore the crowd out effect of public transfers. These results show that income levels of parents somewhat influences children's transfer behaviour, and crowding out is more likely to take place in poorer areas for the same level of public transfer.

The study indicates that there might be a dynamic behaviour change in intergenerational transfer patterns, and longitudinal data is required for further analysis. This will be available as further waves of CHARLS are undertaken.

OVERALL CHALLENGES FOR CHINA'S PENSION SYSTEM

Pension policy reform in China is taking place at a rapid pace. Over the past four years the retirement income arrangements have evolved from a system almost exclusively for urban and public sector workers (accounting for less than 30 per cent of the labour force) to one with broad national coverage. This project complements the work on migrant and social pensions by evaluating pension provision from a national perspective. The national arrangements now comprise four separate schemes specifically designed for 1) urban workers, 2) rural workers, 3) civil servants and public sector workers and 4) urban residents not covered by the urban scheme (which includes migrant workers). Using data from the China Household Finance Survey – a new nationally representative survey of 8,438 households – the pension system in aggregate is assessed using both individual and economy-wide criteria. The analysis reveals deficiencies in terms of adequacy and sustainability. Overall, we advocate that the key to sustainable reform will be the establishment of a regulatory framework with well-defined governance structures for both publicly and privately managed pension assets.

A preliminary paper was presented at the China Social Policy Workshop, convened as part of the Australian Social Policy Conference, on September 16–18 at the University of New South Wales. A revised version is under review with the *Journal of Population Ageing*.

Our central case results indicate that a social pension set equal to the national poverty line, indexed to per capita GDP growth, would cost less than 1 per cent of GDP even in 2050

PROGRESSIVE TAX CHANGES TO PRIVATE PENSIONS IN A LIFE-CYCLE FRAMEWORK

RESEARCHERS

GEORGE KUDRNA
ALAN WOODLAND

Tax concessions are a common feature of private pension pillars around the world. The aim of tax concessions is to increase private retirement incomes and household savings. Most countries exempt contributions and fund investment income from any taxation but tax benefits progressively as regular income. This approach is known as the 'Exempt-Exempt-Taxed' (EET) regime. An alternative approach is the 'Taxed-Exempt-Exempt' (TEE) regime, which allows no deductions of contributions from gross income but then applies no further tax. By contrast, Australia's superannuation features a

flat tax rate on contributions and fund investment income, with benefits being generally tax free. This tax treatment has been widely criticised because of vertical equity concerns, with superannuation tax concessions providing a larger tax break to high income earners (Australia's Future Tax System [AFTS], 2010).

This research provides a quantitative analysis of hypothetical replacements of the current taxation treatment applied to Australia's superannuation with the traditional EET and TEE tax regimes. Under both reforms, the existing flat tax rates on contributions and fund investment earnings that are currently paid by superannuation funds

are abolished and either the benefits or the contributions are treated as ordinary income and taxed progressively at marginal income rates. The project also examines the effects of the TEE variant recommended by AFTS (2010), which includes a flat-rate tax offset so that most taxpayers pay 15 per cent tax on their contributions.

We developed a computable overlapping generations model to examine the economic implications of the superannuation taxation reforms. The model disaggregates households into income quintiles and allows for important interaction between household behaviour and superannuation, public pension and tax policy settings. In 2013,

we extended the analysis to account for the sensitivity of the examined reforms to different types of superannuation payouts (lump sum and gradual withdrawals), and to alternative tax instruments to balance the government budget (consumption and income tax adjustments).

Our model-based simulation results indicate that, irrespective of the superannuation payout type and the budget-balancing tax instrument, all three examined reforms to superannuation taxation improve vertical equity, as shown by larger relative gains in welfare and net incomes experienced by lower income households. We also show that the reforms increase aggregate total assets and reduce public pension expenditures in the long run.

This research was presented at the 21st Australian Colloquium of Superannuation Researchers, Sydney, July 2013. It is anticipated that a journal paper will be submitted for publication early in 2014.

> This research provides a quantitative analysis of hypothetical replacements of the current taxation treatment applied to Australia's superannuation with the traditional EET and TEE tax regimes

DR GEORGE KUDRNA
MA Econ TUL Czech Republic,
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RESEARCH FELLOW

George Kudrna is a CEPAR Research Fellow located in the Australian School of Business at the University of New South Wales. He joined the Centre in July 2011 after working as a Postdoctoral Fellow for the UNSW School of Economics. He completed

his undergraduate studies in economics and insurance management in the Czech Republic, and received a PhD in Economics from the University of Sydney in 2009.

His research interests include pension economics, economic modelling, computational economics and the economics of population ageing. He has written articles published in the Journal of *Macroeconomics*

and *Economic Record*. George is currently involved in research projects on the taxation of private pensions, and on the economic effects of population ageing and pension reforms in Australia.

'Since joining CEPAR I have benefited tremendously from the comments and suggestions of Chief Investigators and exchange of ideas with other research

fellows at the Centre. Participation at CEPAR conferences and workshops involving policymakers and industry professionals has broadened my understanding of the issues related to population ageing.'

RETIREMENT INCOME STREAMS
AS RESOURCE-CONTINGENT LOANS

RESEARCHERS

RAFAL CHOMIK
JOHN PIGGOTT

Income-contingent loans (ICLs) have become a generic policy design following the innovative development of the Higher Education Contribution Scheme (HECS) by the Australian Government some 20 years ago. While the basic idea has a long history (for example Friedman 1955), and there have been many papers analysing both implementation and impact, formal analysis of the policy category has remained elusive and its distinction from other transfer mechanisms not clearly understood.

In trying to identify which specific characteristics of an ICL make it different from other policies and products it is worth discussing broader resource-contingent, or even event-contingent transfers (a resource-contingent loan (RCL)). In doing so, it becomes evident that other existing policies can serve as examples of an RCL, with similar mechanisms and design considerations despite features that are different from those implied by the use of the terms 'income' and 'loan'.

In this project, we use Australian policies and policy proposals directed towards the country's ageing demographic to illustrate how the idea of an RCL is more general than might be thought at first sight. The Age Pension, and the proposal to use housing equity drawdown to finance aged care (a kind of reverse mortgage) are two policy paradigms that fit the pattern of an RCL. The emphasis on age-related programs is deliberate – demographic change implies increasing public expenditure relative to GDP, and policy designs which work to contain these outlays will become increasingly important as populations age.

While there are several similarities in the general design of repayment mechanism for standard ICLs and means-tested pensions, there is one key distinction relating to the accounting period for repayment. If an individual with student debt has previously earned income below the set threshold and starts earning above the threshold, she still has the full amount of the total transfer to repay. A pensioner, on the other hand, who experiences an income or asset windfall, can pocket past transfers and only makes a repayment on the funds transferred in the year or years in which she has resources above a threshold.

These ideas were presented at an International Economics Association (IEA) conference on income-contingent loans held in Bangkok. A paper based on this idea has been accepted for publication in a volume devoted to income-contingent loans.

> The Age Pension and the proposal to use housing equity drawdown to finance aged care are two policy paradigms that fit the pattern of an RCL

RAFAL CHOMIK
BEcFin UWA, MEc
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SENIOR RESEARCH FELLOW

Rafal Chomik is a Senior Research Fellow at CEPAR, located in the Australian School of Business at the University of New South Wales. He joined CEPAR in April 2012.

Rafal has worked in public administration and policy analysis for over a decade, initially as a project manager in economic regeneration and subsequently as an economist focusing on social policy.

He has experience of economic and business consulting in the private sector, working as an economic advisor for the British Government and as a pensions economist at the Organisation for Economic Cooperation and Development in Paris. He specialises in social policy design, public and private pension analysis, static microsimulation modelling of the tax-benefit system, and poverty and income measurement.

His current work at CEPAR is centred on producing policy related briefing papers, summarising existing CEPAR and external research and assisting the secretariat in producing technical content for conferences and the media.

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STRAND 4

AGEING WELL
AND PRODUCTIVELY

Research on ageing well and productively examines ways in which health and psycho-social factors influence productive contributions (including workforce participation and care-giving) as well as independence, wellbeing, and use of health and community services. It focuses especially on those aspects of decision making and life choices that are important for a longer and more productive life, and tries to relate these to productive ageing. The broad issue is important in the context of demographic change because of the much larger proportion of older people in society.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

STRAND 4   AGEING WELL
AND PRODUCTIVELY

Research on ageing well, embracing both productive and active ageing, focused on both physical and cognitive capacities, their determinants, and measures to enhance capacities and retard decline and thus promote active ageing. Both physical characteristics, such as Body Mass Index (BMI), and social influences such as access to support networks, were taken into account, as well as use of services available to support active ageing.

- **PRODUCTIVE AND ACTIVE AGEING**

Ageing well and productively has become a goal not just for individuals, but also for societies facing an ageing demographic. The projects used HILDA data to investigate the extent of engagement in productive activities such as paid work and care-giving, and the determinants and consequences of engagement in productive activities for more recent cohorts of ageing individuals in Australia. In addition, a major research initiative analyses active ageing, a term capturing the ideas of both productive and enjoyable ageing. Work on several related projects has been undertaken through 2013. The impact of unhealthy behaviours on healthy life expectancy in Australia is being investigated. There is an urgent need to establish that increased years of life are not at the expense of greater ill health. Unhealthy behaviours such as smoking and physical inactivity, or conditions

such as obesity are known risk factors not just for mortality but also for morbidity. This work, linked with the University of Newcastle in the U.K., will continue, with a focus on specific chronic diseases. An important outcome is that ultimately, better information about whether morbidity compression is happening in Australia will become available. Related research focuses specifically on the productivity of older cohorts, whether in paid work or in caring and volunteering roles. A new study, in its planning stages, is to examine the impact of cognitive training and physical activity on the everyday functioning of older adults. Further projects focus specifically on the role of social networks in successful ageing, and of the role of stereotypes on health behaviours.

- **LONGITUDINAL PREDICTORS OF HEALTHY AGEING**

A series of projects has been undertaken using the Melbourne Longitudinal Studies on Healthy Ageing program (MELSHA) longitudinal database. These include analyses of lifestyle influences on ageing well and ageing well 'trajectories'. This database, unique in Australia, will be used to fill out our knowledge of longitudinal aspects of the ageing experience. Other studies will compare how the life experiences of the cohorts born between 1946 and 1950 differentially influence health and wellbeing, comparing the Australian experience with the U.K. and Germany. This research highlights the importance of a whole-of-life perspective to understanding the socio-economic determinants of later life health, and draws attention to lessons for behaviour and lifestyle at younger ages.

- **COGNITIVE AGEING**

Several projects focus on cognitive ageing, and the relationship between cognitive decline, behaviour, and socioeconomic status. A CEPAR sponsored National Survey of Attitudes to Cognitive Health and Lifestyle is providing valuable information about people's beliefs and habits with regard to cognitive decline. Preliminary analysis has been conducted. One finding is that while many people report undertaking physical activities and amending diet for reasons at least partly related to concerns about cognitive decline, they do not alter their behaviour when it comes to mental activities such as crosswords and Sudoku. From a socioeconomic standpoint, fear of Alzheimer's appears to be linked to age, education, self-perceptions of memory and subjective life expectancy. Longitudinal data harmonised across 13 European countries have been used to unravel

causality in these relationships. This study confirms that the factors that best maintain cognitive functioning with age are related to individual lifestyle, beliefs, and health behaviours. They establish a causal link from physical activity to cognitive functioning, and are also able to examine the extent to which the regularity and intensity of such activity has a protective effect on cognition, after controlling for health and socioeconomic variables. In yet another study, mental health (such as the absence of depression) is also investigated. Cerebral correlates are also being investigated.

- PHYSIOLOGICAL ASPECTS OF HEALTHY AGEING

Several projects examine specific physiological covariates of healthy ageing. A detailed and longstanding study of elderly Australian men, CHAMP, is used to identify predictors of elderly male mortality: these include low BMI, high white cell count, anaemia, and smoking among others. The impact of Vitamin D status on healthy ageing receives specific and detailed attention. In other research based on U.S. data, BMI patterns are traced through time, with cohort differences in relationships between socioeconomic indicators and BMI identified.

- RESOURCE USE

Products and services to assist the elderly need to be used to have value. Current research is investigating how population and health trends may inform policy design and delivery. To make this operational, emphasis is placed on linking health services data to population survey data, and on methods to convert these data into information for understanding patterns, pathways and costs of health and aged care services.

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LIFESTYLE INFLUENCES ON HEALTHY AGEING
AND CHRONIC DISEASE: LONGITUDINAL PREDICTORS

RESEARCHERS

HAL KENDIG
COLETTE BROWNING
LINDY CLEMSON
RICHARD BURNS
CATHY GONG

This project examines longitudinal data from the Melbourne Longitudinal Studies on Healthy Ageing program (MELSHA), an ongoing longitudinal study of the health of older people living in the community, which commenced in 1994. MELSHA has received funding from the Victorian Health Promotion Foundation, the NHMRC and ARC. In this project, funded with a contribution from the Medibank Community Fund, we are using the MELSHA dataset to examine ageing well

in order to inform the development of interventions and services to optimise ageing well.

This project examines the predictors and consequences of ageing well as key factors that can be addressed in healthy ageing interventions and services. It aims to identify:

- Lifestyle influences on ageing well
- Trajectories of health and wellbeing in old age
- Health and disability transition points for targeted interventions.

During 2013 CEPAR contributed to updating the death records in the MELSHA data file through to 2013. A number of publications were drafted and three are currently under review:

1   Kendig, H., Browning, C., Thomas, S., and Wells, Y. (2013). 'Lifestyle influences on ageing well: An Australian longitudinal analysis to guide health promotion'. (Under review.)

The purpose of this study was to examine lifestyle influences on ageing well using survival analysis techniques applied to the MELSHA database. Important risk factors for the total sample were chronological age, multi-morbidity, low perceived social

support, low nutritional score, being underweight and low physical activity. For men, risk factors were low strain, lower levels of social activity, perceived inadequacy of social activity, low perceived social support and being a current smoker. For women, urinary incontinence, being underweight and low levels of physical activity were risk factors. The findings indicate that healthy lifestyles can assist ageing well, and suggest the value of taking gender into account in health promotion strategies.

2   Browning, C., Enticott, J., Thomas, S., and Kendig, H. (2013). 'Trajectories of ageing well: The influence of lifestyle factors'. (Manuscript in preparation.)

The purpose of this study was to use multiple group-based trajectory modelling to identify the characteristics associated with ageing well in the MELSHA database. Three trajectories were identified for both men and women in the sample: Those who commenced in the study not ageing well and remained in this state (stable-poor), those who commenced in the study as ageing well but showed deteriorating outcomes (deteriorating) and those who started as ageing well and continued in

PROFESSOR LINDY CLEMSON
Dip (OT) NSW College of Occupational Therapy, B App Sc (OT) WAIT, MAppSc (OT) PhD Syd.
ASSOCIATE INVESTIGATOR

Lindy Clemson is a Professor in Ageing and Occupational Therapy. She is the Joint Head of the Ageing, Work & Health Research Unit at the University of Sydney and an NHMRC Career Development Research Fellow.

She has conducted trials to test the efficacy of fall prevention interventions, including Stepping On and LiFE, and has developed assessments related to healthy ageing and participation and investigated ways to translate research into practice.

Lindy has more than 40 peer-reviewed publications, with over half on falls prevention, and has produced several practical manuals

providing frameworks for practice. She developed the first assessment procedure for identifying fall hazards in the home. This Westmead Home Safety assessment, currently considered a gold standard, is used by numerous universities and clinical settings nationally and internationally.

Lindy served on the Board of Directors of the Independent Living Centre for ten years up to 2008, has served on

the NSW Policy Development Working Party (Falls) and as a NHMRC Grant Review Panel member in 2005 and 2007. She currently serves on the executive of the Australian and New Zealand Falls Prevention Society and as an invited member of the World Federation of Occupational Therapists International Advisory Group on Accessibility and Participation.

this state (stable-good). Lifestyle factors influencing these trajectories included sleep quality, nutrition, and social activity.

3   Burns, R. A., Browning, C. and Kendig, H. (2013). 'The importance of delineating the longitudinal trajectories of mental health and wellbeing throughout late life'. (Submitted to *International Psychogeriatrics*.)

The aim of this study was to compare the longitudinal changes in multiple domains of mental health and wellbeing in a sample of older Australians to describe the utility of operationalising wellbeing across multiple domains of functioning. Overall, there was a decline in positive wellbeing and increase in depressive symptoms as people age in late-life. Changing life contexts, such as becoming widowed and survival status appear to amplify these changes. Importantly, differences in the extent of any changes between the wellbeing dimensions were reported. For example, negative affect, but not positive affect and depression, were most significantly impacted

by those who were widowed and non-survivors. This supports the need to operationalise mental health and wellbeing with multiple indicators of different wellbeing domains.

4   Clemson, L., Kendig, H., and Browning, C. (2013). 'Predictors of medicalized falls and fear of falling differ: An 11 year longitudinal study of incident events in older people'. (Submitted to *Ageing and Health*.)

There is a lack of research that examines intrinsic, psycho-social and lifestyle factors and the temporal relationship between having a fall requiring medical attention or of acquiring a fear of falling. Using data from MELSHA we found that the predictors of injurious falls were increasing age, frailty and being in a state of depression while the predictors of developing a fear of falling were increasing age, cognitive impairment and reduced social activity. The profile of the person who will have an injurious fall differs from the profile of the person

who develops a fear of falling. These factors need to be taken into account when designing fall prevention interventions.

The team presented its findings at a number of conferences and symposia including the symposium 'Living Well with Chronic Illness: Comparing Research and Policy Developments in Australia, Canada, and the United States', The Gerontological Society of America, Annual Scientific Meeting, New Orleans, 20–24 November 2013.

NEXT STAGE
Further MELSHA analyses are underway to inform implementation of aged care policy reforms. Dr Richard Burns and Dr Cathy Gong joined CEPAR in 2013 to work with Professors Anstey, Kendig and Browning and are leading a number of analyses on wellbeing, flourishing, mental health, ageing in place and social activities. They are examining outcomes in the years preceding death and will continue to do so in 2014. Richard was awarded a 2014 CEPAR ECR Travel Grant and will visit Professor Browning to work on a longitudinal paper

examining the independent effects of chronic disease and living well on mortality risk and service-use utilisation, as well as to examine the extent to which adults can still lead healthy and functioning lives with chronic disease. The researchers will identify implications for Australian aged-related health care policies. As CIs, Kendig, Gong and Browning have submitted an ARC Linkage grant application on consumer directed care. They are also working with a number of international colleagues in the area of cross-national comparisons of healthy life expectancy.

The profile of the person who will have an injurious fall differs from the profile of the person who develops a fear of falling. These factors need to be taken into account when designing fall prevention interventions

SOCIOECONOMIC DETERMINANTS OF HEALTH AND WELLBEING ACROSS THE LIFE COURSE

RESEARCHERS

HAL KENDIG
JULIE BYLES
JAMES NAZROO
KATE O'LOUGHLIN
VANESSA LOH

This project is examining how the life experiences of the baby boom cohort (born 1946–1950) influence health, productivity, wellbeing, and pension and service use at ages 60 to 64 years. With support from an earlier ARC Discovery grant (Kendig et al,), which funded the 2010–11 Life History and Health Survey, this project is conducting further analyses of the Australian data beginning comparisons with comparable life history data from the English Longitudinal Study of Ageing (ELSA). In 2013,

the Australian and English data harmonisation was completed as well as detailed occupational and family history data.

Continuing analyses and preliminary findings were presented in five papers at national and international conferences. Papers produced included 'Australian baby boomers, inequalities in wellbeing, and social determinants over the life-course' presented at the Public Health Association of Australia and New Zealand Conference in Melbourne; and 'Ageing baby boomers and cohort equity in Australia', presented at an invited symposium of the IAGG World Congress in Seoul. Three papers have been accepted or published in scholarly referred

journals, including 'Housing type, location of residence and health status in Australian baby boomers' in the *Australasian Journal on Ageing*; 'Australian baby boomers face retirement during the Global Financial Crisis' in *Journal of Aging and Social Policy* and 'Australian baby boomers retiring 'early'; Understanding the benefits of retirement preparation for involuntary and voluntary retirees' in the *Journal of Aging Studies*. An article is under review on the innovative CATI methodology.

During 2014, analyses will continue on the Australian data and the Australian-English comparative analyses will be conducted. Earlier conference papers will be submitted for publication and further

papers will be prepared on the determinants of wellbeing, work and health histories; occupational status and change; the influence of childhood opportunity and disadvantage; gender differences; and the experiences of migrants in comparison to the Australian-born. Australian and English comparisons will examine the influence of different societal and policy developments over the post war period.

International comparative findings including Australia, England, and Germany will be presented in an invited symposium led by Kendig and Nazroo to the International Sociology Association in Yokohama. With support from a CEPAR ECR Travel Grant, Loh will

visit Manchester to collaborate with Nazroo and colleagues on comparative analyses and publications. An NHMRC project proposal led by CEPAR collaborators Kendig, Byles, Cumming, and Loh will request funding for a five year follow-up examining change as people pass through retirement and other transitions in later life.

> This project is examining how the life experiences of the baby boom cohort (born 1946–1950) influence health, productivity, wellbeing, and pension and service use at ages 60 to 64 years

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PROFESSOR HAL KENDIG
AB UC Davis, MPI PhD USC, FASSA
CHIEF INVESTIGATOR

Professor Kendig is a sociologist and gerontologist. Until December 2012 he served as Professor of Ageing and Population Health and as Head of the Ageing, Health and Work Research Unit at the University of Sydney. In January 2013,

he was appointed Professor of Ageing and Public Policy at the Australian National University in the Centre for Research on Ageing, Health, and Wellbeing in the Research School of Population Health.

He is a CEPAR Chief Investigator serving on the Management Committee; leading research on healthy and productive ageing and social determinants of health

over the life course; and collaborating in research on aged care, attitudes, health services, men's health, and international comparisons.

Professor Kendig is a Fellow of the Academy of Social Sciences in Australia, Fellow of the Gerontological Society of America, Foundation Fellow of the Australian Epidemiology Association and a founding

board member of the Global Social Initiative on Ageing. He serves on the editorial boards of *Ageing and Society*, the *Australasian Journal on Ageing*, the *Journal of Population Ageing* and the *Journal of Gerontology: Social Sciences*.

PRODUCTIVE AGEING

RESEARCHERS

HAL KENDIG
KATE O'LOUGHLIN
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CATHY GONG

In Australia, there has been increasing policy attention on productive ageing and maintaining productivity by enabling and supporting Australians to continue participation in productive activities as they age. Countering the negative view of ageing as a process of declining health, increasing dependency and dwindling contributions, productive ageing promotes the view that older individuals can and often do continue making valuable social and economic contributions by engaging in a range of productive activities other than paid work. Productive activities may be paid or unpaid, and include volunteering, care-giving, and other informal help to others such as childcare and housework.

This study uses Australian longitudinal data from the continuing Household, Income and Labour Dynamics in Australia (HILDA) Survey, which has been conducted annually since 2001. The aim of this research is to investigate the extent of engagement in productive activities such as paid work and care-giving, and the determinants and consequences of engagement in productive activities for more recent cohorts of ageing individuals in Australia.

The first phase of this study involved a review of research on productive ageing and a cross-sectional analysis of engagement in productive activities such as paid work, volunteering, care-giving, childcare, and domestic work in 2010. The results indicated that engagement in different kinds of productive activities varies across age groups, consistent with socially-graded, age- and gender-related norms and expectations within the Australian context and a life course perspective. The data also highlighted the potential for competition between paid work and other productive activities, and the importance of modifiable factors such as health and education for productivity across all ages. These results were presented at the FAHCSIA Annual Social Policy Research Workshop and published in the *Australian Journal of Social Issues* in 2013.

The next phase of this research is examining transitions over time using several waves of the HILDA Survey. Longitudinal data for the early baby boomer cohort (born 1946–1955) showed that whilst their engagement in paid work decreased from 75.6 per cent in 2002 to 61.7 per cent in 2010, engagement in other productive activities such as volunteering, care-giving, and caring for other people's children all increased. This provides evidence of the continuing contributions of Australians as they age, particularly through their engagement in productive activities other than paid work. In addition, the finding that engagement in an activity in 2002 increased the odds of engagement in the same activity in 2010 underscores the importance of encouraging, enabling, and supporting engagement earlier in life for continued engagement as people age. Outcomes of this research include paper presentations at the IAGG World Congress of Gerontology and Geriatrics, the 1st CEPAR International Conference, and the Industrial and Organisational Psychology Conference.

DR VANESSA LOH
BLibStudies (Int) (Hons), PhD Syd.
RESEARCH FELLOW

Vanessa Loh is a CEPAR Research Fellow located in the Ageing, Work and Health Research Unit in the Faculty of Health Sciences at the University of Sydney. She joined CEPAR in January 2012 after working as a Postdoctoral Research Fellow in organisational psychology at the School of Psychology at Macquarie University. She obtained a Bachelor of Liberal Studies (International) and completed her PhD in Psychology at the University of Sydney in 2010.

Her research interests include the psychosocial, individual and environmental predictors and determinants of healthy and productive ageing, work and retirement, and older adults' continuing contributions via paid work and other productive activities.

'My work as a CEPAR Research Fellow has enabled me to extend my research interests from individual and organisational factors in work and retirement to broader issues in population ageing research and healthy and productive ageing. Working with CEPAR has provided me with the unique opportunity to meet and collaborate with both CEPAR-affiliated and other researchers from a range of disciplines with similar research interests. CEPAR has also helped me in developing my career and research skills by providing the opportunity to attend and participate in several conferences, workshops, and seminars organised by CEPAR and other affiliated researchers.'

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INVESTIGATING PATHWAYS OF HEALTH AND COMMUNITY CARE SERVICE USE

RESEARCHERS

JULIE BYLES
HAL KENDIG
LYNN FRANCIS
CATHERINE CHOJENTA
CATHY GONG
NINA LUCAS

Australia urgently requires information to guide and monitor major health reforms anticipating massive population ageing and increasing demand on health services. Of particular relevance are the challenges of redesigning care for those with chronic and complex conditions, integrating services, and improving distribution and access to services on the basis of need. Such improvements in care require a better understanding of how services respond to changes in health state, movements and interfaces between acute, community and residential care settings, and variations in social and economic contexts.

Linkages between longitudinal survey and health services use data are essential to identify how specific health service usage relates to individual changes in physical and mental health and provide the ideal evidence base for understanding these multiple, complex and pressing issues.

This program, supported by the NSW Science Leveraging Fund, is developing methods and capacity to use routinely collected health services data to examine ways in which the use and impacts of health and aged care services change as people grow older and to provide information that can inform health care service delivery, planning and policy.

The emphasis will be on linkage of health services data to population survey data; and on methods to convert these data into information for understanding patterns, pathways and costs of health and aged care services as people age. The program will also develop methods for using longitudinal and linked data to evaluate health care innovations and programs aimed at addressing the health care needs of an ageing population. By linking longitudinal survey data with health services data it is possible to determine individual factors associated with use of these services and the differential changes in health outcomes for those who do and do not use them.

The aims of this project are to:

1   Build platforms, methods and capacities for using linked data to examine ways in which the use and impacts of health and aged care services change as people grow older including:
     a   Linkage of longitudinal health survey and hospital separations data
     b   Basic descriptive outputs
     c   Development of methods and analytical modules

2   Undertake analyses of health care use associated with major chronic illnesses and health risk behaviours, and the modifying effects of age, gender, other sociodemographic factors, and area of residence

3   Undertake analyses to identify major drivers of health service use and factors associated with different levels and patterns of use among particular population subgroups according to age, gender, sociodemographic resources, and geographical location

4   Develop and apply techniques for post-roll out evaluation of recent health and policy innovations.

DR CATHY GONG
PhD Econ ANU
RESEARCH FELLOW

Cathy Gong is a CEPAR Research Fellow located in the Centre for Research on Ageing, Health and Wellbeing at the Australia National University. She joined CEPAR in August 2013. Prior to this she worked as a Research Fellow with the National Centre for Social and Economic Modelling (NATSEM) at the University of Canberra; an Assistant Director with the Child Care Data and Modelling Team at the Department of Education, Employment and Workplace Relations; and as a Statistician/Senior Statistician with the Urban Household Survey Division of the National Bureau of Statistics of China. She completed her PhD in Economics at ANU in 2009.

Her research interests include social determinants of healthy and productive ageing, aged care, health service use, international comparisons of ageing, age friendly communities for older people, inequality and mobility in health, employment and economic wellbeing, and labour market and retirement choices in late life. She has published on intergenerational mobility, income inequality, spatial disparity and social exclusion in both international and domestic journals. Her skills and experience in cross sectional and longitudinal data analysis, indexation, microsimulation and other economic and statistical techniques enable her to contribute widely to the multidisciplinary research of ageing.

Data from the Australian Longitudinal Study on Women's Health (ALSWH) have been linked to NSW APDC data, death indices, and separately to Medicare and PBS data allowing for approved analyses concerning the predictors of health care use, and the consequences of health service arrangements and policies for women aged in their 80's. These data have been analysed to examine health care use and costs associated with major chronic conditions such as stroke, arthritis and diabetes, the impact of these conditions on health outcomes, and changes in health care use in the two years prior to death. Separate analyses are also investigating the use of medications by women in this age group, and their effects on women's mental and physical health.

In 2013 we also obtained access to linked survey and hospital data for participants in the NSW 45 and Up study aged 85 years and over. This very large data set allows us to examine health care use in finer detail across a much larger sample, a broader range of ages, and for men as well as women.

An examination of 45 and Up data in relation to older men living independently has found that single older men have worse physical and mental health than partnered men. These findings have important implications for support services offered to men who do not live with a partner.

Access to linked 45 and Up data to Medicare data has also been obtained for approved projects. Some analysis has been completed (use of psychological services), and some is to commence (time to residential aged care).

> Australia urgently requires information to guide and monitor major health reforms anticipating massive population ageing and increasing demand on health services

PROFESSOR JULIE BYLES
B Med PhD Newcastle
ASSOCIATE INVESTIGATOR

Julie Byles is Director of the Research Centre for Gender, Health and Ageing – a Priority Research Centre at the University of Newcastle that includes the World Health Organisation Collaborating Centre for International Longitudinal Studies on Gender, Ageing and Health. As a clinical epidemiologist, Professor Byles interests are in risk determination, health assessment, other health care evaluation, and measurement of health outcomes. As a Gerontologist and Fellow of the Australian Association of Gerontology, her research interests in ageing include the role of health services, preventive activities, and treatments in maintaining quality of life for older people, and in determining physical, psychological and social factors associated with optimal physical and mental health of men and women as they age. Her work has included health assessment, medications used by older people, sleep disturbance, health effects of alcohol, nutrition screening and interventions, health and retirement, and prevention of falls in residential care.

Professor Byles is co-director of the Australian Longitudinal Study on Women's Health and is closely involved with the NSW 45 and Up Study. She is the immediate past President of the Australian Association of Gerontology (2012, 2013), and contributes to government and non-government programs relating to ageing research and health care for older persons.

She has authored over 180 publications in peer reviewed refereed journals.

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RESEARCHERS

KAARIN J. ANSTEY
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DIMITRI CHRISTELIS

Two projects, one involving an Australian pilot study focused on the effects of cognitive training and physical activity on everyday function in older adults, and the other on investigating the relationship between physical activity and cognitive ageing using European data, were progressed in 2013.

THE EFFECT OF COGNITIVE TRAINING AND PHYSICAL ACTIVITY ON EVERYDAY FUNCTION IN OLDER ADULTS

Normal cognitive ageing is characterised by slowing of information processing and decline in a range of cognitive abilities that involve novel problem solving and reasoning, attention, working memory, shifting focus, multitasking, and recalling information. These changes typically do not interfere with the healthy older adult's ability to live independently and engage in most activities. However, the effects of normal cognitive ageing on daily activities can be apparent when these activities demand complex cognitive skills along with sensory and physical demands. Driving a motor vehicle is one such task that can be impacted by normal cognitive ageing. Because maintaining mobility is vital for continued social engagement, independence and quality of life in older adults, it is important that we investigate methods to enhance both cognitive and physical function in this age-group. Although there is much scientific and popular interest in cognitive training tools, very few are evidence-based and none have shown lasting transfer of gains to everyday activities.

In order to improve everyday function in older adults, Anstey and Sargent-Cox aim to develop an intervention targeting both complex cognitive demands and physical demands. As a pilot study, we aim to compare training in cognitive speed and selected 'executive functions' (working memory, attentional control, multitasking, and response inhibition), with a physical activity intervention. A third control group will receive no intervention. Effects of the interventions will be tested on outcomes related to driving, including performance on a driving simulator task.

This study aims to pilot a cognitive intervention trial and assess its feasibility using a small group of 30 participants aged in their 70s from a local Canberra Retirement Village.

The intervention will involve three groups:

1   Cognitive intervention (executive function training focusing on control of visual attention with bimanual and bipedal motor responses)
2   Physical activity intervention (exercise program with emphasis on cognitively complex movements, tailored for older adults, and designed to appeal to both genders)
3   Passive control (no intervention).

Both intervention programs will involve 12 one-hour sessions over four weeks (three per week). Attendance will be recorded in order to measure compliance rates for analyses. Participants can drop-out of the program at any time by contacting the researchers. All participants will undergo a baseline assessment and post-intervention session.

PROFESSOR KAARIN J. ANSTEY
BA (Hons) Syd., PhD Qld., FASSA
CHIEF INVESTIGATOR

Kaarin J. Anstey is Director of the Centre for Research on Ageing, Health and Wellbeing and Director of the Dementia Collaborative Research Centre – Early Diagnosis and Prevention, both of which are based at the Australian National University.

She is also an NHMRC Senior Research Fellow and an Adjunct Professor at the Pennsylvania State University Gerontology Centre.

Her substantive research interests include the epidemiology of cognition and dementia, late-life depression, and wellbeing. She is interested in the social impact of late-life cognitive impairment with increasing longevity. Kaarin is also working on interventions to reduce the risk of cognitive decline and dementia and promote healthy ageing. She has developed a model of driving safety and conducts research on older driver safety and the impact of driving cessation.

Kaarin is a member of the NHMRC Steering Group on Dementia in the Research Translation Faculty, and is a member of several editorial boards of journals in gerontology and psychology.

It is anticipated that the pilot project will begin in late 2014. Findings from the study will be used to plan and conduct a larger scale randomised control trial of the cognitive and physical interventions. The study has significant implications for evidence-based approaches that support productive ageing and enhance quality of life for older adults.

In order to improve everyday function in older adults, we aim to develop an intervention targeting both complex cognitive demands and physical demands

PHYSICAL ACTIVITIES AND COGNITIVE AGEING

Ageing well, economically or otherwise is, in many ways, closely related to preserving cognition in old age. For instance, enhanced cognitive skills are associated with better physical and mental health, superior job performance, occupational rank and income, higher financial literacy, wealth and risky portfolio holdings and life satisfaction after retirement in general.

Identifying the factors that can help maintain or enhance cognitive functioning is thus crucial for the elderly. Interestingly, these factors were found to be mainly related to individual lifestyle, beliefs and health behaviours. Among the health-protective behaviours, exercising proved to be strongly and positively associated with better old age cognition. But is this relation causal? Using cross-country harmonised data from 13 European countries, Dobrescu and Christelis address this issue and document the considerable positive causal impact of physical activities on cognition. Importantly, we also examine the extent to which the regularity and intensity of such activity has a protective effect on cognition, after controlling for the role of health and socio-economic variables.

We find that only the activities involving moderate effort have a strong statistically significant effect on numeracy, and we see this only for males. For fluency, moderate activities seem to matter for both males and females, but vigorous ones have a strong effect only for women. Delayed memory for women seemed not affected by any type of physical activities, while only moderate activities impact immediate recall. Finally, for males, both types of activities affect short-term memory, while the vigorous activities appear relevant only for delayed recall capacities. We expect this project to be completed by mid-2014 with subsequent journal submission.

Ageing well is strongly associated with the preservation of cognitive skills. We find engaging in physical activity to be one of the main drivers of old age cognition, with results varying by gender and effort intensity

DR DIMITRIS CHRISTELIS
PhD Pennsylvania
ASSOCIATE INVESTIGATOR

Dimitris Christelis is a Research Fellow of the Centre for Studies in Economics and Finance at the University of Naples Federico II. He obtained his PhD in Economics at the University of Pennsylvania.

In his research he primarily uses micro data surveys of older households. Some of the topics he has worked on include the effect of cognitive abilities, health insurance coverage and fear of terrorism on risky financial asset investment, the analysis of differences in household portfolio choices across different countries, the interaction between different modes of stockholding, and the effect of unemployment and capital losses during the Great Recession on household consumption. He has also worked on issues related to health economics, including the cross-country analysis of smoking persistence and the link between engaging in social activities and the preservation of cognitive abilities in older age.

He has been involved with the production of micro data, as he participated in the design of the questionnaire and implemented the imputation of missing data for the first two waves of the Survey of Health, Ageing and Retirement in Europe. He has also worked as a senior economist in the Directorate General Research of the European Central Bank and has consulted on micro survey issues with the World Bank, the Hebrew University of Jerusalem, and the Bank of Greece.

ESTIMATING THE EFFECT OF UNHEALTHY BEHAVIOURS ON HEALTHY LIFE EXPECTANCY IN AUSTRALIA

RESEARCHERS

CAROL JAGGER
KAARIN J. ANSTEY

External Collaborator

ANDREW KINGSTON
(NEWCASTLE UNIVERSITY, UK)

There has been a lack of research on health expectancy in Australia, in part due to a lack of national datasets containing key risk factors. This CEPAR project is the first in a series that will examine Australian health expectancies and enable comparisons between Australia and other countries.

As life expectancy continues to increase globally, there is an urgent need to establish that increased years of life are not at the expense of greater ill-health. Unhealthy behaviours such as smoking, obesity and physical inactivity are known risk factors for mortality and many diseases including dementia. However how these behaviours affect the number of remaining years with and without cognitive impairment is unknown, despite this being key information for public health interventions. For example, unhealthy behaviours may result in slightly earlier onset of cognitive impairment but more rapid decline and death, with therefore fewer years in total and with cognitive impairment. Professors Kaarin Anstey and Carol Jagger decided to address this question using the DYNOPTA dataset and CEPAR provided funding for Andrew Kingston (Newcastle University, UK) to undertake the analyses under the supervision of Carol Jagger. Andrew is a statistician working with Carol and is undertaking a PhD part-time on trajectories of disability in the very old. Having already mastered new software to calculate disability-free life expectancy from longitudinal data, Andrew was well-placed to employ the same techniques on DYNOPTA.

Similar to other countries, Australian women were found to spend more time with cognitive impairment than men (about three versus two years). We investigated how these years of cognitive impairment were related to lifestyle factors that affect healthy ageing, including smoking, physical activity and obesity. Our results have been submitted as a research paper to the *International Journal of Epidemiology*.

Future projects involving this team will focus on the impact of specific chronic disease on cognitive health expectancy, and the overall level of disability-free life expectancy in Australia. Ultimately, this body of work will enable CEPAR to evaluate whether compression of morbidity is occurring in Australia and which factors are contributing.

> ...there is an urgent need to establish that increased years of life are not at the expense of greater ill-health

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PROFESSOR CAROL JAGGER
BSc MSc Leeds, PhD Leicester
PARTNER INVESTIGATOR

Carol Jagger is the AXA Professor of Epidemiology of Ageing in the Institute for Ageing and Health at Newcastle University, UK.

She has an Honorary Visiting Fellowship at the Department of Public Health and Primary Care, is a Fellow of the Faculty of Public Health, Royal Statistical Society and Gerontological Society of America, is a Member of the British Geriatrics Society and a Chartered Scientist. She sits on the Institute and Faculty of Actuaries Mortality Research Steering Committee, the NHS Outcomes Framework Technical Advisory Group and the Office for National Statistics National Population Projections Expert Advisory Panel.

Her research spans demography and epidemiology with a focus on trajectories of mental and physical functioning with ageing, measuring disability and determinants of healthy active life expectancy, particularly through cohort studies of ageing: the Melton Mowbray studies and currently the MRC Cognitive Function and Ageing Study and the MRC Newcastle 85+ study.

She brings to the Centre statistical and epidemiological expertise particularly in cross-national comparative analyses, healthy life expectancy and its determinants and consequences, and simulation modelling of disease and disability.

SOCIAL NETWORKS AND AGEING PROJECT

RESEARCHERS
HEATHER BOOTH
TIM WINDSOR

External Collaborator
ROBERT ACKLAND
(AUSTRALIAN
NATIONAL UNIVERSITY)

SNAP aims to improve our understanding of the role of social networks in successful ageing. Longitudinal survey data were collected in 2010/11 and March 2012, including patterns of face-to-face and other forms of communication between participants and their family members and friends, as well as indicators of social connectedness and wellbeing.

Analyses of these data are providing new insights into the relationship between social networks and wellbeing. Differences by age, sex and partnership status in this relationship show that policy initiatives to improve connectedness and wellbeing need to be targeted at specific demographic groups. The first analysis focuses on self-rated health as the wellbeing outcome. Life satisfaction analyses have also begun.

In other analyses, data on the use of the internet and online social networking websites are being used to answer the question 'who uses online social networking (OSN)?' by identifying the offline social network predictors of online use. This study reveals that women use OSN to address a lack of offline emotional support whereas men use OSN as a practical tool to enhance practical activity or social support. These uses reflect gendered styles of communication.

Other analyses examine social network profiles. Using variables representing positive aspects of social networks (i.e., availability of social support) and negative social exchanges, several different network profiles have been identified. Examples include 'high levels of support with infrequent negative exchanges' and 'living alone with frequent negative exchanges'. Associations of profiles with external variables indicate that supportive social networks and an absence of interpersonal tensions are related to greater satisfaction with life, and better mental health. This work was initially conducted using the first wave of data and is currently being expanded to incorporate the second wave, thereby enabling the examination of temporal change in wellbeing outcomes among the different profiles.

A third data collection instrument captures online social networking. A purpose-designed Facebook application (AuSON) collects data on the structure of participants' Facebook-friends networks and on the participants' social capital and wellbeing. The study also examines the relationship between online and offline social networks and its impact on individual social capital and wellbeing.

The initial sample comprises Facebook-users from the SNAP sample, with expansion through snowball sampling. The second phase of data collection using AuSON is underway.

Results from this research were presented in a symposium at the International Association of Geriatrics and Gerontology Conference in Korea. This research is supported by the ARC and National Seniors Australia (LP0990974) and CEPAR.

DR TIM WINDSOR
BA PhD UNE
ASSOCIATE INVESTIGATOR

Tim Windsor is an Associate Investigator with CEPAR, and an Australian Research Council Future Fellow based at the Flinders Centre for Ageing Studies and School of Psychology, Flinders University. Before commencing at Flinders in 2011, Tim worked as part of the Centre for Research on Ageing, Health, and Wellbeing team at the Australian National University. His research interests are focused on psychosocial aspects of adult development and ageing. Current projects are concerned with changes that take place in social networks and social behaviour in later life, and how these changes relate to emotions, mental health, and cognition. Tim is involved in a number of collaborative studies of ageing in Australia including The Australian Longitudinal Study of Ageing (ALSA), PATH Through Life, DYNOPTA, and the Transitions in Later Life Study (TRAILLs).

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CONCORD HEALTH AND AGEING IN MEN PROJECT

RESEARCHERS
ROBERT CUMMING
VASANT HIRANI
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FIONA BLYTH
DAVID HANDELSMAN
DAVID LE COUTEUR
VASI NAGANATHAN
MARKUS SEIBEL
LOUISE WAITE
(ALL UNIVERSITY OF SYDNEY)
THOMAS TRAVISON
(BOSTON UNIVERSITY)

The Concord Health and Ageing in Men Project (CHAMP) is designed to fill the gap in knowledge about the health of older men. Between 2005 and 2007, men aged 70 years and over living in the community around Concord Hospital in Sydney were invited to participate in CHAMP. A total of 1705 men was recruited. Two-year and five-year follow-up assessments have been completed, with 1367 men after two years and 955 men after five years.

Detailed diet histories were done by 804 men at the five-year assessment. The dietary data will form the basis of Rosilene Waern's PhD thesis, in which she will investigate the relationship between protein intake and health in older men.

CHAMP investigators are currently analysing data on predictors of mortality over 5 years of follow-up, during which time more than 400 men have died. Preliminary analysis suggests that the strongest predictors of mortality are low Body Mass Index, high white cell count, anaemia, smoking, history of cancer, having depressive symptoms, and physical disability. Overweight and obesity and/or being a lifelong non-drinker of alcohol were significantly protective against mortality. These findings will be used to develop risk models that could have applications in a range of clinical, policy and industry settings.

Thirty seven CHAMP papers have been published or are in press. Papers in 2013 covered a wide range of topics, including osteoporosis, use of cholesterol lowering drugs, incidence of knee pain, vitamin D deficiency, predictors of activity limitation, and prevalence of alcohol drinking and smoking. These included a paper that found factors associated with low vitamin D levels were smoking, obesity and low levels of physical activity. (Hirani, V. et al. *Journal of Nutrition, Health and Aging*, 2013; 17: 587–593.). Another paper reports that at older age, kidney disease, some diuretic medications, poor balance, and low levels of vitamin D were associated with greater bone loss; and that walking for exercise seemed to protect against bone loss. (Bleicher K et al. *Osteoporosis International*, 2013; 24: 1951–1963.)

CHAMP is supported by the NHMRC, CEPAR and the Sydney Medical School Foundation.

A new NHMRC project grant was awarded for 2014–2015 to study oral health among surviving CHAMP men.

> Our findings suggest that being overweight or obese and/or a life time non-drinker is associated with better survival

PROFESSOR ROBERT CUMMING
MBBS UNSW, MPH PhD Syd.
CHIEF INVESTIGATOR AND UNIVERSITY OF SYDNEY NODE LEADER

Robert Cumming is Professor of Epidemiology and Geriatric Medicine at the University of Sydney. He shares his time between the School of Public Health at the University of Sydney and the Centre for Education and Research on Ageing (CERA) at Concord Hospital.

He has an international reputation for his research on osteoporosis, falls and fractures. His research on falls prevention in older people has had major impact on policy and practice in this important field. Much of his research brings together biological, psychosocial and medical aspects of ageing. In recent years he has extended his work to the study of ageing in sub-Saharan Africa.

He is currently a member of the Australian Institute of Health and Welfare's National Arthritis and Musculoskeletal Conditions Monitoring Advisory Group; a member of the Woolcock Institute of Medical Research Advisory Committee; and serves on the editorial board of *Osteoporosis International*. He is a Life Member of the Australasian Epidemiological Association.

INVESTIGATING THE IMPACT OF VITAMIN D STATUS ON HEALTHY AGEING

RESEARCHERS

VASANT HIRANI
ROBERT CUMMING

External Collaborators

VASI NAGANATHAN
FIONA BLYTH
DAVID HANDELSMAN
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LOUISE WAITE
MARKUS SEIBEL
(ALL UNIVERSITY OF SYDNEY)

This research program includes two studies investigating health outcomes related to low vitamin D levels of two biomarkers of vitamin D: serum 25-hydroxyvitamin D (25D) and 1,25-dihydroxyvitamin (1,25D) with chronic pain of older men participating in the Concord Health and Ageing in Men Project (CHAMP).

The aim of the first study was to examine associations between serum 25D and 1,25D levels with reported 'recent' or intrusive and chronic pain, in men aged ≥70 years, living in the community. The prevalence of intrusive pain was 22.9 per cent and the prevalence of chronic pain was 29.7 per cent. Serum 25D concentrations were not associated with intrusive or chronic pain. In contrast, low 1,25D levels (<62.0pmol/L) were independently associated with chronic pain only, OR: 1.50 (95 per cent CI 1.03, 2.23) even after full adjustment with a wide range of confounders. The study concluded that low serum 1,25D concentrations are associated with chronic but not intrusive pain

in older men. The results of the study were written up in a paper titled 'Associations between 1,25-Dihydroxyvitamin D Concentrations and Chronic Pain in Older Australian Men: The Concord Health and Ageing in Men Project' and submitted to the journal, *Pain*.

The aim of the second study was to examine the associations between serum 25-hydroxyvitamin D (25D) and 1,25-dihydroxyvitamin (1,25D) with type 2 diabetes (DM) in community-living men aged ≥70 years participating in CHAMP. The prevalence of DM using measures of self-reported diabetes as well as fasting blood glucose measures and diabetic medication use was 20.0 per cent. There was a significant association

between 25D and 1,25D with DM that remained after adjustment for a wide range of potential confounders and covariates of clinical significance such as comorbidities, renal function, calcitropic hormones, and medications. Both 25D and 1,25D levels were associated with DM raising the question whether vitamin D metabolites may influence DM through specific biological mechanisms and pathways. A paper is in preparation for *The Journal of Clinical Endocrinology & Metabolism*.

Research on this topic completed in 2012 has now been published or accepted for publication as follows:

The study investigating associations between frailty and components of frailty with serum

25-hydroxyvitamin D (25D) and 1,25-dihydroxyvitamin (1,25D) has been published in the *Journals of Gerontology: Series A, Biological Sciences and Medical Sciences*, 2013;68(9):1112-21.

The study identifying and exploring the optimal vitamin D levels for positive health outcomes was accepted by the *Journal of the American Geriatrics Society* in October 2013.

> ...low serum 1,25D concentrations are associated with chronic but not intrusive pain in older men

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DR VASANT HIRANI

BSc Leeds, MSc London School of Hygiene and Tropical Medicine, Diploma in Dietetics London Metropolitan University, PhD University College London
RESEARCH FELLOW

Vasant Hirani is a CEPAR Research Fellow at the University of Sydney working at the Centre for Education and Research on Ageing. Her PhD investigated associations between vitamin D levels,

obesity and health risk outcomes. Her primary research interests are focused on vitamin D epidemiology and the impact of vitamin D status on healthy ageing. Other research interests are in the field of population health and nutrition, including obesity, chronic disease, anthropometry such as demi-span, and mental health.

She is a lead author for papers published in a range of international peer-reviewed journals. She has worked on the Health Survey for England (HSE) and the National Diet and Nutrition Survey (NDNS). She has been an author on 21 national government health and nutrition reports and was a co-editor of the HSE reports. She has also worked at the London School of Hygiene and Tropical Medicine on a project to

develop and pilot tools for the prevention and management of overweight in primary care.

Vasant previously worked as a Senior Research Fellow at University College London focusing on the health of older people.

'Working for CEPAR provides me with an excellent opportunity to work in a collaborative environment with experts in this field.'

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EDUCATIONAL DIFFERENCES IN OVERWEIGHT AND OBESITY IN THE UNITED STATES

RESEARCHER

YAN YU

Excess body mass has reached epidemic proportions in both developed and developing countries with long-term social and health implications. In industrialised populations, less educated people are more likely to be overweight or obese. Multiple inter-related processes could be responsible for the negative association between education and body mass. Educational attainment affects outcomes in the labour market, family formation and other aspects of adult life that could impact body mass. On the other hand, education is influenced by family background in early life.

Taking a different perspective on these issues, this project explores and compares changes across periods and cohorts in the association between education and overweight, using a series of cross-sectional samples from the National Health and Nutrition Examination Surveys (NHANES) spanning the 40-year period from 1971 to 2010. The analysis goes beyond prior period analysis of the NHANES data by incorporating more recent samples from 2007 through 2010. In addition, it is the first analysis of U.S. birth cohort trends in the association of body mass with education. Cohort (and period) trends in the age-specific prevalence of obesity have been analysed previously at the population level and by educational groups, but prior research has not examined how educational differences in body mass vary across birth cohorts, or whether cohort or period variations are more or less consistent with empirical patterns of change in the educational differences. Analysing period and cohort patterns of the education-BMI association will help to better understand the link between education and body weight.

Some of this work was presented at the 1st CEPAR International Conference in July and the XXVII IUSSP Conference held in Busan, Korea in August 2013.

> Educational attainment affects outcomes in the labour market, family formation and other aspects of adult life that could impact body mass

THE BODY MASS-MORTALITY ASSOCIATION IN THE UNITED STATES: THE TEMPORAL PATTERNS

RESEARCHER

YAN YU

There has been widespread secular improvement in survival throughout the world. While improvements in longevity are expected to continue, one threat to the survival trend is the rise in overweight and obesity. In the United States, 69 per cent of adults are currently overweight or obese, increasing from less than 50 per cent in the early 1970s. If the trend continues, it is suggested that excess body fat would wipe out the recent gains in health and longevity.

Whether mortality is elevated by excess body fat, especially at moderate levels, however, remains uncertain and controversial.

Although excess body fat is associated with a host of fatal chronic diseases such as cardiovascular disease, diabetes and cancer, previous studies have found higher or lower mortality for the overweight or moderately obese than for the normal-weight, or no mortality differences between the categories, depending on the datasets and analytical techniques. The discrepant findings could be due to i) differences in measurement (e.g., height and weight data based on self-reporting or physical measurements, measures that are retrospective or concurrent with the study baseline, or a wider or narrower reference normal-weight category) and/or ii) compositional differences in the study

populations (e.g., with respect to social, behavioural and health conditions).

Research on trends in body mass-related mortality differences is limited, but evidence is also inconsistent. Previous studies have claimed or suggested declines in the obesity-mortality association in the U.S. population or among U.S. men, but there is evidence that excess mortality due to obesity may be increasing among women, and the body mass-mortality association is changing across birth cohorts rather than time periods. Using data from the first three National Health and Nutrition Examination Surveys that represent the U.S. non-institutionalised

populations in 1971–75, 1976–80 and 1988–1994 and are followed up for mortality through July 1992, 1993 and 2006 respectively, this project examines trends in the body mass-mortality association for men and women separately, with particular attention to time period vs. birth cohort trends.

> Whether mortality is elevated by excess body fat, especially at moderate levels, however, remains uncertain and controversial

DR YAN YU

BS Shanghai JiaoTong, MA Sociology Columbia, MS Statistics PhD Sociology Wisconsin–Madison

RESEARCH FELLOW

Yan Yu is a Research Fellow at the Crawford School of Public Policy at the Australian National University. She joined CEPAR in 2011. Her doctoral thesis brought a demographer's

perspective to bear on the public health concern of obesity. She received the 2009 Dorothy S. Thomas Award from the Population Association of America for her thesis.

Her research interests include health and mortality, and the demography of ageing in both developed and developing countries. Her current research

projects include age, period and cohort patterns of body mass and mortality, and socio-economic differences in risk behaviours.

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NATIONAL SURVEY OF ATTITUDES TO COGNITIVE HEALTH AND LIFESTYLE

RESEARCHERS

KAARIN J. ANSTEY
KERRY SARGENT-COX
RICHARD BURNS

Through our National Survey project, we are interested in finding out about people's attitudes to cognitive health, and cognitive health lifestyles across different age groups. We are specifically interested in what behaviours people are engaged in for their cognitive health, whether they think those behaviours may help and what benefits they have. Additionally, as a novel approach, we're interested in finding out what younger people think about these behaviours, and the age at which people start engaging in behaviours to protect their cognitive health. Finally, our survey aims to investigate what roles stereotypes and fears play in these beliefs and behaviours.

Participants were recruited across Australia through a polling company using random digit dialing. Eligibility criteria for participating in the survey included speaking English and to be aged between 20 to 89 years old. The final sample consisted of 900 participants, with a mean age of 54.89 years (SD = 18.05 years).

Data was collected in early 2013. Preliminary data analysis has been conducted to examine 1) factors that may influence behaviours aimed at maintaining or improving cognitive health across different age-groups, and 2) factors related to fear of Alzheimer's or Dementia in different age-groups. We found that a number of physical activities are undertaken, predominantly for cognitive reasons. However, less than half the sample reported drinking wine, doing Sudoku and crosswords or continuing some form of education. Only a small proportion reported undertaking these activities for other reasons. Preliminary results indicate that age, education, subjective memory and expectations of ageing are significant determinants of fear of Alzheimer's.

Table 1.1: Proportion undertaking activity for cognitive or other reasons

	DONE FOR COGNITIVE REASONS	DONE FOR OTHER REASONS	NOT DONE
Physical Activity	553 (63.6)	58 (6.7)	259 (29.8)
Water	474 (56.0)	55 (6.5)	318 (37.5)
Vegetation	565 (65.2)	83 (9.6)	218 (25.2)
Fish	584 (67.3)	39 (4.5)	244 (28.1)
Sugar	468 (53.6)	79 (9.1)	326 (37.3)
Social	630 (72.3)	43 (5.0)	194 (22.4)
Smoke	524 (61.9)	68 (8.0)	254 (30.0)
Stress	479 (57.0)	10 (1.2)	351 (41.2)
Wine	253 (28.6)	27 (3.1)	604 (68.3)
Sudoku	244 (28.1)	9 (1.0)	615 (70.9)
Crosswords	417 (47.2)	10 (1.1)	457 (51.7)
Education	371 (42.5)	15 (1.7)	488 (5.8)

DR KERRY SARGENT-COX
BAppPsych (Hons) UC, PhD ANU
ASSOCIATE INVESTIGATOR

Kerry Sargent-Cox is a Senior Lecturer at the ANU Medical School and Research Fellow located at the Centre for Research on Ageing, Health and Wellbeing at the Australian National University. Kerry's research explores the psychosocial predictors of positive and healthy ageing. Her work is primarily focused on examining stereotypes and attitudes towards ageing and the ageing process, and how these attitudes affect ageing and health outcomes at an individual and society level.

'My involvement with CEPAR as a Research Fellow between 2011 and 2013 provided me with unique opportunities to further my career, establish collaborative partnerships, and enhance my research skills. For example, I attended a CEPAR meeting with the Age Discrimination Commissioner, the Hon. Susan Ryan, AO, which resulted in advisory work with her office. I organised a CEPAR Early Career Researcher Workshop, 'Methods for modelling dynamic processes in ageing', held at the ANU. Working with the presenter of the workshop, Dr Nilam Ram, led to collaborative prospects with him and his colleagues at Pennsylvania State University.'

MENTAL CAPITAL AND SUCCESSFUL AGEING:
PROMOTING HEALTHY AGEING AND WELLBEING IN ADULTHOOD

RESEARCHERS

RICHARD BURNS
KAARIN J. ANSTEY
PETER BUTTERWORTH

This project has identified that whilst older adults appear to be at no increased risk of major depression in late life, there is evidence of increased depressive symptomology in men which may reflect increasing subsyndromal depressive conditions. Further, males were more likely to report increasing depressive symptomology in the years preceding death. The depression-mortality association is well described in the literature, as is the proposed terminal decline hypothesis which states that health declines in the decade preceding death. However, a recent CEPAR publication now suggests that for most individuals, there is no decline in wellbeing or mental health in the years preceding death. Rather, it appears that mortality-related decline in physical health and functioning drives changes in mental health.

Further work has investigated the importance of flourishing across the lifespan, examining the extent to which having positive mental health (e.g., having a sense of vitality, resilience) is as important for promoting quality of life, healthy ageing and productivity, as simply not having poor mental health (depression, anxiety, psychological distress). These findings have been presented at national and international conferences including the Australasian Society for Psychiatric Research 2013 conference and the 14th International Conference of the International Federation of Psychiatric Epidemiology.

Related research is examining the different trajectories of clinical mental health and psychological wellbeing indicators in late life; it is proposed that different wellbeing and mental health indicators, whilst related, change in different ways as a consequence of different contexts. Further, this work is identifying whether positive wellbeing is a more important predictor of quality of life than mental health and highlights the role of positive psychological health in contrast to measures of clinical mental health.

Two pilot studies have also been undertaken to inform future projects. The first pilot study assessed the utility of the European Social Survey (ESS) Wellbeing Inventory in an Australian population. Wellbeing research is usually described as reflecting two theoretical paradigms, Subjective Wellbeing which focuses on individuals' affect and life satisfaction, and Psychological Wellbeing which focuses on individuals' functioning in terms of their sense of mastery, resilience, autonomy and growth. The ESS Wellbeing Inventory assesses many aspects of both wellbeing dimensions. A second pilot study sought to examine how mental capital (resilience, mastery, autonomy, personality) is associated with intraindividual variability in affect over a 14-day period with daily assessment of positive and negative affect and life stressors. Work on both pilot studies is ongoing and may lead to either publications or the development of frameworks for future research.

Currently a number of additional areas of work are planned and relate to examining social-economic determinants of living well with chronic disease and examining the utility of life satisfaction as a measure of population mental health and wellbeing across the lifespan.

DR RICHARD BURNS
BMus ANU, BA CSU, PGDE UC, MSc Manchester, PhD USQ
RESEARCH FELLOW

Richard Burns joined the ANU CEPAR node in January 2013 as a Research Fellow at the Centre for Research on Ageing, Health and Wellbeing (CRAHW). Previously, Richard was a Research Fellow on a Capacity Building Grant and a joint NHMRC/ARC funded project, the DYNOPTA project, which were based at CRAHW.

Richard's research focuses on wellbeing and mental health and has encompassed varied contexts including educational, organisational and epidemiological. More recently, Richard has been examining longitudinal changes in dimensions of wellbeing and mental health across adulthood and more specifically in the years leading to death. Current work is focusing on describing 1) changes in wellbeing and cognitive function in late life, 2) the psycho-socio-demographic factors that drive flourishing and positive mental health across the lifespan, and 3) the impact of job strain and workplace climate on employee health and wellbeing and as barriers to workforce participation in later life.

CEREBRAL CORRELATES OF COGNITIVE AND MENTAL WELLBEING IN THE 50s

RESEARCHERS

NICOLAS CHERBUIN
KAARIN J. ANSTEY
PETER BUTTERWORTH

A better understanding of the nature of brain changes in middle-age and their associations with mental health and cognition is essential in order to inform preventative intervention and policy.

To investigate how brain structure and difference in brain structure in community-living individuals in their 50s relate to risk factors for cognitive ageing, mental health, and cognitive decline, MRI scans of a sub-sample of participants taking part in the PATH Through Life project were acquired in the first half of 2013.

The acquired scans were processed on the supercomputer of the National Computational Infrastructure in the following six months using advanced neuroimaging techniques. These techniques allow us to measure the thickness of the cortex, the volumes of many brain sub-structures and other cerebral characteristics such as the way in which different brains vary in the pattern of folding visible on their surface.

In 2014, we will use these measures to investigate associations between variation in brain structure and environmental and lifestyle risk and protective factors, as well as cognitive health and wellbeing. These analyses are expected to lead to multiple publications which will further CEPAR's aim of producing research evidence demonstrating that a healthy lifestyle in middle-age and before is a cornerstone of more productive ageing. Moreover, the evidence produced will inform public education, policy and research in the promotion of healthy ageing.

> Midlife is a time when the cumulative effects of genetic, lifestyle, health, and environmental risk factors on cerebral health become more salient.

DR NICOLAS CHERBUIN
BA UNSW, BA (Hons) PhD ANU
ASSOCIATE INVESTIGATOR

Nicolas Cherbuin is an ARC Future Fellow at the Centre for Research on Ageing, Health and Wellbeing, ANU, where he leads the Neuroimaging and Brain Lab. He is a member of the Dementia Collaborative Research Centres initiative. His main research interests are the investigation of risk factors for dementia and cognitive ageing, the development of instruments for the early identification of individuals at risk of developing dementia, and the investigation of neuroanatomical changes associated with cognitive decline and dementia using brain imaging techniques. He is particularly interested in the development of public health approaches aimed at maximising cognitive health throughout the lifespan and at decreasing individuals' risk of dementia in later life.

Nicolas is also a chief investigator on the PATH through Life Study, a large prospective epidemiological study of mental health and ageing surveying more than 7500 community-based participants which provides important normative and clinical information on the Australian population.

ACTWELL – THE INFLUENCE OF AGEING ATTITUDES AND EXPECTATIONS ON HEALTH BEHAVIOURS AND MEDICAL HELP-SEEKING

RESEARCHERS

KERRY SARGENT-COX
KAARIN J. ANSTEY

Negative stereotypical views of older adults are linked to poor health outcomes, but the mechanisms behind this relationship are unclear. A promising hypothesis argues that stereotypes create expectations of ageing processes and interpretation of health problems, which in turn affects health behaviours and medical actions. Identifying and debunking stereotypes may improve health and self-management.

This study employed a cross-sectional survey to collect original, representative (population-based), quantitative data. The aim was to identify the degree to which expectations of ageing affect health literacy, health behaviours and health outcomes in young, mid-aged and older adults. The attribution of musculoskeletal symptoms to the 'normal ageing processes' was also explored.

There were 3000 individuals randomly selected and invited to participate in a survey on health and wellbeing in the Australian Capital Territory between July and September 2011. From these respondents 44 had missing data, leaving a final sample of n=739 (42.2 per cent female) aged between 20 and 92 years (mean = 57.31, SD=13.67). The majority of participants were married (65.8 per cent), had an undergraduate degree (24.1 per cent), or higher (19.5 per cent), and were employed full time.

In 2013 the ACTWell data contributed to two manuscripts that have been prepared and submitted (currently under review and revision). The aim of the first paper 'The relationship between age-stereotypes and health locus of control across adult age-groups' was to bring theoretical concepts of healthy ageing and health psychology together to explore the relationship between age-stereotypes and health locus of control (MHLC).Results indicated that higher age-stereotype endorsement was associated with higher health expectancies, after controlling for age, gender, education and self-rated health. Age and gender were found to be important moderators for the relationship between age-stereotypes and internal health expectancies. Our findings suggest that dimensions of MHLC are informed by age-stereotypes. They point to the importance of targeting health promotion and interventions at addressing negative age-attitudes. The second paper examined the indirect influences of expectations of ageing on the relationship between age-stereotypes and physical activity across different ages. We found a significant indirect relationship between age-stereotypes and sedentary behaviours via expectations of ageing that was also shown to be moderated by both age and gender. For males a consistent relationship across age indicated that negative stereotypes were associated with poor expectations of age, which in turn was associated with an increased likelihood of sedentary behaviours. In contrast, this relationship was dependent on age for females. The findings demonstrate gender differences in the influence of age-attitudes and expectations for performing physical activity across ages. They suggest policy interventions and education may need to be targeted differently for males and females, particularly in the context of ageing well across the lifespan. This paper was presented at the 1st CEPAR International Conference held in Sydney, July 2013, as well as part of an invited symposium at the Gerontological Society of America's Scientific Meeting, November 2013.

> Findings suggest policy interventions and education may need to be targeted differently for males and females, particularly in the context of ageing well across the lifespan

RESEARCH TRAINING & MENTORING

TWO EARLY CAREER RESEARCHER WORKSHOPS, ONE FOCUSED ON USING HEALTHY LIFE EXPECTANCY TO MONITOR POPULATION HEALTH AND THE OTHER FOCUSED ON THE ECONOMICS OF POPULATION AGEING, WERE JUST TWO OF THE MANY CAPACITY-BUILDING EVENTS CEPAR HOSTED THIS YEAR.

Led by CEPAR Partner Investigator, Professor Carol Jagger, and Professor Jean-Marie Robine (Head of Research at the French Institute of Health and Medical Research), the three day workshop on calculating health expectancies provided specialised training for 23 early career researchers (ECRs) and higher degree research (HDR) students from both CEPAR and the broader research community. The two day workshop on the economics of population ageing brought together young Australian and Chinese researchers in China. It further strengthened CEPAR's links with Zhejiang University and provided a unique opportunity for Australian and Chinese ECRs to share research and build their networks.

The 12th National Emerging Researchers in Ageing (ERA) Conference, hosted by the University of Sydney CEPAR node, was the largest ERA conference in several years, demonstrating our success in increasing the multidisciplinary reach of this initiative to engage PhD students. At the honours level, the population ageing stream of the 2013 National Honours Colloquium provided an excellent opportunity for fourth year honours students to present their research-in-progress and benefit from a cross-disciplinary perspective on their work.

As part of our commitment to developing the networks of our young researchers, both nationally and internationally, CEPAR continued to provide funding to assist our affiliated students and fellows with the costs of travel associated with presenting a conference paper or to visit an affiliated overseas research institute for an extended period of time. Our first international conference also offered an exceptional opportunity for CEPAR students and ECRs to share ideas with leading international experts as well as emerging researchers from around the world.

All of these activities support CEPAR's objective of building a critical mass of students and ECRs with a sound appreciation of multidisciplinary research and strong research training, firmly linked into CEPAR's industry, government and international networks. In 2014 we look forward to continuing to support initiatives which develop young researchers' skills and networks and, in so doing, increase CEPAR's profile as a destination of choice for emerging researchers.

Peter McDonald
Deputy Director

EARLY CAREER RESEARCHER MENTORING AND TRAINING

ECRs are mentored by CEPAR senior researchers and have opportunities to interact with experts within the three collaborating universities, as well as international leaders in the field who visit the Centre during the year. A range of events held throughout 2013 also provided frequent occasions to engage with our industry and government partners. Our ECRs participate in Centre activities such as workshops and seminars, contribute to the Centre's working paper series and have opportunities to develop a range of skills.

In 2013, 23 research fellows were funded directly by the Centre. This included six supported by DECRA-style awards financed by the additional $1.25 million ARC grant awarded to boost the Centre's research capacity-building activities and two fellows funded by the NSW Science Leveraging Fund. Additionally six of our CEPAR Associate Investigators were early career researchers in 2013.

EARLY CAREER RESEARCHER WORKSHOPS

Two workshops, the first providing an opportunity to present research-in-progress, and the other providing advanced training, were hosted by CEPAR in 2013.

In May, with support from the Australia-China Science and Research Fund and UNSW Contestable Funding, CEPAR organised a two day workshop on population ageing at Zhejiang University. In collaboration with the Institute for Population and Development at Zhejiang University, the event was designed to bring together Australian and Chinese researchers with a view to enhancing research links. The workshop featured presentations from around 40 young researchers on a broad range of issues, including labour force participation, intergenerational transfers, savings and consumption, pension policy, and health and aged care. A panel focused on the challenges of population ageing in China over the next two decades concluded the event.

In December, the Centre for Research in Ageing, Health and Wellbeing at ANU hosted a three day workshop on using healthy life expectancy to monitor population health. The workshop was offered free of charge to 23 ECR and HDR student participants from across the nation, many of whom were supported by CEPAR travel bursaries. Comprising lectures, practicals, and participant presentations, the workshop offered young researchers the opportunity to develop the fundamental tools to calculate health expectancies and interpret them alongside life expectancies; understand their use in policy and target setting; appreciate the need for a range of health expectancies, including life expectancy with frailty or with cognitive impairment; and understand the strengths and limitations of health expectancies. The workshop was convened by CEPAR Partner Investigator Professor Carol Jagger, who holds the AXA Chair of Epidemiology of Ageing at Newcastle University in the UK, and Professor Jean-Marie Robine, Head of Research at the French Institute of Health and Medical Research.

Both workshops were extremely well received by participants who welcomed the opportunity to expand their knowledge and skills as well as network with their peers.

CATHY GONG
CEPAR Research Fellow, ANU
ECR WORKSHOP PARTICIPANT

'It was a great training course for early career researchers on how to calculate healthy life expectancy using cross sectional data, and on how to analyse the internal and external drivers of health inequalities measured by healthy life expectancy. It also provided a very good introduction to and summary of what has been done and what can be done in this area. This will help us to develop a potential project to compare healthy life expectancy among Asian countries, such as China and India. It also provided me with a great opportunity to build my research network.'

JOINT CEPAR-ZHEJIANG WORKSHOP ON POPULATION AGEING

INTERNATIONAL NETWORKING OPPORTUNITIES
Creating opportunities for young researchers to develop their international networks and communicate the results of their research to international peers is also an area the Centre has invested significant resources.

Three CEPAR Research Fellows each spent time at the Department of Economics and Nuffield College at the University of Oxford to work intensively with CEPAR Chief Investigator Michael Keane during the course of 2013. As a result of Keane's prestigious professorial appointment at Nuffield College, three fellows under his supervision were invited to visit Oxford to collaborate and work within one of the world's best groups of economists. In visits ranging from three weeks to over two months, Fedor Iskhakov, Shiko Maruyama and Elena Capatina, made significant progress on a number of joint projects with Keane involving retirement behaviour and health insurance. They also benefited from the opportunity to interact with interdisciplinary groups of researchers based at both Nuffield and the Oxford Institute of Population Ageing as well as learn about the British retirement and health systems.

RESEARCH TRAINING & MENTORING

ELENA CAPATINA
CEPAR Research Fellow

'Visiting Professor Michael Keane at Nuffield College, Oxford has been an excellent experience. We made very good progress on our joint project (together with Shiko Maruyama). In addition, I found Nuffield College to be a very intellectually stimulating environment. I benefited from meeting other renowned academics in Economics and Sociology as their perspectives on many issues have been enlightening and inspiring for my own future research. '

FEDOR ISKHAKOV
CEPAR Senior Research Fellow

'I visited Michael Keane at Nuffield College at Oxford in April–May 2013. This trip was a unique opportunity to experience the classic British academic environment during an intensive session of cooperative research work. It was a great success both in terms of moving forward our project and providing excellent opportunities to meet world-renowned economists at casual gatherings at Nuffield College.'

Another three CEPAR ECRs were part of a group mission to China in May 2013. CEPAR fellows Lu Bei and Rafal Chomik and Associate Investigator Rong Zhu, joined a delegation led by John Piggott to build collaborative research relationships between CEPAR and Zhejiang University, the Chinese Academy of Social Sciences, Peking University and the Brookings-Tsinghua Centre for Public Policy. The eight day visit included the opportunity for each to present a paper or chair a session at the population ageing workshop in Zhejiang, meet and exchange ideas with researchers at the Institute for Population and Development at Zhejiang University and the Chinese Academy of Social Sciences, and participate in roundtable discussions with members of the Brookings-Tsinghua Centre for Public Policy.

RAFAL CHOMIK
CEPAR Senior Research Fellow

'Alongside my studies in Economics I also undertook courses in Mandarin Chinese, so it was a pleasure to be able to spend even a small amount of time in China, building professional relationships by making use of both these skills. Besides making useful contacts, I learned more about key policy issues facing Chinese policymakers and how this translated to research agendas. I was also surprised to realise how interested Chinese researchers were in the Australian retirement income system, particularly the governance structures around superannuation. It demonstrates that such exchanges are enriching not only at a personal level but also project Australia's influence, modest though it is, through research interactions.'

PhD student, Adam Wenqiang Shao, was the first of our junior researchers to take advantage of the CEPAR HDR and ECR Fellow Travel Scheme. Adam used the funds for a four month extended visit to Temple University in the U.S. to collaborate with Dr Hua Chen. The visit provided him with the opportunity to work on joint papers with Chen, attend seminars and build his research networks. In 2014 the scheme will support a visit by CEPAR Research Fellow Dr Vanessa Loh to Manchester University to work with Partner Investigator Professor James Nazroo; and visits by CEPAR Research Fellow Dr Richard Burns to Flinders and Monash universities to work with CEPAR Associate Investigators, Dr Tim Windsor and Professor Colette Browning.

EARLY CAREER RESEARCHERS RAFAL CHOMIK AND LU BEI WITH PROFESSOR JOHN PIGGOTT AT PEKING UNIVERSITY, MAY 2013

Our visitors program also provided our students and ECRs with an opportunity to expand their international networks. CEPAR's first international conference brought an influx of international experts to the Centre, many of whom extended their visits to spend time at the Centre meeting with CEPAR personnel. For our junior researchers, this provided an excellent opportunity to exchange ideas and perspectives with a range of multidisciplinary experts in an informal setting.

Hosting visiting PhD students from institutions with which we are building a collaborative research program, also expanded the networks of our young researchers and fostered the development of collaborative research relationships. CEPAR students were also encouraged to present their research at international conferences. To enable this CEPAR provided funding to ten PhD students in 2013 to assist with conference travel expenses.

XIANGUO JERRY HUANG
PhD Student, National Graduate Institute for Policy Studies, Tokyo
CEPAR VISITOR, 4 SEPTEMBER–26 NOVEMBER 2013

'CEPAR fosters a great collaborative environment, facilitating research that addresses the ongoing concerns of policymakers and the business sector. Personally, I have benefited from attending the pension conference and regular seminars organised by CEPAR. And I was also inspired to extend my current research to pension reforms in the context of population ageing.'

HIGHER DEGREE RESEARCH TRAINING

39 HDR students were enrolled in 2013 under the supervision of CEPAR Investigators working on topics aligned with the Centre's research agenda. Details of their research theses are provided on pages 104–112. These students have the opportunity to participate in a range of Centre activities, including conferences and workshops and meetings with international visitors.

We contribute to the development of national research capacity more generally through our support for Emerging Researchers in Ageing (ERA), an initiative which aims to bring together students interested in ageing research and provide them with opportunities to form networks and undertake collaborative endeavours. In 2013 ERA membership continued to grow, with over 570 registered members, primarily doctoral students drawn from a wide range of disciplines.

RESEARCH TRAINING & MENTORING

Three ERA Student Representatives, elected by their peers, act as connection points with the ERA membership and are full members of the ERA Steering Committee, ensuring that future ERA activities are informed by the views of students. This year the ERA Student Representatives played a key role in the establishment of an online journal club which involves ERA members selecting and disseminating recent journal articles for online critical review by the ERA cohort.

EMERGING RESEARCHERS IN AGEING CONFERENCE

The 12th National ERA Conference, *Enabling Active Ageing,* was the largest ERA conference in several years, showcasing the work of 78 presenters from a range of disciplines. Hosted by the University of Sydney CEPAR node, the conference attracted over 80 participants interested in learning more about a wide range of issues including the biological and physiological aspects of ageing; mature labour force participation; falls balance and exercise; depression and pain management; social dimensions of ageing; dementia and carers; and community, healthcare and practice.

Run immediately prior to the Australian Association of Gerontology (AAG) National Conference, ERA 2013 provided participants with an opportunity to attend both conferences as well as the ERA and AAG workshops. CEPAR Chief Investigator and Professor of Epidemiology and Geriatric Medicine, Bob Cumming, delivered the keynote address: 'Public Health and Ageing in sub-Saharan Africa – a Personal Perspective'.

Two post-conference workshops were well-attended by ERA participants:

• Staying on track with your PhD and
• Knowledge translation including engagement with stakeholders.

CEPAR STUDENTS AT ERA 2013. FROM LEFT TO RIGHT: BRIDGET BROWNE, TAZEEN MAJEED, ROSILENE WAERN AND JACQUELINE WESSON

TAZEEN MAJEED
PhD Candidate (Gender and Health)
Priority Research Centre for
Gender, Health and Ageing,
University of Newcastle
2013 ERA participant

'This is the third consecutive
ERA conference I have
attended. ERA has always
provided opportunities and
encouraged early career
researchers like me to
present their research to
the knowledge community.
In addition to the student-
friendly environment,
ERA also provides valuable
feedback from peers and
professionals. A big thanks
to ERA and CEPAR.'

EMERGING RESEARCHERS IN AGEING VIRTUAL SEMINAR SERIES

The ERA Virtual Seminar
series provides a regular
opportunity for ERA
members from across
Australia and internationally
to come together virtually
to hear from leading
researchers and
stakeholders in the field
of ageing and engage
in extended discussion.
Participation in the series
has significantly grown in
the last two years with up
to 70 participants per virtual
seminar based in Australian
metropolitan and regional
areas as well as New
Zealand, China and Malaysia.

HONOURS STUDENT ENGAGEMENT

NATIONAL HONOURS COLLOQUIUM

The population ageing
stream of the UNSW
Australian School of
Business' 2013 National
Honours Colloquium
provided an opportunity
for fourth year honours
students to present their
research-in-progress in a
stimulating and supportive
environment. The stream
is designed to provide
participants with an
enriched appreciation of
multidisciplinary research
and the impetus to consider
higher degree research.
CEPAR Research Fellows
were on hand to provide
feedback on a range
of topics including
long-term care, dementia
and decision making in
families; the impact of
competition constraint
on the productivity and
efficiency of the Australian
superannuation industry;
and an interrogation of
the discourse of consumer
directed care.
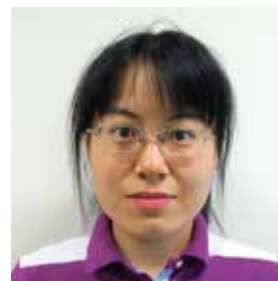
MENGYI XU
Honours Student, UNSW
Australian School of Business
**2013 NATIONAL HONOURS
COLLOQUIUM PARTICIPANT**

'The National Honours
Colloquium helped
me establish a strong
connection with a
senior research fellow
from CEPAR. Not only
did I receive valuable
comments and feedback
in the colloquium, but also
tremendously beneficial
support afterwards.'

STUDENT THESES

CEPAR affiliated students
work under the supervision
of CEPAR Investigators
on topics aligned with the
Centre's research agenda.

In 2013 a total of 39 HDR
students and five honours
students were affiliated
with the Centre. This year
eight HDR CEPAR affiliates
submitted their theses
for examination and/
or graduated:

- Aishwarya Bakshi
  (MPhil submitted)
- Craig Blackburn
  (PhD awarded)
- Dimity Crisp
  (PhD awarded)
- Jun Feng
  (PhD submitted)
- Kim Kiely
  (PhD awarded)
- Saran Sarntisart
  (PhD awarded)
- Safrina Thristiawati
  (PhD awarded)
- Jiaying Zhao
  (PhD awarded).

RESEARCH TRAINING & MENTORING

PHD STUDENTS AT THE AUSTRALIAN SCHOOL OF BUSINESS, UNSW

NATALIA ARANCO
MEc Universidad de Montevideo
SUPERVISORS
Professor John Piggott
Professor Michael Sherris

Assessing the evolution of the educational-mortality link across countries

This research analyses the link between health and education from a macroeconomic perspective. Taking countries as the unit of analysis, it addresses the relationship between the two variables depending on the particularities of each country and across time. Using state-of-the-art macro panel estimation techniques, it is shown that the relationship varies with the level of development of a country: Some basic level of development is needed in order to make the link work, but once this level is passed, the link becomes weaker as the level of development increases. The link also decreases with time, providing some evidence of the existence of decreasing marginal returns in the impact of both variables.

CRAIG BLACKBURN
MAct StUNSW, BSc (Hons) LSE, MEng(R) JCU, BEng (Hons) QUT
SUPERVISOR
Professor Michael Sherris
CO-SUPERVISOR
Dr Jonathan Ziveyi

Longevity risk management and securitisation in an affine mortality modelling framework

Longevity risk for an insurer affects its regulatory capital requirements. Ideally, an insurer would like to transfer some of this risk to capital markets. This research presents an affine mortality model that is estimated from historical mortality rates. The framework will then forecast multiple cohorts from the affine mortality model. The model has multiple factors and an explicit longevity price of risk process embedded in the framework. We use this framework to value, in a multi-period model, an insurer's annuity business written on multiple cohorts subject to Solvency II capital requirements. In this framework, the insurer may purchase a longevity swap, survivor bond, or bond options to hedge longevity risk. Craig graduated with a PhD on 5 November 2013.

XIAO CHEN
BSc Peking University, MA USyd.
SUPERVISOR
Professor Alan Woodland

Population ageing, innovation and growth

This thesis focuses on the impacts of individual and population ageing upon education, technological progress and economic growth. It first constructs a model with technology adoption and innovation, and studies how ageing could affect technological progress. The thesis then uses an overlapping-generations model with survival uncertainty and defines population ageing as a higher survival rate, to investigate how population ageing affects educational efforts, technological progress and economic growth, under both closed and open economy environments. Another paper studying population ageing and directed technical change is being finalised.

JUN (JIMMY) FENG
MPhil UNSW
SUPERVISOR
Professor Hazel Bateman

Saving for retirement: An investigation on contributions to superannuation in Australia

Financial security is of critical importance to quality of life for retirees. Australians are better off thanks to the superannuation system formally established in the 1990s. Superannuation has become one of the main sources of income for retirees. Yet there is little known about the dynamics in superannuation saving behaviours. This thesis aims to fill this gap by exploring three areas: the characteristics of individuals who make voluntary contributions to superannuation to boost their savings; the effectiveness of tax incentives introduced by the government on the choice of making salary sacrifice contributions into superannuation; and the extent to which compulsory employee contributions represent new savings. The thesis was submitted for examination on 29 August 2013.

SIMON MAN CHUNG FUNG
BSc (Hons) ANU
SUPERVISOR
Professor Michael Sherris
CO-SUPERVISOR
Dr Katja Ignatieva

Pricing and risk management of long dated contracts in finance and insurance

Retirement products are expected to play a significant role in addressing the needs of a rising number of retirees. These products are of a very long-term nature and insurers who offer them are often subject to financial and demographic risks. Part of the thesis is concerned with the pricing and risk analysis of financial guarantees in variable annuities, focusing on the longevity risk component. In 2013 the continuous time cohort modelling approach was further developed to incorporate explicitly the correlation structure among different generations. Analytical formulas for longevity derivatives are derived using a specific cohort model. The impacts of the correlation structure, as well as the hedging effectiveness of longevity derivatives, on life annuity portfolios are examined.

This year work focused on the link between fertility and socieconomic status. In association with CEPAR Research Fellow Shiko Maruyama, work has progressed on delimiting the topic, methodology and the variables to be used.

NATALIA GARABATO
BA Econ (Hons) University of the Republic, Montevideo
SUPERVISORS
Professor John Piggott
Professor Denzil Fiebig

What motivates people to save for retirement? The role of personality and impatience

This thesis investigates the determinants of retirement income and savings focusing on the role of impatience and how it affects people's disposition to save for retirement. Literature suggests that impatience and present bias are plausible explanations for suboptimal financial decisions as evidence shows that individuals do not allocate resources intertemporally in ways that are likely to be welfare improving. Using a one off experiment included in the Social Protection Survey in Chile to measure people's impatience, we analyse the determinants of the subjective discount rate, its relation to retirement income (actual or projected) and how/whether individuals respond to incentives to delay gratification. The findings show that impatience is negatively correlated with actual retirement income (for retirees) and expected pension income for non-retirees, which confirms a link between impatience and the ability to save for retirement. Moreover, the findings suggest people can be significantly affected by financial incentives to delay consumption. The findings have important implications for the design of incentives to save in retirement products.

ADAM WENQIANG SHAO
BA (Finance) Beijing International Studies University, MA (Actuarial) Central University of Finance and Economics, China
SUPERVISOR
Professor Michael Sherris
CO-SUPERVISOR
Dr Katja Hanewald

Financing health care costs in retirement through equity release products and insurance

The thesis first investigates pricing and risk analysis of reverse mortgages and long-term care insurance that can be used to finance health care costs in retirement, taking into account idiosyncratic house price risk, longevity risk, and demographic changes. The demand for the two retirement products is also analysed in a life-cycle model to provide insight into product designs. Two working papers, respectively on individual house price risk and multi-state models of functional disability, have been completed. Another working paper on reverse mortgage pricing and risk analysis is in preparation for submission.

SHANG WU
B Bus (Hons) UTS, MAcc Syd., BAppFin/BActStud Macq.
SUPERVISORS
Professor Hazel Bateman
Dr Ralph Stevens
CO-SUPERVISOR
Professor Susan Thorp

Demand and supply side issues for a long-term care (LTC) annuity market

This project aims to provide empirical evidence, theoretical justification, and pricing aids for the hybrid product LTC annuity which combines a life annuity and LTC insurance. On the demand side, studies will be undertaken both empirically and theoretically. The empirical study will use experimental data to examine the demand for LTC annuities. The theoretical study will estimate a life-cycle model to explore the influence of having LTC annuities on the investment menu on the optimal decisions for consumption, saving, annuitisation, and LTC coverage. On the supply side, the project will address potential risk management issues of offering LTC annuities.

YAJING XU
BActSc MActSc Central University of Finance and Economics, China
SUPERVISOR
Professor Michael Sherris
CO-SUPERVISOR
Professor John Piggott

Cohort models of mortality and the design of derivative contracts for longevity risk management

Longevity risk has become increasingly important for a growing proportion of the world's population. This research explores issues associated with the successful development of the longevity risk market. The aim of this research is to devise a novel numerical approach for the pricing and hedging of longevity risk based on a cohort mortality model. In addition to a much-needed theoretical survey on mortality model and pricing methods, this research will also provide new ideas for the design of longevity derivatives that would be helpful in building a market in longevity risk.

XIAOYUN ZHANG
BMgt Zhejiang University, China
SUPERVISOR
Professor John Piggott
CO-SUPERVISOR
A/Professor Elisabetta Magnani

Work and care: Female labour force participation in China

This research investigates factors affecting female labour force participation in China, particularly the role of caring for elderly family members. It looks at the demand for care by aged parents or parents-in-law, whether or not there are other siblings to share the burden, and the extent to which the aged family members have access to a pension. The research aims to identify strategies to overcome decreasing female labour market participation associated with the increasing demand for care by an ageing population in China.

cepar

RESEARCH TRAINING & MENTORING

MPHIL STUDENT LOCATED AT THE AUSTRALIAN SCHOOL OF BUSINESS, UNSW

AISWARYA BAKSHI
MS VIT University, Vellore
SUPERVISOR
Professor Pradeep Ray
CO-SUPERVISOR
Srikumar Venugopal

Managing policy deviations in collaborative aged care environments

This thesis looks at developing methods and techniques to handle policy deviations in computer supported cooperative aged care environments. The outcomes from this research are a policy deviation framework based on existing literature, a technique to determine and rank all possible actions which can lead the user to reach their objectives, and a process to allow policy deviations based on user roles and environmental context by presenting the user with legal implications of their actions. The contributions of this study have been evaluated using hypothetical scenarios based on real situations as well as using randomly generated simulations. The method was shown to be both applicable and effective. This thesis was submitted for examination on 15 August 2013.

HONOURS STUDENTS LOCATED AT THE AUSTRALIAN SCHOOL OF BUSINESS, UNSW

ALEXANDRO HOYEN LAI
BCom UNSW
SUPERVISOR
Professor Hazel Bateman
CO-SUPERVISOR
Dr Kevin Liu

Default option design: An evaluation of default investment strategies for defined contribution pension funds

The thesis compares the performance of alternative investment strategies using a variety of criteria. It is designed to provide insights into the design of default investment strategies for defined contribution pension funds and identify factors which can be used to adjust the crediting method of funds.

YU SUN
BCom BSc UNSW
SUPERVISOR
Professor Michael Sherris

Optimal investment consumption under systematic longevity risk

The thesis solves the consumption-investment problem in discrete time and discrete state space. The state space is in the form of a recombining binomial lattice and spanned by various survival curves from the initial age. The systematic longevity risk is incorporated by imposing shocks to the mortality experience at each state. This thesis examines various types of longevity products as well as state contingent products. The impacts of systematic longevity risk on consumption and investment behaviour are assessed through the demand for and the necessity of the various types of longevity products.

JAMES PEK EN YAP
BCom UNSW
SUPERVISOR
Professor Michael Sherris
CO-SUPERVISOR
Dr Joelle Fong

Australian disability trends and projections

This thesis aims to apply a Markov Ageing Model to Australian mortality data to examine the implied frailty of the population over time. The resulting implied frailty distributions are related to disability prevalence, and a projection of the future population is made, identifying the disability trend and examining the effect on future disability costs.

JASON ZHIWEI QU
BCom BEc UNSW
SUPERVISOR
Professor Hazel Bateman
CO-SUPERVISOR
Dr Sasan Bakhtiari

Efficiency study of the Australian superannuation industry

This research conducts a two stage efficiency analysis of the structural and design features of the Australian superannuation industry. In the first stage data envelopment analysis (DEA) is used to construct an efficient frontier based on annual fund level data from the Australian Prudential Regulatory Authority (APRA). The second stage calibrates a non-linear fractional response model (FRM) under a generalised linear model (GLM) regression framework to investigate the efficiency impact of fund characteristics. Such a study incorporating all major fund types is unique in the Australian context, and the measurement of fund efficiency using VaR is innovative.

MENGYI XU
BCom UNSW
SUPERVISOR
Professor Michael Sherris
CO-SUPERVISOR
Dr Ramona Meyricke

Modelling the mortality of heterogeneous populations

Systematic mortality improvement and mortality heterogeneity are important factors in modelling mortality rates. Both factors are required in mortality models used for pricing life annuities and life insurance. This thesis provides an original analysis of systematic improvements and heterogeneity. The results confirm the significance of differences in systematic improvements across sub-populations, and at the same time highlight the challenges of quantifying statistical differences of systematic improvements across groups of individuals using individual-level data. In addition, the results elucidate the impact of individual-level characteristics on mortality heterogeneity and systematic time trends in mortality rates. The research concludes that systematic improvements have a significant impact on mortality rates even after allowing for individual-level factors.

PHD STUDENTS LOCATED AT THE CENTRE FOR RESEARCH ON AGEING, HEALTH AND WELLBEING, ANU

KIMBERLY ASHBY-MITCHELL
BSc Human Ecology
MSc Nutrition West Indies
SUPERVISOR
Professor Kaarin J. Anstey
ADVISORS
Professor Carol Jagger
A/Professor Anna Peeters

The relationship of diet and physical activity behaviours to cognitive impairment

This thesis adopts a cross-national approach examining diet and physical activity behaviours among individuals in Australia and seven Latin American and Caribbean countries. Clarification and consensus of the effect of both of these modifiable risk factors on cognitive status is important since there is a need for effective preventative treatment approaches as even a modest protective result can have a significant impact on public health.

CAROLINE BRODRICK
BSc Psychology (Hons) ANU
SUPERVISOR
Professor Kaarin J. Anstey

An investigation of depressive symptoms and cognitive disorders

Cognitive disorders are increasingly diagnosed within Australia, with significant financial costs associated with rehabilitation. This increase highlights the necessity to identify predictors of cognitive disorders, to potentially prevent or delay the onset of these disorders. Past research shows that depression is a predictor for the onset of cognitive disorders, for example, dementia and pre-clinical dementia syndromes including Mild Cognitive Impairment (MCI). However there is a limited amount of longitudinal research investigating specific depressive symptoms as predictors of conversion to cognitive disorders. Symptoms of depression including affect, mood, sleep, and psychomotor slowing, are associated with a range of cognitive abilities (e.g., executive functions and memory), which are often impaired in cognitive disorders. This study aims to investigate first, whether positive and negative affect predicts conversion to Mild Cognitive Impairment and Any-Mild Cognitive Disorders (Any-MCD), and secondly, whether other depressive symptoms predict conversion to MCI and Any-MCD. This study will utilise 3 waves of data from The Personality and Total Health Through Life Study. Preliminary findings are intriguing, suggesting that as positive affect increases so does the likelihood of converting to Any-MCD. Explanatory analysis will be performed to investigate whether other variables contribute to this relationship.

NATASHA GINNIVAN
BSc Psych UNSW,
PGDip Psych Macq.
SUPERVISOR
Professor Kaarin J. Anstey
CO-SUPERVISOR
Dr Kerry Sargent-Cox

Self-perceptions of ageing from a cross-cultural perspective: The differential impact of socio-cultural practices on identity and age-stereotypes

Due to differing social practices around elder respect in more collectivist cultures such as China, Japan and the Philippines, it is hypothesised in some research that older people in these cultures are less prone to the internalisation of negative age stereotypes. A mixed methodology designed project is being carried out incorporating both qualitative and quantitative aspects in order to investigate which cultural and contextual aspects contribute to one's self-identity as one ages. Preliminary results from focus group data in both Australia and the Philippines show that older people in collectivist cultures rely on a more cohesive frame of reference for the social role of an older person than older people in Australia do. Currently we are testing older participants (60–75 years old) under different experimental conditions to analyse whether or not exposing them to age-related concepts has an effect on their performance. Participants are seniors (60–75) who are either of Australian or Filipino heritage. Results will be analysed in the context of any cross-cultural differences.

PUSHPANI HERATH
MBBS University of
Sri Jayawardenepura,
MSc UTexas, Arlington
SUPERVISOR
Professor Kaarin J. Anstey
ADVISOR
Dr Nicolas Cherbuin

Understanding the relationship between treatment of common chronic diseases and cognitive function

Dementia and cognitive impairment are becoming two of the most important neurological disorders among the elderly. The proposed study was designed to examine the impact of long-term medical treatments for chronic diseases such as diabetes, hypertension, hypercholesterolemia, and depression on cognitive function. This study is using data from two large longitudinal cohorts: the PATH Through Life Project, and the AusDiab study. The data analysis for the first part of this project, 'Exploring the link between type 2 diabetes and diabetes medication with cognitive function', is already completed for both the PATH Through Life Project and the AusDiab Study. A manuscript is being prepared for publication.

RESEARCH TRAINING & MENTORING

KIM KIELY
BLibStudies (Hons) Syd.
SUPERVISOR
Professor Kaarin J. Anstey
ADVISORS
Professor Mary Luszcz
Dr Lesley Ross
Dr Denis Gerstorf

Out of sight, out of mind: Population estimates and dynamic interplay between age-related decline in hearing and cognitive function in late life

Age-related sensory loss and neurocognitive impairment are two of the leading contributors of non-fatal disability burden among the oldest-old. Biological and social explanations have been given to account for links between these two domains. This research reports population estimates of sensory impairment in Australia, explores long-term inter-associations between audiometric hearing-loss and cognitive function, and investigates the role of hearing aids in protecting against hearing-related cognitive decline. The thesis was recommended for the award of PhD in October 2013.

SARANG KIM
BA Melb., PGDip MA Bond
SUPERVISOR
Professor Kaarin J. Anstey
ADVISORS
Dr Kerry Sargent-Cox
Dr Nicolas Cherbuin

Motivations and barriers to lifestyle and behavioural changes for dementia risk reduction

Dementia and cognitive decline are often thought of as a part of normal ageing. However, recent research has identified some risk factors for dementia, some of which are modifiable. This project aims to identify factors that motivate and discourage people from changing their behaviour and lifestyle in order to reduce their risk of developing dementia. The motivation scale for dementia risk reduction has been developed and validated. The relationship between components of the scale and intentions to change lifestyle and health behaviours has also been examined. In the last part of this thesis, determinants of actual behavioural changes have been examined.

LARA MORRIS
BSc (Psych) (Hons), MClinPsych
SUPERVISOR
Professor Kaarin J. Anstey
ADVISORS
Dr Kerry Sargent-Cox
Dr Nicolas Cherbuin

Modifiable risk factors for chronic disease

This research explores the occurrence of modifiable health risk factors for chronic disease. Utilising data from the Personality and Total Health (PATH) Through Life study, this thesis will combine cross-sectional and longitudinal analysis. The overarching research aim is to describe the patterns of modifiable risk factors and their changes across time. It will also examine determinants and consequences of risk factor change. The results derived so far from this study provide a detailed picture of the prevalence and high rate of co-occurrence of modifiable health risk factors in the Australian adult population. Identifying those with multiple risk factors will enable targeting of multi-domain interventions.

Lara was on leave in 2013 and is expected to resume her research in 2014.

LILY O'DONOUGHUE-JENKINS
BA BSc Psych (Hons) ANU
SUPERVISOR
Professor Kaarin J. Anstey

Four resource levels and their association with cognitive decline

This thesis analyses four resource levels – inner resources, social networks, primary care, and tertiary care – and how they relate to cognitive decline. It uses the Personality and Total Health (PATH) through life study data to analyse the association between cognitive decline and participants' psychological mastery, wellbeing and social networks. A paper on whether cognitive impairment is associated with increased general practitioner use is currently being finalised. The PATH data is also being linked with ACT hospital separations data in order to analyse if the frequency and length of hospitalisation is associated with cognitive decline.

CHWEE CHWEE VON SANDEN
BSc (Hons) ANU
SUPERVISOR
A/Professor Peter Butterworth
CO-SUPERVISOR
Professor Kaarin J. Anstey

Health and labour force participation among older Australians: Investigating the roles of cognitive and sensory functions

The thesis aims to examine whether declines in cognitive and sensory functions are related to labour force participation using the Dynamic Analyses to Optimise Ageing (DYNOPTA) dataset. Significant cross-sectional associations were found between older adults' cognitive, visual and hearing functions, and their employment status. Participants with poorer cognitive function were less likely to be employed compared to those with better function but the strength of the association decreases with increasing age. Similar patterns of results were found for hearing function. Poorer visual acuity appears to be associated with lower likelihood of being employed but only among the early school leavers.

Chwee Chwee was on program leave in 2013.

SARAH WALKER
BA (Hons) Psychology, ANU
SUPERVISOR
Professor Kaarin J. Anstey
CO-SUPERVISORS
Dr Tim Windsor
Dr Jay Brinker

The psychosocial impacts of giving up driving in later life

This thesis examines post-driving cessation experiences of volunteers aged 65 plus; and explores the driving cessation-wellbeing relationship, whether psychological needs satisfaction mediates that relationship, and whether coping strategies and alternative transport availability moderate the relationship. Data has been collected via focus group, interviews, and questionnaire.
The results show that the post- cessation phase of driving is a period of gains and losses requiring flexible adjustment to new circumstances. No association was found between driving cessation and wellbeing, precluding mediation analysis. Ex-drivers with tendencies towards accommodative coping tended to report fewer depressive symptoms and more positive affect. Alternative transport availability failed to moderate the driving status-wellbeing relationship.

PHD STUDENTS LOCATED AT THE AUSTRALIAN DEMOGRAPHIC AND SOCIAL RESEARCH INSTITUTE, ANU

BRIDGET BROWNE
BEc Macq., FIAA, FIA
SUPERVISOR
A/Professor Heather Booth
CO-SUPERVISORS
Dr Tim Higgins
Professor Michael Sherris

Aged care in Australia: What place for long-term care insurance?

This research examines why there is no private, voluntary long-term care insurance product in Australia to support the costs of aged care. It also examines the variability in individual financial exposure to aged care costs and considers potential insurance product designs.

The first component of the research, a survey of financial service providers, addressed questions of insurability, supply- and demand- barriers and outlook for the future. The survey found in principle support for an insurance product due to confidence that the risk can be insurable and perception of a growing financial need. There is insight for policymakers regarding the views of providers on the role that government could play. Indeed a multi-stakeholder collaborative approach is seen as essential to overcoming the significant barriers currently perceived by providers.

ALICE FALKINER
BA (Hons) MSocRes ANU
SUPERVISOR
Professor Peter McDonald
CO-SUPERVISOR
Dr Anne Evans

Dual caring in Australia: an examination of the experiences of people with multiple caring responsibilities

Informal care provided by family members is the most common form of care for people with disabilities, long-term health problems and the frail aged in Australia. Although there is a range of research focusing on the experiences of informal carers in Australia, there are some key areas that have been neglected. One such area is the study of informal carers that provide care to more than one recipient, or balance informal care with child care responsibilities. This thesis bridges the gap in knowledge about dual caring in Australia. In 2013 this project focused on reviewing and updating the literature review and performing quantitative analyses on the Household, Income and Labour Dynamics in Australia (HILDA) survey.

CUC THU HOANG
BA Sociology VNU, MA Population Studies ANU
SUPERVISOR
A/Professor Heather Booth
CO-SUPERVISORS
Dr Iwu Utomo
Dr Philip Taylor

Modes of aged care in Vietnam: Adaptation to change

This thesis studies intergenerational care and support for the elderly in Vietnam in the context of rapid demographic, social, and economic changes. The thesis will contribute to the ongoing efforts to understand changes that have taken and are taking place in Vietnam in general and in the field of aged care in particular. This thesis explores how elderly people and their families are finding ways to adapt their traditional modes of aged care to changing circumstances in Vietnam.

NERIDA HUNTER
BA BCom Melb, MGovt & M Comm Law ANU
SUPERVISOR
Professor James Raymer
CO-SUPERVISOR
Professor Peter McDonald

Population ageing in Australia: 1961 to 2031

This study examines demographic change in Australia over the period 1961 to 2011 and a future projection period of 2011 to 2031. It focuses on the population aged sixty-five years and over and how it varies across space and time by cohort size, structure, characteristics and life course. In 2013 thesis development was enhanced through the candidate's visit to the International Max Planck Research School for Demography.

MAHIN RAISSI
BS MA Tehran
SUPERVISORS
A/Professor Robert Ackland
A/Professor Heather Booth
CO-SUPERVISOR
Dr Lexing Xie

Influences in online social networks and successful ageing in Australia

The project aims to understand the relationship between online and off-line social networks and the wellbeing of older

RESEARCH TRAINING & MENTORING

Australians (50+) by examining the mechanisms and processes of behaviour transmission in social networks. As a component of the Social Networks and Ageing Project (SNAP), a Facebook application called Australian Seniors' Online Networks (AuSON) was developed and released in October 2012. AuSON collects information about participants' social networks, social capital and wellbeing. Many Facebook users who are mainly Australian seniors (50+) or others who are friends with them have used AuSON.

Some analysis of social networks, social capital and wellbeing of Australian seniors on Facebook has been completed. Results and findings have been communicated through academic conferences and seminars. With the aim of better understanding the associations between social networks and successful ageing, a one year follow-up survey was run in December 2013. This information will be of use to government policymakers.

MARIA PILAR RIOSECO LOPEZ
Licentiate in Psychology Pontificia Universidad Catolica de Chile, MSocRes ANU
SUPERVISORS
A/Professor Heather Booth
A/Professor Robert Ackland
CO-SUPERVISORS
Dr Tim Windsor
Professor Hal Kendig

The role of social connectedness in the process of retirement in Australia

Retirement is a key area of social and policy research in the context of population ageing. Although several studies have been done in this area, little is known about the role that social connectedness plays in the process of retirement. Analysis of SNAP data investigated the association between indicators of social connectedness and retirement status, expected time to retirement and changes in expected time to retirement. Longitudinal analysis using the HILDA dataset showed that retirement has an effect on a number of aspects of social connectedness, and changes in social connectedness over time differ by retirement status.

JIAYING ZHAO
BMed Fudan, MA ANU
SUPERVISORS
Professor Zhongwei Zhao
A/Professor Heather Booth

Changing cardiovascular disease mortality and advancing longevity: Hong Kong, Shanghai and Taipei

The cardiovascular revolution which began in the late 1960s resulted in the epidemiological transition from 'the age of degenerative and man-made diseases' to 'the age of delayed degenerative diseases' (Olshansky & Ault 1986). This dissertation examines the changes in mortality from cardiovascular disease (CVD) and their role in increase in life expectancy in Hong Kong, Shanghai and Taipei. The analyses reveal that CVD mortality reduction in the three cities made an important contribution to the increased life expectancy during the past three decades. Institutional factors (especially increased accessibility to quality health care and more inclusive governance) played an important role in the CVD mortality decline. Multiple cause-of-death data analyses for Shanghai and Taipei suggest that the decline in CVD mortality led to an increased risk of dying from other degenerative diseases at older ages (e.g., neoplasms, diabetes). The analyses also suggest that the comorbidity of CVD with other diseases at time of death is gradually increasing, with a reduction in the lethality of CVD over time.

The thesis was submitted in April 2013 and conferred in December 2013. During 2013, the student made four conference presentations and three seminar presentations and also visited Seoul National University. Two manuscripts are under review.

PHD STUDENTS LOCATED AT THE COLLEGE OF BUSINESS AND ECONOMICS, ANU

ARM NAKORNTHAB
MA U.Va.
SUPERVISOR
Dr Cagri Kumru

Social security integration in ageing economies: Who gains and who loses?

Integrating social security across legal jurisdictions is an immense challenge. This is exacerbated in the context of population ageing, where tax revenues are shrinking, increasing longevity raises social security payout liabilities, and where induced changes in policy parameters such as access age are unlikely to be coordinated. This thesis will investigate the impacts of social security harmonisation strategies in the context of an overlapping generations model.

SARAN SARNTISART
BEcon (Hons) Chulalongkorn, MSc MgtEcon Essex, CIFP
SUPERVISOR
Dr Cagri Kumru

Implications of non-standard preferences on religious giving, alternative banking, and optimal taxation

Economists have been studying factors such as religious and self-control preferences which affect economic decisions. This study examines these preferences in three areas; religious giving as a redistribution policy, alternative banking and economic growth, and temptation and optimal taxation using an overlapping generations model focusing on economic aggregates and social welfare, especially towards the shift of savings. Results constitute policy implications that could help lessen the burden of social security schemes in ageing

economies. The paper on alternative banking was presented at the 8th Workshop on Macroeconomic Dynamics while the paper on temptation and optimal taxation was presented at the Association for Public Economic Theory 14th International Meeting. The thesis was submitted in July 2013 and the student graduated in December 2013.

PHD STUDENTS LOCATED IN THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF SYDNEY

JOHANNE ELIZABETH BRADY
BA (Hons) UNSW

SUPERVISOR
A/Professor Kate O'Loughlin

CO-SUPERVISOR
Dr Jennifer Smith-Merry

The meaning of living with Parkinson's Disease (PD) in an Australian community setting from the perspectives of people diagnosed and partners/carers

This sociological study on the over 55s will use interviews and focus groups to collect data from people diagnosed with PD and their partners/carers. Grounded Theory will be used to examine how participants construct meaning within interrelated elements of

biology, self, social interaction and society. The purpose is to construct an interpretive schema that describes living with PD as a perspectival embodied experience in a socio-cultural context. A completed pilot study informs a larger study starting in 2014. The aim is to add to knowledge on the support people living with PD need to maintain their quality of life in an Australian community.

DOROTHY DUDLEY
BBus UTS, MASS ACAP

SUPERVISOR
A/Professor Kate O'Loughlin

ASSOCIATE SUPERVISOR
Dr Vanessa Loh

Understanding personal goals in retirement and their relationship with life satisfaction: An Australian perspective.

This sociological research project aims to understand the existence and nature of personal goals held by Australian retirees aged 60 to 85 years. It will examine the influence of personal goals on the subjective wellbeing of retirees and their impact on successful ageing with a view to informing program and policy development. A multi-phased design

will employ both qualitative and quantitative methods to understand the perceived benefits of having goals, the nature of any goals held and the motivations for establishing them, any links to pre-retirement goals, whether goals are adjusted, and the relationship between goals in particular life domains and self-reported life satisfaction.

KYLIE WALES
B AppSc Occupational Therapy UWS

SUPERVISOR
Professor Lindy Clemson

CO-SUPERVISORS
A/Professor Natasha Lannin
Professor Glenn Salkeld

Measuring function and cost effectiveness in occupational therapy home discharge planning

The final stages of collecting information related to the cost effectiveness of occupational therapy home discharge planning are currently underway. Data linkage will be used to determine participants' health service utilisation post-discharge.

A systematic review of literature was conducted in 2012 to determine functional assessment tools used by occupational therapists. The measurement properties

of these tools have been assessed by the Consensus-based standards for the selection of health measurement instruments (COSMIN). The results will be brought together in 2014 to help determine which functional assessment tool is valid for use with an older adult function. A validation study of commonly used functional assessment tools was also undertaken in 2013. Information from this study will allow the constructs of assessment tools to be explored along with responsiveness to change within an older adult population.

JACQUELINE WESSON
B AppSc Occupational Therapy Cumberland College, MA Macq.

SUPERVISOR
Professor Lindy Clemson

CO-SUPERVISORS
Professor Henry Brodaty
Dr Simone Reppermund

Evaluating functional cognition and performance of everyday tasks in older people with dementia – the validity, reliability and usefulness of the Allen's model of cognitive disability

Assessment for dementia/MCI includes assessment of everyday functioning. However, objective, reliable and valid measurement tools are lacking. Occupational

therapy (OT) functional assessments, while commonly used, have shortcomings. Allen's Cognitive Disabilities Model is an OT model offering information about cognition during functional task performance, as measured by the Large Allen's Cognitive Level Screen-5 (LACLS-5). The project aims to explore psychometric properties of the LACLS-5 with a community sample of older people and examine the relationship of performance on this tool with other standardised measures of everyday function and cognitive measures. It will also explore OT perceptions of clinical utility of the tool.

LYNDA WOODWARD
BPhysio BSc Biotech (Hons) N'cle (NSW)

SUPERVISOR
Professor Lindy Clemson

CO-SUPERVISORS
A/Prof Cathie Sherrington
A/Prof Karen Willis

Exploring the perceptions and experiences of older people in the 'Stepping on after hip fracture' program

Using qualitative thematic analysis, the study aims to determine whether older men and women who have had a fall-related lower limb fracture have different

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experiences related with their journey after having a fall, acute treatments related with their fall and fracture, and pre and post participation in a long-term exercise self-management falls prevention program. The past 12 months have seen the commencement of the one year follow-up interviews, and the continuation of initial interviews for new participants. Analysis is underway, with preliminary findings suggesting that these older men and women do have differing experiences with certain aspects of this journey.

PHD STUDENT LOCATED AT THE CENTRE FOR EDUCATION AND RESEARCH ON AGEING, UNIVERSITY OF SYDNEY

ROSILENE WAERN
BNut MND Syd., APD AN
SUPERVISOR
Professor Robert Cumming
CO-SUPERVISORS
Professor Margaret Allman-Farinelli
Dr Vasant Hirani
Dr Thomas G Travison

Geometric Framework and nutrition in old age

The association between ageing, health and nutrition is a complex issue yet to be comprehended. Our research aims to assist in the development of nutritional guidelines of macronutrients for older individuals.

The work is based in the Geometric Framework – a generation state-space model that deals with eating behaviour and nutritional regulation. In 2013, the nutritional data of 781 men participating in CHAMP (Concord Health and Ageing in Men Project) were collected and analysed, and the findings were presented at the 20th IAGG World Congress of Gerontology and Geriatrics, the 1st CEPAR International Conference, 52nd National Scientific Conference of the Australian Society for Medical Research (ASMR) and at the 12th National Conference of Emerging Researchers in Ageing.

PHD STUDENT LOCATED AT THE FLINDERS CENTRE FOR AGEING STUDIES, FLINDERS UNIVERSITY

MYDAIR HUNTER
Bch Psych (Hons) DipApp Sc (Nsg), Flinders University
SUPERVISOR
Prof Mary Luszcz
CO-SUPERVISOR
Dr Tim Windsor

Prospective memory in the fourth age: Evidence from the ADuLTS Study

The research has examined several predictors of prospective memory performance in a sample of positively ageing oldest-old adults, that is, those

over the age of 85 years. Data was collected from the ADuLTS: ALSA Daily Life Time Sampling Study, pairing a week long measurement burst study of cognitive, affective, and daily-life outcome data with daily stress hormone levels (cortisol). Intra-individual variation and inter-individual differences in prospective memory were analysed. Overall prospective memory performance of the oldest-old in a naturalistic environment has been assessed, and the coupling of daily stress processes and prospective memory performance has been analysed. The effect of cognitive processes, including executive functioning, working memory and retrospective memory, on prospective memory performance informed the final study of the PhD, completion of which is anticipated for mid-2014.

PHD STUDENTS LOCATED AT THE FACULTY OF HEALTH AND MEDICINE, UNIVERSITY OF NEWCASTLE

THOMAS LO
MClin Epi N'cle (NSW)
SUPERVISOR
Professor Lynne Parkinson
CO-SUPERVISORS
Dr Michelle Cunich
Professor Julie Byles

The cost of arthritis

The objective of this study is to assess the costs of arthritis from the Australian Government's perspective. The main study outcome is the incremental adjusted mean annual healthcare costs of arthritis measured between 2003 and 2009. Explanatory variables for higher costs were assessed cross-sectionally and longitudinally using Generalized Linear Models and Quantile Regression Models. Preliminary results indicated that the cost of arthritis was fairly constant across time. However, costs were significantly associated with enabling factors such as health insurance coverage, and perceived need variables such as physical functioning and comorbidity.

TAZEEN MAJEED
MPH N'cle (NSW), MBBS Dow University of Health Sciences
SUPERVISOR
Professor Julie Byles
CO-SUPERVISOR
Peta Forder

Life-course impact of chronic diseases on patterns of workforce participation: A gendered approach

This thesis consists of five studies designed to evaluate the association between chronic diseases (particularly diabetes, asthma, arthritis and depression) and workforce participation among older workers; and how these associations differ between men and women. It also aims to study chronic diseases from a life-course perspective (i.e., how early life experiences, social and economic conditions and health issues in early life affect an individual's health and workforce participation over time).

In three of the studies so far, patterns of workforce participation (various combinations of being in and out of paid work) among older workers have been found to be associated with chronic diseases (diabetes, arthritis and depression) and these associations differ among men and women.

SECTION 3

EXTERNAL LINKAGES

2013 CEPAR INDUSTRY FORUM. FROM LEFT TO RIGHT:
MICHAEL SHERRIS, PAUL CLITHEROE AND BOB CUMMING

INDUSTRY & GOVERNMENT LINKS

AN INDUSTRY FORUM FOCUSED ON AGE-FRIENDLY BUSINESSES WAS ONE OF THE HIGHLIGHTS OF CEPAR'S EXTERNAL ENGAGEMENT STRATEGY IN 2013.

Providing insights into strategies for business and government responsiveness were keynote speakers John Beard from the World Health Organisation and Medibank Private's Managing Director, George Savvides. Following the presentations, a panel comprising specialists from industry and academe engaged in a spirited discussion about the challenges for industry and government.

The forum was one of several initiatives in 2013 designed to communicate findings to and facilitate engagement with business, community groups and government. These included our first international conference focused on multidisciplinary perspectives and innovation in population ageing research, a specialist colloquium bringing together superannuation researchers and end users, and a series of high profile public lectures. All of these initiatives proved to be successful vehicles for increasing our impact on government policy and business practice.

CEPAR's first international conference attracted policymakers and practitioners from a range of organisations interested in hearing from Australian and international researchers engaged in cutting edge research in population ageing. Spanning two days, the event featured sessions on such diverse issues as aged care, health insurance, mature age labour force participation, identity and ageing, activity and enablement, social inclusion, demography, retirement financing and fiscal sustainability. Special sessions on Ageing in Asia furthered CEPAR's strategy of targeted engagement with researchers in the region. Following our international conference, the 21st Annual Colloquium of Superannuation Researchers, hosted by CEPAR in conjunction with the UNSW School of Risk and Actuarial Studies, brought together academic researchers, industry experts and senior public servants to explore a range of topics in this important area.

Public lectures provide an opportunity to communicate our research to the wider community. John Piggott delivered the prestigious Hancock lecture on Retirement Income Design with an Ageing Demographic to large audiences in Sydney and Canberra. In a lecture on Canberra as an Age-friendly City, Hal Kendig explored the extent to which Canberra measures up to the ideals of the World Health Organisation; Peter McDonald used the 2006 and 2011 Censuses of Australia to examine changes in employment at older ages in Australia; and at the Australian Institute of Health and Welfare, Kaarin Anstey spoke on the social and environmental determinants of ageing well over the life course.

Throughout the year our researchers contributed to the policy debate through their participation in a range of advisory panels, workshops and roundtables. CEPAR researchers were well-represented at the FaHCSIA Social Policy Research Workshop, with Kaarin Anstey, Hal Kendig, Vanessa Loh and John Piggott contributing important insights on intergenerational solidarity,

productive engagement across the life course, and the implications of cognitive impairment for employment in late life. Other highlights included Hal Kendig's policy consultation with the Advisory Panel on Positive Ageing and his presentation to the National Aged Care Alliance on direction-setting for the Living Longer Living Better Reforms; Kaarin Anstey's membership of the ACT Ministerial Advisory Council on Ageing; Peter McDonald's membership of the Australian Ministerial Advisory Council on Skilled Migration; and John Piggott's presentation on retirement incomes to Treasury.

In May 2013, AMP very generously hosted the launch of the CEPAR Research Briefing series on 'Asia in the Ageing Century'. Comprising three separate publications on demography, retirement income and health care, the briefs were launched to an audience of industry practitioners, researchers and a visiting delegation from China. In the latter part of the year, work progressed on a research brief on aged care which we plan to release in early 2014.

We look forward to continued engagement with the public and private sectors in 2014 through a series of events designed to exchange ideas and stimulate debate on relevant issues.

Professor Michael Sherris
Chair, Outreach Subcommittee

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EVENTS

CEPAR'S FIRST INTERNATIONAL CONFERENCE AND INDUSTRY FORUM
With more than 150 attendees and 70 papers presented, CEPAR's 1st International Conference brought together researchers, policymakers and practitioners from around the world.

Over two and a half days in July, the conference featured papers from economists, sociologists, epidemiologists, actuaries and psychologists, bringing a truly multidisciplinary approach to the understanding of population ageing research.

The four keynote speakers deliberately drawn from diverse disciplines – Epidemiology, Sociology, Economics and Finance – were well-received. Eileen Crimmins presented her research on the global

physiological changes that have contributed to improved longevity and questioned whether the wealth that has led to longer lives will eventually lead to a reduction in longevity as a result of increases in non-communicable disease.

Michael Keane discussed the impact of cognitive decline on complex financial decision making. Theo Nijman provided an interesting comparison of the Dutch and Australian pension systems, two systems regarded as world leading and yet very different. The final keynote was presented by James Nazroo, on the impact of socioeconomic inequality on ageing in the UK, and the correlation between income inequality and health inequality.

The audience featured a cross section of representatives from our government and industry partners, as well as emerging researchers, students and other academics. Titled 'Analysing Population Ageing: Multidisciplinary Perspectives and Innovations', the conference featured a very wide range of research papers on the dynamics of an ageing demographic, its causes, and its consequences.

In our Industry Forum focused on age-friendly businesses, the distinguished speakers represented the leading edge of awareness of the challenges and opportunities of population ageing. John Beard, the Director of the World Health Organisation's Department of Ageing and Life Course, delivered a keynote address on Ageing, the Private Sector and Government, and Medibank Private's Managing Director, George Savvides, examined the challenge for healthcare in his keynote presentation titled 'The Medibank Effect'. Discussing the challenge for business and government was a dynamic panel comprising CEPAR Chief Investigators Professors Bob Cumming and Michael Sherris, Paul Clitheroe, Director of ipac securities, and Heather Ridout, Chair of AustralianSuper.

1ST CEPAR INTERNATIONAL CONFERENCE KEYNOTE SPEAKERS.
FROM LEFT TO RIGHT: THEO NIJMAN, MICHAEL KEANE, JAMES NAZROO AND EILEEN CRIMMINS

MEDIBANK PRIVATE'S MANAGING DIRECTOR, GEORGE SAVVIDES, DELIVERS HIS KEYNOTE ADDRESS AT THE CEPAR INDUSTRY FORUM

cepar

INDUSTRY & GOVERNMENT LINKS

21ST ANNUAL COLLOQUIUM OF SUPERANNUATION RESEARCHERS

This annual Colloquium, now in its twenty-first year, is an opportunity for superannuation and pension experts from around the world to share their research. Hosted by CEPAR in July, the Colloquium featured presentations from a range of Australian and international presenters including CEPAR distinguished international visitors Paul Johnson, Director of the Institute for Fiscal Studies in the UK; Theo Nijman from Tilburg University; and Olivia Mitchell from the Wharton School.

In the opening plenary session, the Honourable Nick Sherry, former senator and Minister for Superannuation and Corporate Law, examined future superannuation policy directions to enhance sustainability. Over the next two days of presentations, academics joined industry experts and senior public servants to explore and analyse a range of issues. Demonstrating a high level of engagement from government and industry, the conference included presentations from Andrea Slattery, CEO of SMSF Professionals' Association, Ross Clare (Association of Superannuation Funds of Australia), Sacha Vidler (Industry Super Network), Robyn Gilbert (Australian Law Reform Commission),

George Rothman (Australian Treasury), David Cox (Challenger) and Dan Goldstein (Microsoft Research).

Six CEPAR personnel presented research on a variety of topics including 'The impact of family structure on risk attitudes and economic behaviour during the financial crisis' and 'Fund evolution in the Australian superannuation industry: The role of leaders and stakeholders for superannuation funds'.

'ASIA IN THE AGEING CENTURY' RESEARCH BRIEF LAUNCH

Through our Research Brief series, we aim to communicate to the wider community the outcomes of CEPAR research in the context of a discussion about a particular issue of

interest to our end users. These briefs leverage the vast accumulation of knowledge held by our investigators as well as highlight CEPAR developments.

In 2013 the briefing series focused on population ageing in Asia. This region is of particular interest to us for several reasons beyond physical geography. The world's oldest economy, Japan sits in the Asian region alongside some of the world's youngest, and most rapidly ageing, populations. This dynamic makes the area one of extraordinary interest. The global population is expected to rise from seven billion now to nine billion by 2050. Of these extra two billion people, one billion will be in Asia and half a billion of them will be 65 and over.

'Asia in the Ageing Century' comprises three papers examining the demographic factors and their impact on the system of retirement income and healthcare systems across the region. The publication of the briefing papers provided the perfect opportunity to partner with AMP to launch the briefs at an event held at their offices in May. The event was well-attended and included visiting Chinese officials who were very interested in the insights and knowledge presented.

PROFESSOR OLIVIA S. MITCHELL
BA Harvard, MA PhD Wisconsin–Madison
PARTNER INVESTIGATOR

Dr Olivia S. Mitchell is International Foundation of Employee Benefit Plans Professor, and Professor of Business Economics/ Policy and Insurance/Risk Management, at the Wharton School of the University of Pennsylvania. She is also the Executive Director of the

Pension Research Council and the Boettner Center on Pensions and Retirement Research; is a Fellow of the Wharton Financial Institutions Center and the Leonard Davis Institute; and sits on the Board of the Penn Aging Research Center. Concurrently Dr Mitchell is a Research Associate at the National Bureau of Economic Research and a Co-Investigator for the Health and Retirement Study at the University of Michigan.

Dr Mitchell's main areas of research and teaching are international private and public insurance, risk management, public finance, and compensation and pensions. Her extensive publications (25 books and more than 180 articles) analyse pensions and healthcare systems, wealth, health, work, wellbeing, and retirement.

She served on President Bush's Commission to Strengthen Social Security and the U.S. Department of Labor's ERISA Advisory Council. She has spoken for groups including the World Economic Forum; the International Monetary Fund; the Investment Company Institute; the White House Conference on Social Security and the President's Economic Forum.

'ASIA IN THE AGEING CENTURY' LAUNCH. FROM LEFT TO RIGHT: JOELLE FONG (CEPAR), GREG HEALY (AMP), MIKE ORSZAG (TOWERS WATSON) AND LU BEI (CEPAR)

JOHN PIGGOTT DELIVERS THE 2013 KEITH HANCOCK LECTURE AT UNSW

PUBLIC LECTURES

THE 2013 KEITH HANCOCK LECTURE: RETIREMENT INCOME DESIGN WITH AN AGEING DEMOGRAPHIC

CEPAR's Director, John Piggott, was chosen to deliver the prestigious Hancock Lecture in 2013. The annual event is an initiative of the Academy of the Social Sciences in Australia and is named in honour of Emeritus Professor Keith Hancock AO, a distinguished Fellow and past President of the Academy.

Addressing large audiences in two separate events hosted by UNSW and the ANU in September, Professor Piggott argued that Australia's retirement income design is robust to population ageing, and is thus a framework appropriate for an era of demographic change, whether viewed from the standpoint of an academic economist, or from a policymaker's perspective. But, he said, it is a structure that is still to be completed, with the 'decumulation' part of the framework not yet in place. To make Australia's retirement income system truly world-class, it requires concerted action, from academics, government, and business.

The lecture was delivered at UNSW on Monday 2 September and repeated at ANU on Thursday 5 September 2013 to capacity audiences comprising academics, policymakers and industry practitioners.

CANBERRA AS AN AGE-FRIENDLY CITY? NEW THINKING AND POLICY DIRECTIONS

In a public lecture delivered at the ANU in May to academics and policymakers, Professor Hal Kendig assessed how well Canberra meets the World Health Organisation's ideal of an age-friendly city. In a thought-provoking discussion, Professor Kendig examined whether ideas and evidence can contribute to age friendliness. He argued that they can, but noted that ideas can take a long time to be translated into action. For example the idea of 'carers' and 'caring' is relatively new – people used to think of community 'services' and 'support' rather than care – but gradually these ideas were translated into action. He then discussed the WHO Age-friendly movement which focuses on concepts such as 'active ageing' to enhance the quality of life of older people, 'social inclusion' of vulnerable and marginalised groups,

'attention' to the priorities of older people themselves in each community, and 'friendly built environment' to keep old people living at home longer. He also discussed the ACT Positive Ageing plan, the high general level of satisfaction of the older community found by the ACT Age-friendly Cities survey 2010, and the characteristics that make Canberra an age- friendly city (such as its well-planned structure).

In a panel discussion following the lecture, Professor Kendig was joined by Barbara Squires, Head of Research and Advocacy for IRT (a community based provider of housing and care for older people), and Kevin Vassarotti, a member of the ACT Council on Ageing Policy Council, as well as representatives of a number of other advisory and professional bodies on Ageing.

The lecture was repeated on September 11 to the U3A community group at the Southern Cross Club Jamison.

CEPAR continued to champion the Age-friendly Cities movement through its support of the Australian Age-friendly Cities and Communities Conference held in Canberra on 9 October 2013. Hosted by the ACT's Office of Ageing, the conference provided an opportunity to share initiatives and innovations in this important area from around the country. The conference featured a keynote presentation from Dr Alex Kalache, a CEPAR visitor and former head of the Ageing and Life Course Programme at the World Health Organization.

CHANGES IN EMPLOYMENT AT OLDER AGES IN AUSTRALIA: TRENDS AND DIFFERENTIALS

CEPAR's Deputy Director, Professor Peter McDonald used results from the 2006 and 2011 Censuses of Australia to examine changes in employment rates at older ages, defined as 55 years and over. He explained that older age employment increased considerably during this period and that increases were widespread across a range of characteristics. Examining changes in population composition,

HAL KENDIG DELIVERS HIS PUBLIC LECTURE IN MAY 2013 AT ANU

he concluded that the composition of the population is shifting in the direction that leads to higher employment rates in the future. He also showed that continuation of employment varies by personal characteristics but also considerably by occupation and industry.

The lecture was delivered to an audience of academics and policymakers at ANU on 24 May 2013.

INTERNATIONAL LINKS

Throughout 2013, CEPAR employed a number of strategies to forge and strengthen international links. These included joint conferences and workshops, international delegations and visits and the submission of joint funding proposals.

Strengthening ties with high quality institutions in China was one focus of CEPAR's international engagement strategy in 2013. Through a series of workshops and meetings, CEPAR enhanced its existing partnership with the Institute for Population and Development at Zhejiang University as well as establishing new collaborative relationships with researchers at a number of outstanding research institutions in China.

Hosting joint conferences and workshops provided an excellent opportunity to build linkages with Harvard University's Department of Global Health and Population as well as Japan's Research Institute for Policies on Pension and Aging. And the planning of a three year research program focused on best policy and practice for mandatory pre-funded retirement income schemes, enhanced links between CEPAR and Dutch collaborators, Netspar and APG, as well as local partners AMP and Booz & Company. International visits and the hosting of special symposia at international conferences provided further opportunities for networking and collaboration as well as increasing CEPAR's international footprint.
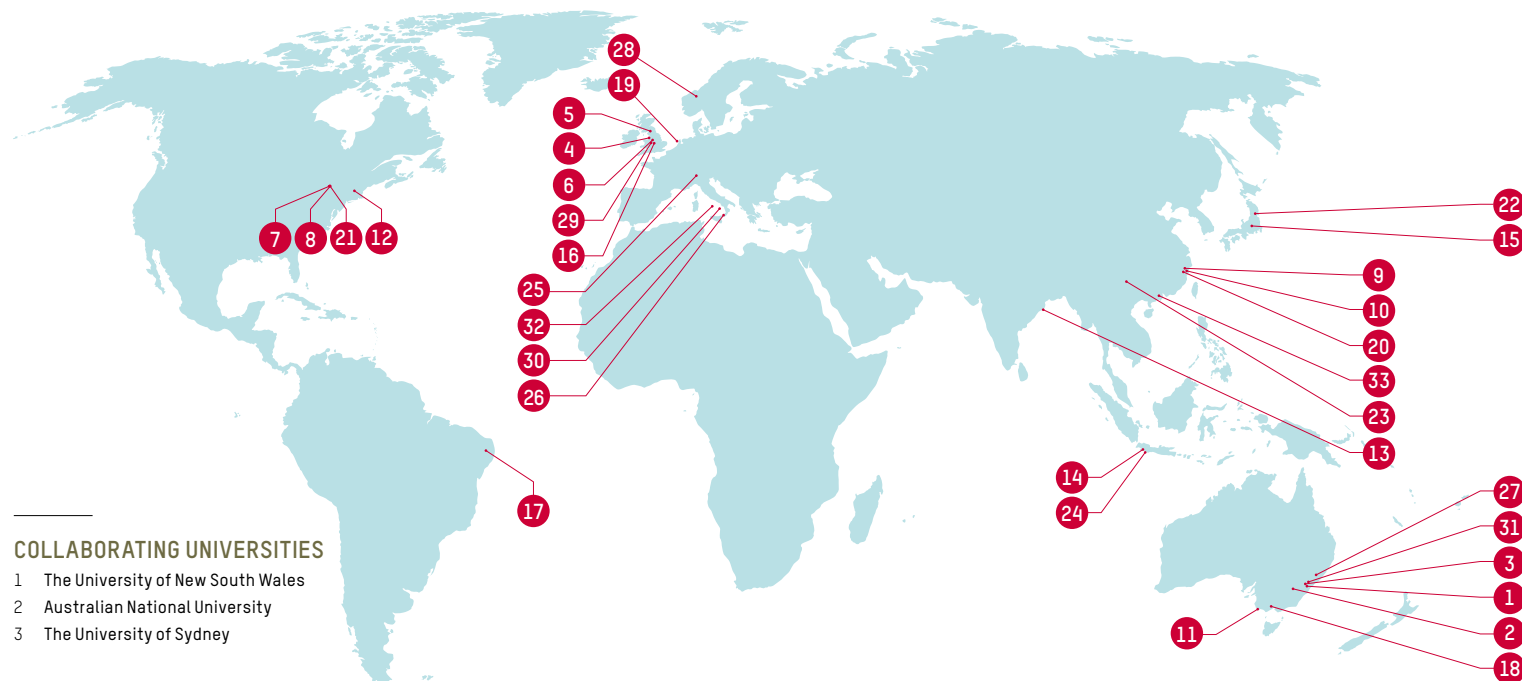
COLLABORATING UNIVERSITIES

1. The University of New South Wales
2. Australian National University
3. The University of Sydney

PARTNER UNIVERSITIES

4. School of Social Sciences
   University of Manchester
5. Institute for Ageing and Health
   University of Newcastle (UK)
6. School of Economics
   University of Nottingham
7. Department of Economics
   University of Pennsylvania
8. Wharton School
   University of Pennsylvania

ASSOCIATED UNIVERSITIES/INSTITUTIONS

9. Brookings-Tsinghua
   Centre for Public Policy
10. Chinese Academy
    of Social Sciences
11. School of Psychology
    Flinders University
12. Department of Global
    Health and Population (GHP)
    Harvard University
13. Indian Statistical Institute
14. Indonesian National Population
    and Family Planning Board

15. Institute for Economic Research
    Hitotsubashi University
16. Institute for Fiscal Studies
17. Instituto de Estudos de
    Saúde Suplementar (IESS)
18. School of Primary Health Care
    and Emerging Researchers
    in Ageing Initiative
    Monash University
19. Netspar
20. Research Centre for Ageing
    and Health Services
    Peking University
21. Gerontology Centre
    Pennsylvania State Unversity

22. Research Institute for Policies
    on Pension and Ageing
23. Southwestern University
    of Finance and Economics
24. Statistics Indonesia
25. Department of Economics
    St Gallen University
26. Centre for Studies in
    Economics and Finance
    University of Naples Federico II
27. Research Centre for
    Gender, Health and Ageing
    The University of Newcastle
    (Australia)

28. Ragnar Frisch Centre
    for Economic Research
    University of Oslo
29. Nuffield College
    University of Oxford
30. Department of Economics
    University of Parma
31. Centre for the Study of Choice
    University of Technology, Sydney
32. Faculty of Economics
    University of Trieste
33. College of Public Administration
    Zhejiang University

INTERNATIONAL LINKS

BUILDING LINKS WITH CHINA

China is not just the world's most populous nation. It is also its most rapidly ageing significant economy. Building links with China is therefore an important initiative for CEPAR as it seeks to gain global traction.

Financial support from the Australia-China Science Research Fund and UNSW Contestable Funding underpinned a number of activities designed to bring together Australian and Chinese researchers focused on population ageing research.

The largest of these activities, an innovative two day workshop on population ageing held at Zhejiang University in China, featured presentations by around 40 researchers from a range of disciplines including actuarial studies, economics, demography, public policy and sociology. Presenters were drawn from over twenty leading research institutions including four of China's C9 universities: Beijing, Tsinghua, Xian Jiao Tong and Zhejiang. In addition to providing an excellent opportunity for young researchers from around

China to share their research, the event was also extremely successful in building new links between CEPAR and Chinese research organisations focused on the issue. These research linkages will provide the basis for future joint research projects. The workshop also served to promote CEPAR as a destination of choice for young researchers interested in the issue. It resulted in a number of post-workshop enquiries about opportunities for students and postdoctoral fellows at CEPAR from Chinese scholars.

As well as visiting Zhejiang University, where the workshop was based, the group mission led by John Piggott and CEPAR Associate Investigator Elisabetta Magnani also visited the Chinese Academy of Social Sciences and Tsinghua University in May 2013. At a special seminar organised by the Brookings-Tsinghua Centre for Public Policy focused on comparing the Australian and Chinese pension systems, ECRs Rafal Chomik and Lu Bei provided insights into Australia's superannuation and pension systems. Discussions were fruitful with both sides gaining a greater

appreciation of national systems and structures. This laid the foundation for a further workshop in December 2013 focused on retirement age and mature labour force participation.

In a series of three high level meetings over the course of the year, CEPAR researchers conducted broad-ranging discussions with experts at the Chinese Academy of Social Sciences on pension reform in China, especially strategies for the next decade. Zheng Bingwen, Head of the Centre of International

Social Security Studies at the Chinese Academy of Social Sciences, said 'We found these discussions extremely valuable and look forward to developing a joint cross-national comparative research program with CEPAR.'

In December CEPAR joined forces with the Southwestern University of Finance and Economics to host a joint conference on Intergenerational Solidarity, Demographic Change and Economic Growth. Attended by more than 80 participants from

around China, the conference established a new partnership for CEPAR and brought researchers together on an important area of research focus.

CEPAR's program of engagement with China in 2013 served to increase its international footprint, raise awareness of CEPAR as a destination of choice for young Chinese researchers, and most importantly lay the foundation for collaborative research projects.

CEPAR-TSINGHUA WORKSHOP, MAY 2013

CEPAR AND INDONESIA

A large three-year Linkage Project led by Peter McDonald and conducted in cooperation with AusAID, UNFPA, Statistics Indonesia, and the Indonesian National Population and Family Planning Board, focuses on population and development in Indonesia.

Social and economic planning in Indonesia today is problematic because of a lack of consensus regarding the current and likely future demography of this, the world's fourth most populous nation. Making use of all available data sources and innovative techniques, the project aims to reconstruct Indonesia's demography over a 40-year period from 1971 to the 2010 Census of Indonesia. The work will be done at both the national and the provincial levels. Beyond demographic estimation, the project will also produce reports on social and economic trends based mainly upon analysis of the Indonesian censuses. This includes analysis of internal migration, urbanisation, housing, labour force participation, industrial composition, and education. The project brings together technical demographic expertise in Australia and Indonesia to develop reliable population estimates and to inform evidence-based policymaking including policies related to the ageing of the population of Indonesia.

In cooperation with Statistics Indonesia, a database has been developed at the Australian National University consisting of the complete unit record census data for the five censuses held in Indonesia from 1971 to 2010. Analysis of this huge database will be facilitated through access to the ANU supercomputer. For the 2010 Census, it has been possible to merge the individual census records with the village census data (Potensi Desa) which provides contextual level data about characteristics of the village and facilities available at the village level. The ANU team consists of Peter McDonald, Terry Hull, Ariane Utomo, Siew-Ean Khoo, Iwu Utomo, Hasnani Rangkuti (an employee of Statistics Indonesia), Aliza Hunt and Steve McEachern. Economists from the ANU Indonesia Project are also involved and the project is funded by AusAID (now DFAT) through the ANU Indonesia Project. Professor Graeme Hugo of the University of Adelaide is a Chief Investigator on the project working on internal and international migration.

The Indonesian Government partners include Statistics Indonesia, the agency responsible for demographic estimation and projection and the National Population and Family Planning Board, the agency responsible for population planning. Though not formal partners, the project will work also with the Indonesian National Planning Board (BAPPENAS) and with major demographic centres in Indonesian universities. The Indonesian office of the United Nations Population Fund (UNFPA) is a formal partner helping to provide coordination within Indonesia, especially in relation to training programs associated with the project. An initial training course was held for Indonesian civil servants at ANU in December 2013. An Australian volunteer, Horst Posselt, formerly with the Australian Bureau of Statistics is working on the project at UNFPA in Jakarta.

Related to the project, Peter McDonald will deliver the 2014 Sadli lecture in Jakarta in April 2014.

A CEPAR-NETSPAR NEXUS

The development of a large-scale research program centred on mandatory pre-funded retirement income systems was the focus of discussions between CEPAR and the Network for Studies on Pensions, Aging and Retirement (Netspar) in 2013, culminating in the

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ERIK HERNAES
Cand. oecon. Oslo
ASSOCIATE INVESTIGATOR

Erik Hernaes is a Senior Research Fellow at the Ragnar Frisch Centre for Economic Research at the University of Oslo, Norway's leading economics research centre. Erik's primary research interests are related to pension economics and he is currently leading a project on evaluating the labour market effects of Norwegian pension reform.

After working at Statistics Norway, he became the inaugural Director of the Frisch Centre in 1999. He was one of the first researchers to organise administrative register data and use these for econometric analysis. This is now a major research focus of the Frisch Centre.

Erik has published on productivity, education, unemployment and retirement, in the *Scandinavian Journal of Economics, Oxford Bulletin of Economic Research, Journal of Pension Economics and Finance, Journal of Health Economics* and in volumes published by the NBER, Kluwer, Edward Elgar and Routledge.

INTERNATIONAL LINKS

submission of a Linkage Grant proposal with Netspar together with partners APG in the Netherlands and AMP and Booz & Company in Australia. The established research relationship between CEPAR and Netspar provided the perfect foundation for a project aimed at bringing together a coalition of world-class researchers and leading industry experts to undertake a rigorous investigation of the critical elements of retirement income design in two countries with established and high quality mandatory pre-funded systems – Australia and the Netherlands.

The proposed project also involves the Netherlands' largest pension provider, APG, an organisation which has developed a very strong collaborative research program with Netspar over the last eight years. APG's Head of Collective Pensions Research was an invited speaker at CEPAR's conference on Pre-funded Pension Plans held in November 2013, providing further opportunities for CEPAR researchers to hear first-hand about one of the world's leading pension systems.

CEPAR's Director, John Piggott, and Netspar's Scientific Director, Theo Nijman, are committed to building an ongoing, collaborative research program on topics of relevance to policymakers and industry practitioners. To facilitate this, both institutions have promoted opportunities to bring researchers from the two organisations together. In July 2013 Professor Nijman was one of four keynote speakers at CEPAR's 1st International Conference and earlier in the year CEPAR hosted Netspar visitors Bas Werker and PhD student Tim Boonen. CEPAR researchers are also regular participants in Netspar's annual international pension workshops.

In a bid to further leverage the shared research interests of CEPAR and Netspar, discussions about the proposed establishment of the International Society for Research on Pensions, Aging and Retirement (ISPAR) were progressed. The idea for the Society, which is also being driven by the Pension Research Council at The Wharton School (one of CEPAR's Partner Organisations), is to connect researchers in pensions around the world with a view to enhancing collaboration between individuals and institutions.

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CEPAR AND FRISCH

Using detailed Norwegian administrative data sets built by the Ragnar Frisch Centre for Applied Economics Research in Oslo, CEPAR Associate Investigators and Frisch researchers, Erik Hernaes and Simen Markussen, together with John Piggott and Ola Vestad from Statistics Norway, produced a paper on the relationship between retirement age and mortality. The paper, which appeared in the *Journal of Health Economics* in 2013, received extensive media attention in Australia and the UK. In July Erik Hernaes visited CEPAR to deliver a paper on the effect of salience in the social security benefit system on labour supply at CEPAR's first international conference and in December Simen Markussen returned to CEPAR for an extended visit to work on labour supply impacts of pension reforms. This research, undertaken jointly by Simen, Erik Hernaes, who is visiting for 3 months in early 2014, and John Piggott, mainly focuses on decisions to work longer under alternative social security and earnings test arrangements, and makes use of the unparalleled administrative databases held by Frisch, and recent Norwegian pension reforms, to estimate labour force participation response.

DR SIMEN MARKUSSEN
BEc MEc PhD Oslo
ASSOCIATE INVESTIGATOR

Simen Markussen is a Senior Research Fellow at the Ragnar Frisch Centre for Economic Research in Oslo, Norway.

Since completion of his PhD in Economics in 2010 he has published several research papers in the leading journals within labour and health economics. He conducts empirical research aimed at identifying causal effects of various labour market policies or events.

He participates in the public debate around labour, health and education in Norway, holding numerous talks with relevant organisations and governmental agencies as well as writing a periodic column in *Dagens Næringsliv*, a major Norwegian newspaper, every sixth week.

JOINT CONFERENCES AND WORKSHOPS

PRE-FUNDED PENSION PLANS: THEORY, PRACTICE AND ISSUES. DOES PRE-FUNDING WORK? A CEPAR joint conference with the Research Institute for Policies on Pension and Aging, Japan

A conference focused on pre-funded pension plans held at UNSW in November 2013 was the joint initiative of CEPAR and the Research Institute for Policies on Pension and Aging (RIPPA) in Japan. The conference was the outcome of discussions between CEPAR Director John Piggott and Professor Noriyuki Takayama, a RIPPA Distinguished Scholar and CEPAR Associate Investigator, during Professor Takayama's visit in 2012. The conference brought country specialists together with economics, finance and insurance experts to explore the experiences of specific countries and regions; analyse common issues; and suggest ways in which the paradigm as a whole might be improved. Addressing the question, 'Does pre-funding work?', were a range of international experts sharing the experiences of the U.S., U.K., Japan, China, Singapore, the Netherlands, Switzerland, Germany, Central and Eastern Europe and Latin America.

Stressing the importance of the conference, John Piggott said, 'As demographic change places traditional social security under ever greater pressure, countries are increasingly relying on pre-funded retirement plans. This conference

NORIYUKI TAKAYAMA AT THE JOINT CEPAR-RIPPA CONFERENCE ON PRE-FUNDED PENSION PLANS

was the first to focus on this plan category, bringing participants from all corners of the world.'

PROFESSOR NORIYUKI TAKAYAMA
ASSOCIATE INVESTIGATOR

Noriyuki Takayama is Distinguished Scholar at the Research Institute for Policies on Pension and Aging (RIPPA), Tokyo, and JRI Pension Research Chair Professor at the Institute of Economic Research, Hitotsubashi University. He is also Director General and CEO of a research Project on Intergenerational Equity (PIE: 2000–2015), whose main objective is setting options for fair distribution of wellbeing among different generations.

He has published numerous books and articles in international publications including *Econometrica* and the *American Economic Review*. His publications include *Taste of Pie: Searching for Better Pension Provisions in Developed Countries, Pensions in Asia: Incentives, Compliance and Their Role in Retirement, Closing the Coverage Gap, Fertility and Public Policy, Priority Challenges in Pension Administration,* and *Securing Lifelong Retirement Income.* He is the author of a Japanese book, *Saving and Wealth Formation,* which was awarded the 1996 Nikkei Prize for the best book on economic issues.

INTERNATIONAL LINKS

THE ECONOMICS OF POPULATION AGEING
A CEPAR joint conference with Harvard's Department of Global Health and Population

Supported by conference funding awarded by the Harvard University Australian Studies Committee, CEPAR and Harvard's Department of Global Health and Population (GHP) jointly mounted a two day workshop in Harvard in late September 2013. Leading academic economists from disparate fields assembled to share perspectives and present their current research on this important topic.

Conceived as part of a project to develop a *Handbook of the Economics of Population Ageing* Research, which John Piggott and Alan Woodland have contracted to deliver to Elsevier by mid-2015 (see page 30–31), the conference served not only to bring handbook contributors together to advance the project but also to strengthen ties between GHP and CEPAR and lay the foundation for ongoing collaboration.

Conference co-convenor David Bloom, Professor of Economics and Demography and Chair of the Department of Global Health and Population at Harvard, said the workshop 'brought together the world's leading economists in the field of Population Ageing, to synthesize and critically review the discipline's research contributions to date, and to scope a future agenda'.

CEPAR-HARVARD JOINT CONFERENCE ON THE ECONOMICS OF POPULATION AGEING. FRONT ROW FROM LEFT: ALAN WOODLAND (CEPAR), JOHN PIGGOTT (CEPAR), DAVID BLOOM (HARVARD). SECOND ROW FROM LEFT: DAVID CANNING (HARVARD), HANMING FANG (PENNSYLVANIA), OLIVIA MITCHELL (WHARTON), DARA LEE LUCA (HARVARD), MARIA JOY (HARVARD). BACK ROW: WORKSHOP PARTICIPANT, ALESSANDRO CIGNO (FLORENCE), EDWARD NORTON (MICHIGAN), LOIC BATTE (TOULOUSE SCHOOL OF ECONOMICS), ROEL BEETSMA (AMSTERDAM), JOSEPH MARCHAND (ALBERTA), WORKSHOP PARTICIPANT, ANZELIKA ZAICEVA (MODENA AND REGGIO EMILIA), MICHAEL SHERRIS (CEPAR), KLAUS ZIMMERMANN (BONN), RON LEE (BERKELEY)

PROFESSOR MONIKA BÜETLER
ASSOCIATE INVESTIGATOR

Monika Büetler is a Professor of Economics and Public Policy at the University of St. Gallen and an affiliated researcher at CESifo, Netspar and CEPR London as well as an Associate Investigator at CEPAR. She has degrees in Mathematics and Physics and Economics as well as a PhD in Economics from the University of St. Gallen. Monika has been a visiting professor at the University of New South Wales and a visiting scholar at the University of Virginia and the Federal Reserve Bank of Richmond. She was a member of the Board of the World Demographic Association, Advisor at The World Bank, and Managing Director at the Swiss Institute for Empirical Economic Research.

Monika visited CEPAR to present at the Pre-funded Pensions Plans conference in November.

INTERNATIONAL SYMPOSIA

One of the ways in which we facilitate global discussion of the implications of population ageing as well as increase the visibility of the Centre, is through the sponsorship of sessions at international conferences.

Workshop on Work and Care-giving Responsibilities, 27 and 28 June 2013, Seoul

This CEPAR-sponsored workshop, convened by A/Professor Kate O'Loughlin and Professor Hal Kendig, followed on from the International Association of Gerontology and Geriatrics (IAGG) World Congress in Seoul (23–27 June). The purpose of the workshop was to bring together (by invitation) a group of scholars from around the world to present their research related to the paid work and care-giving responsibilities of those in mid to later life in varying geographic, social, economic and political contexts. Peer-reviewed papers from contributors will be included in a proposal (due 28 February 2014) for a Special Edition of the international journal *Ageing and Society* to be edited by Professor Judith Phillips (University of Swansea) and A/Professor Kate O'Loughlin.

Contributors include:

Dr Isabella Aboderin, Senior Research Fellow, African Population and Health Research Centre, Nairobi, and Oxford Institute of Population Ageing

Professor Fiona Alpass, School of Psychology, Massey University

Professor Xiaomei Pei, Department of Sociology, Tsinghua University

Professor Sue Yeandle, Director, Centre for International Research on Care, Labour and Equalities, University of Leeds

Professor Wonjee Cho, Research Professor, Translational Gerontology and Retirement Research Center, Seoul National University

Professor Janet Fast, Co-Director, Research on Aging, Policies and Practice, University of Alberta

A/Professor Kalyani K. Mehta, SIM University, Singapore

Prof Hal Kendig, Centre for Research on Ageing, Health and Wellbeing, Research School of Population Health, Chief Investigator, ARC Centre of Excellence in Population Ageing Research, The Australian National University

A/Professor Kate O'Loughlin, Ageing, Work & Health Research Unit, Associate Investigator, ARC Centre of Excellence in Population Ageing Research, The University of Sydney

Dr Vanessa Loh, Research Fellow, ARC Centre of Excellence in Population Ageing Research, The University of Sydney

International Actuarial Association Lyon Colloquium: The Balance between Contributions and Benefits

The work of actuaries is particularly concerned with the balance between the contributions and benefits of retirement schemes. This applies to Defined Benefit schemes that are currently grappling with the consequences of poor investment performance, increased longevity and promises that were sometimes overoptimistic from the start. It also applies to Defined Contribution schemes where the questions relate to the adequacy of the benefits.

CEPAR and the Australian Actuaries Institute jointly sponsored two sessions on this topic at the June Colloquium and the Pensions, Benefits and Social Security Section (PBSS) of the International Actuarial Association (IAA). Robert Brown, a well-known academic from Canada and president-elect of the IAA, presented a paper that looked at the 'myths' surrounding the debate about which systems were more balanced. Junichi Sakamoto, previously of the Japanese Government Pensions Bureau, described the automatic balancing mechanisms that are being used in some

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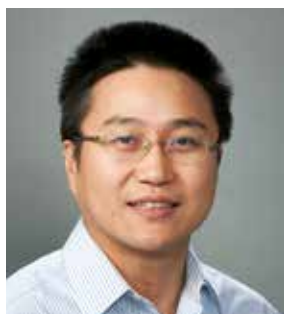
PROFESSOR HANMING FANG
BA Fudan, MA Virginia, PhD Pennsylvania
PARTNER INVESTIGATOR

Hanming Fang is Professor of Economics at the University of Pennsylvania and a Research Associate at the National Bureau of Economic Research (NBER).

Professor Fang is an applied microeconomist with broad theoretical and empirical interests focusing on public economics. His research covers topics ranging from discrimination, social economics, welfare reform, psychology and economics, to public good provision mechanisms, auctions and health insurance markets.

He is currently working on issues related to insurance markets, particularly life insurance and health insurance markets, and issues related to discrimination and affirmative action. He serves as a co-editor of the *International Economic Review,* as well as on the editorial boards of several other journals, including the *American Economic Review*.

Professor Fang received his PhD in Economics from the University of Pennsylvania in 2000. Before joining the Penn faculty, he held positions at Yale University and Duke University.

Professor Fang was one of CEPAR's Distinguished Visitors in 2013 and a participant in the Economics of Population Ageing Workshop hosted by Harvard University. During his visit to the UNSW node of CEPAR he presented at the 1st CEPAR international conference as well as met with a number of CEPAR personnel, particularly early career researchers.

cepar

INTERNATIONAL LINKS

European countries and in Japan. John Woodall, an actuary working for the ILO, expressed some concern about how benefits for the more vulnerable were being cut by the need for balance. Anthony Asher of the School of Risk and Actuarial Studies at UNSW, discussed some of the pressures that actuaries worked under and the importance of identifying interest groups who might otherwise obtain unfair privileges.

It is intended that these papers, together with other contributions on the same subject from those attending the Colloquium will be published in a special edition of the *Australian Journal of Actuarial Practice*.

INTERNATIONAL VISITORS

The Centre hosted 45 international visitors in 2013. These visitors ranged from experts with distinguished reputations in their fields to early career researchers interested in developing research programs in the area of population ageing. They participated in a range of CEPAR events and activities, contributed to the development and execution of research projects and brought an international perspective to bear on the research program.

One of the ways in which our visitors contribute to our outreach to the wider community is through distinguished lectures and public presentations. Highlights included:

James Nazroo, Professor of Sociology at the University of Manchester and a CEPAR Partner Investigator, visited CEPAR in July 2013. He delivered a keynote address at CEPAR's 1st International Conference which was repeated as a public lecture at the ANU in July 2013. In his lecture, 'Age, Wellbeing and Inequality: Evidence from the English Longitudinal Study of Ageing', Nazroo explored inequalities in later life health and wellbeing. In seeking to identify factors that mediate the relationship between wellbeing, health and age, Nazroo examined the diverse retirement trajectories which carry differing implications for post-retirement experiences. More broadly, he argued that later-life experiences continue to be shaped by social class, but that we need to move beyond simple material and occupational measures to reveal the extent of these class-based inequalities.

During his visit, Nazroo also met with CEPAR researchers to discuss collaborative projects as well as advise on the development of an Australian longitudinal health and retirement study.

Dr Alex Kalache, former World Health Organisation Director responsible for launching the WHO Active Ageing Policy Framework and the Global Movement for Age-friendly Cities, visited the ANU node of CEPAR in October. In two public lectures delivered in Canberra, Dr Kalache spoke on Research and Training for the 21st Century and on The Longevity Revolution, asking 'Are Societies Prepared?'

Carol Jagger, AXA Professor of Epidemiology of Ageing at the UK's Newcastle University and CEPAR Partner Investigator, and Professor **Jean-Marie Robine**, Research Director at INSERM, the French National Institute of Health and Medical Research, visited the ANU and UNSW nodes of CEPAR in December. In addition to co-convening the Early Career Researcher Workshop 'Using Healthy Life Expectancy to Monitor Population Health', the distinguished visitors also delivered public lectures at ANU. Professor Jagger spoke on 'Pathways of health in the very old: Lessons for health and care practice and policy' and Professor Robine discussed emerging international trends in mortality and longevity.

PROFESSOR JAMES NAZROO
BSc MB BS Lond., PhD UC Lond.
PARTNER INVESTIGATOR

James Nazroo is Professor of Sociology at the University of Manchester, UK. He also serves as Director of the Manchester Interdisciplinary Collaboration for Research on Ageing and Director of the Cathie Marsh Centre for Census and Survey Research.

His research focuses on issues of inequality, social justice and underlying processes of stratification, particularly in relation to ageing and ethnicity. He works on the social determinants of health and wellbeing in later life, social inequalities over the life course, and longitudinal surveys of health and retirement.

He is the lead investigator for the five year interdisciplinary research programme 'Frailty, Resilience and Inequalities in Later Life (fRaill)' (2011–2016); a chief investigator on the ongoing 'English Longitudinal Study of Ageing' (ELSA); and a partner investigator on the ARC Discovery grant 'Socio-economic determinants and health inequalities over the life course' being conducted in collaboration with CEPAR Chief Investigator Kendig, Associate Investigators Byles and O'Loughlin, and Research Fellow Loh.

In 2013 CEPAR was proud to host the following visitors:

PROFESSOR FIONA ALPASS
Massey University/University
of New Zealand
13–15 February 2013

DR JOHN BEARD
World Health Organisation
3–4 July 2013

TIM BOONEN
Tilburg Univeristy and Netspar
4 March–31 May 2013

PROFESSOR MONIKA BÜETLER
University of St Gallen
6–7 November 2013

DR DIMITRIS CHRISTELIS
Centre for Studies in
Economics and Finance,
University of Naples Federico II
4–22 September 2013

PROFESSOR GORDON CLARK
Oxford University
2–6 July 2013

PROFESSOR EILEEN CRIMMINS
University of Southern California
29 June–4 July 2013

PROFESSOR HANMING FANG
University of Pennsylvania
1–12 July 2013

PROFESSOR JANET FAST
University of Alberta
13–15 February 2013

PROFESSOR GARY D. HANSEN
University of California,
Los Angeles
15–25 September 2013

PROFESSOR CHAO HE
Hanqing Advanced Institute
of Economics and Finance
Renmin University
8 July 2013

ERIK HERNAES
Frisch Centre for Economic
Research, University of Oslo
19 June–8 July 2013

PROFESSOR ROBERT HOLZMANN
University of Malaya
1–5 July 2013
2–17 November 2013

A/PROFESSOR MINCHUNG HSU
National Graduate Institute
for Policy Studies
15–25 September 2013
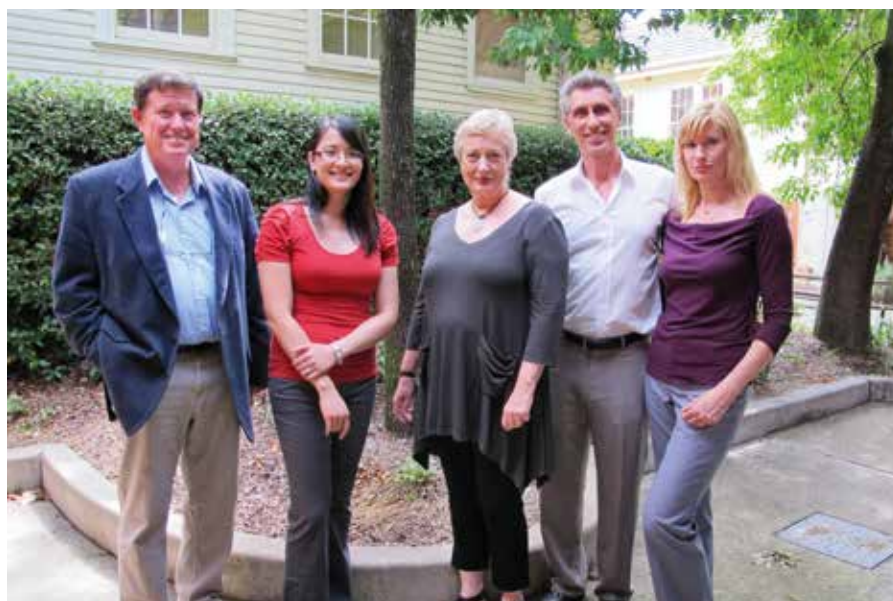
CEPAR VISITORS ANDREW WISTER AND BARBARA MITCHELL (RIGHT) HOSTED BY HAL KENDIG, VANESSA LOH AND KATE O'LOUGHLIN

PROFESSOR ROBERT HOLZMANN
MBA Graz, PhD Vienna
HONORARY PROFESSOR

Robert Holzmann holds the chair of Old Age Financial Protection at the University of Malaya (Kuala Lumpur), and is a Research Fellow of IZA (Bonn) and CESifo (Munich). He also serves as a consultant on pensions, financial literacy and education, labour market and migration issues. From 1997 to 2011 he held various positions at the World Bank including Sector Director for Social Protection & Labor. Before joining the Bank he was a professor in Germany and Austria and senior economist at the IMF and OECD. He has published 34 books and over 150 articles on social, fiscal and financial policy issues.

Robert visited CEPAR twice in 2013 to participate in CEPAR conferences and advance collaborative research projects. In July, he delivered 'A Provocative Perspective on Populating Ageing and Old-Age Financial Protection' at the 1st CEPAR International Conference. At the conference on Pre-funded Pension Plans he spoke about the importance of financial literacy, and in an article in The Australian newspaper in November, expressed concern about the ease with which people are able to set up self-managed super funds often without the necessary skills and understanding of how financial markets and products work.

INTERNATIONAL LINKS

XIANGUO JERRY HUANG
National Graduate Institute
for Policy Studies
September–December 2013

PROFESSOR CAROL JAGGER
University of Newcastle (U.K.)
9–18 December 2013

PAUL JOHNSON
Institute for Fiscal Studies
1–8 July 2013

DR ALEXANDER KALACHE
Formerly World Health
Organisation
8–10 October 2013

DR SALLY KEELING
University of Otago
13–15 February 2013

PROFESSOR ZINOVIY LANDSMAN
University of Haifa
19 August–27 September 2013

DR HAO LUO
Tsinghua University
8–13 December 2013

PROFESSOR HONG MI
Zhejiang University
5–12 July 2013

PROFESSOR BARBARA MITCHELL
Simon Fraser University
26–30 January 2013

PROFESSOR OLIVIA S. MITCHELL
The Wharton School,
University of Pennsylvania
8 July–12 July 2013

PROFESSOR JAMES NAZROO
Manchester University
1–10 July 2013

PROFESSOR THEO NIJMAN
Netspar
30 June–11 July 2013

JIA NING
Zhejiang University
13 May–12 July 2013

PROFESSOR MARCIA ORY
Texas A and M University
3–16 July 2013

PROFESSOR ERMANNO PITACCO
University of Trieste
2–9 October 2013

DR YANNPING REN
Xi'an Jiaotong University
13–14 April 2013

PROFESSOR JEAN-MARIE ROBINE
INSERM, France
9–18 December 2013

PROFESSOR RICHARD ROGERS
University of Colorado
3–24 November 2013

PROFESSOR YASUHIKO SAITO
Population Research Institute,
Nihon University
2–5 July 2013

DR TANNISTHA SAMANTA
Indian Institute of Technology,
Gandhinagar
7–13 December 2013

DR RENUKA SANE
Indira Gandhi Institute
of Development Research
18 February–2 March 2013

DR ARTUR SERRANO
Norwegian Centre for Telemedicine
26 November–8 December 2013

PROFESSOR MERRIL SILVERSTEIN
Syracuse University
30 June–5 July 2013

PROFESSOR NORIYUKI TAKAYAMA
Research Institute for Policies
on Pension and Aging
6–7 November 2013

DR ATHANASIOS THANOPOULOS
Greek Ministry of Finance
9–30 October 2013

PROFESSOR BJM WERKER
Netspar
3 June 2013

EDWARD WHITEHOUSE
Pension Economist
5–18 November 2013

PROFESSOR ANDREW WISTER
Simon Fraser University
26–30 January 2013

TREENA WU
Tsao Foundation
31 October 2013

MINGXU YANG
Zhejiang University
13 May–12 July 2013

PROFESSOR SUE YEANDLE
University of Leeds
13–15 February 2013

PROFESSOR ERMANNO PITACCO
ASSOCIATE INVESTIGATOR

Ermanno Pitacco is Professor of Actuarial Mathematics at the University of Trieste, and Academic Director of the Master in Insurance and Risk Management at the MIB School of Trieste. His current research interests lie in the area of life and health insurance mathematics and techniques, focussing in particular on longevity risk and life insurance portfolio valuations and solvency assessment. He is an author and co-author of textbooks and papers in the actuarial field. He has published in leading international risk and actuarial studies journals, including *Insurance: Mathematics and Economics, the ASTIN Bulletin,* the *Journal of Pension Economics and Finance,* the *Belgian Actuarial Bulletin,* the *Journal of Actuarial Practice, Applied Stochastic Models in Business and Industry, AStA Advances in Statistical Analysis,* and *Giornale dell'Istituto Italiano degli Attuari*. He was awarded the 1996 INA Prize for Actuarial Mathematics, from the *Accademia Nazionale dei Lincei,* and the 2011 Bob Alting von Geusau Memorial Prize, together with Annamaria Olivieri.

Ermanno Pitacco is Editor of the *European Actuarial Academy* series (Springer), Co-editor of the *European Actuarial Journal* and Associate Editor of a number of international journals.

Professor Pitacco visited CEPAR from the 2nd to the 9th of October 2013. During his visit he worked with Professor Michael Sherris and his team at the UNSW CEPAR node as well as presented a public seminar titled 'Biometric Risk Transfers in Life Annuities and Pension Products: A Survey.'

INTERNATIONAL VISITS

CEPAR personnel were invited to visit a number of leading research institutions in 2013:

KAARIN J. ANSTEY
University College London and Newcastle University, UK
1–8 May 2013

HAZEL BATEMAN
Chinese Academy of Social Sciences
15 December 2013

South-western University of Finance and Economics
14 December 2013

Tsinghua University
17 December 2013

LU BEI
Zhejiang University
10–12 May 2013

Peking University
13 May 2013

Chinese Academy of Social Sciences
14 May 2013
15 December 2013

South-western University of Finance and Economics
14 December 2013

Tsinghua University
17 December 2013

HEATHER BOOTH
Oxford University
16–17 September 2013
4 October 2013

University of Southampton
1–3 October 2013

Vienna Demographic Institute
27–29 November 2013

Max Planck Institute for Demographic Research
2–6 December 2013

COLETTE BROWNING
Warwick Medical School
20–26 May 2013

Peking University
30 November–12 December 2013

ELENA CAPATINA
Nuffield College, Oxford University
17 March–3 April 2013

NICOLAS CHERBUIN
Centre Hospitalier Universitaire Vaudois
24–26 June 2013

Massachusetts General Hospital Harvard University
22 July 2013

University of California, Los Angeles
10 September–5 October 2013

RAFAL CHOMIK
Zhejiang University
10–12 May 2013

Peking University
13 May 2013

Chinese Academy of Social Sciences
14 May 2013

LINDY CLEMSON
University of Chicago
8 November 2013

University of Washington
9–16 November 2013

ROBERT CUMMING
University of Malaya
21–25 January 2013

ISABELLA DOBRESCU
Boston University
18 October–20 November 2013

XIAODONG FAN
Center for International Research, Japan
31 May–7 June 2013

Hanqing Advanced Institute of Economics and Finance
8–12 June 2013
14 September–14 October 2013

BOB CUMMING AT THE PLANNING MEETINGS FOR THE MALAYSIAN ELDERLY LONGITUDINAL RESEARCH STUDY (MELOR) IN JANUARY 2013

JOELLE FONG
The Wharton School, University of Pennsylvania
8–14 August 2013

MEIMANAT HOSSEINI-CHAVOSHI
Ministry of Health and Medical Education, Tehran
2–7 November 2013

NERIDA HUNTER
International Max Planck Research School of Demography
November 2012–February 2013

University of Southampton
14–15 November 2013

FEDOR ISKHAKOV
Nuffield College, Oxford University
4 April–25 May 2013

MICHAEL KEANE
University of Chicago
25 September–4 October 2013.

GEORGE KUDRNA
University of Pardubice
4–5 April 2013

CAGRI KUMRU
Academia Sinica, Taiwan
7–21 September 2013

ELISABETTA MAGNANI
Zhejiang University
10–12 May 2013

Peking University
13 May 2013

Chinese Academy of Social Sciences
14 May 2013
15 December 2013

South-western University of Finance and Economics
14 December 2013

Tsinghua University
17 December 2013

SHIKO MARUYAMA
Nuffield College, Oxford University
15–30 March 2013

Rockwool Foundation Research Unit
1–3 September 2013
9 September 2013
20 October–12 November 2013

University of Kyoto
16–23 September 2013

PETER MCDONALD
University of Michigan
10 September–5 October 2013

Ministry of Health and Medical Education, Tehran
2–7 November 2013

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INTERNATIONAL LINKS

KATE O'LOUGHLIN
Massey University
21–25 April 2013

University of Alberta
13 May 2013

University of Leeds
12–14 August 2013

JOHN PIGGOTT
World Bank
16–17 April 2013

National Institute on Aging
16 April 2013

Zhejiang University
10–12 May 2013

Peking University
13 May 2013

Chinese Academy
of Social Sciences
14 May 2013
15 December 2013

The Wharton School,
University of Pennsylvania
28–29 October 2013

South-western University
of Finance and Economics
14 December 2013

Tsinghua University
17 December 2013

PRADEEP RAY
World Health Organisation,
South East Asia Region, India
23–26 May 2013

World Health Organisation,
South East Asia Region, Thailand
29 September–2 October 2013

ADAM WENQIANG SHAO
Temple University
15 September 2013–
13 January 2014

CHUNG TRAN
Towson University
July 2013

Hanoi National
Economic University
November 2013

TIM WINDSOR
Humboldt University
26 August–3 September 2013

JIAYING ZHAO
Seoul National University
2 September 2013

RONG ZHU
Zhejiang University
10–12 May 2013

SECTION 4

ANNUAL REPORT 2012

PERFORMANCE INDICATORS
& FINANCIAL STATEMENT

2013 KEY PERFORMANCE INDICATORS

MEASURE	TARGET	RESULT
RESEARCH FINDINGS		
Total research outputs	50	435
– Refereed journal articles	15	117
– Percentage appearing in A* and A journals	30%	45%
Invited talks/papers/keynotes given at major international meetings	12	26
Commentaries about the Centre's achievements		
– Media releases	8	13
– Articles	6	97
RESEARCH TRAINING AND PROFESSIONAL EDUCATION		
Attended professional training courses for staff and postgraduate students	6	8
Centre attendees at all professional training courses	16	45
New PhD students working on core Centre research and supervised by Centre staff	6	10
New postdoctoral researchers recruited to the Centre working on core Centre research	2	4
New Honours students working on core Centre research and supervised by Centre staff	4	5
Postgraduate completions	0	8
Early Career Researchers working on core Centre research	9	29
Students mentored	150	400[4]
Mentoring programs	2	6
INTERNATIONAL, NATIONAL AND REGIONAL LINKS AND NETWORKS		
International visitors and visiting fellows	11	45
National and international workshops held/organised by the Centre	2	7
Visits to overseas universities or organisations	8	51
Interdisciplinary research: Research projects and papers co-authored by writers with different disciplinary backgrounds	2	8

[4] Includes students mentored under the Emerging Researchers in Ageing initiative

MEASURE	TARGET	RESULT
END-USER LINKS		
Government, industry and business community briefings	5	47
Public awareness programs	2	4
Currency of information on the Centre's website (number of updates per year)	10	Updated at least weekly
Website hits	5,000	15,335
Public talks given by Centre staff	15	20
ORGANISATIONAL SUPPORT		
Annual cash contributions from Collaborating Organisations[5]	$938,250	$938,280
Annual in-kind contributions from Collaborating Organisations	$1,090,621	$2,173,342
Annual cash contributions from Partner Organisations	$200,000	$186,364
Annual in-kind contributions from Partner Organisations	$929,722	$950,169
OTHER RESEARCH INCOME SECURED BY CENTRE STAFF[6]		
– ARC Grants	$250,000	$1,785,379
– Other Australian Competitive Grants	$250,000	$1,449,397
– Other Commonwealth, State and Local Government Grants	$125,000	$370,016
– Industry/Private Sector Grants	$125,000	$273,906
Number of new organisations collaborating with, or involved in, the Centre	1	6
NATIONAL BENEFIT		
Contribution to the National Research Priorities and the National Innovation Priorities		
– Public conferences	2	3
– Government and industry briefings	5	47
– Communiques etc	12	110

[5] A delayed payment of $116,520 for 2012, received in the first quarter of 2013, was reported in 2013 and is therefore not included here
[6] Includes all new grants awarded since the Centre's inception where a CEPAR Chief Investigator and/or Research Fellow is included in the research team as a Chief Investigator. Only 2013 income is shown

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RESEARCH OUTPUTS

A1 BOOK – AUTHORED RESEARCH

1 Dorman, M. C., Holzmann, R., O'Keefe, P., Wang, D., Sin, Y. and Hinz, R. (2013). *China's Pension System* – A Vision. The World Bank.

A3 BOOKS – EDITED

1 Hinz, R., Holzmann, R., Takayama, N. and Tuesta, D. (Eds.), (2013). *Matchings Contributions for Pensions: A Review of International Experience*. The World Bank.

2 Holzmann, R., Palmer, E. and Robalino, D. (Eds.), (2013). *NDC Pension Schemes in a Changing Pension World. Volume 2: Gender, Politics and Financial Stability*. The World Bank.

B BOOK CHAPTERS

1 Alston, C.L., Stickland, C.M., Mengersen, K.L. and Gardner, G.E. (2013). Bayesian Mixed Effects Models. In C.L. Alston, K.L. Mengersen and A.N. Pettitt (Eds.), *Case studies in Bayesian Statistical Modelling and Analysis*. (pp 141–158). Wiley & Sons.

2 Cherbuin, N. and Jorm, A.F. (2013). The IQCODE: Using Informant Reports to Assess Cognitive Change in the Clinic and in Older Individuals Living in the Community. In A.J. Larner (Ed) *Cognitive Screening Instruments*. (pp 165–182). Springer.

3 Clemson, L. (2013). Fall Risk Behaviour. In M.D. Gellman and J.R. Turner (Eds.), *Encyclopaedia of Behavioral Medicine*. (pp 755–758). Springer.

4 Holzmann, R. (2013). Long-term Perspectives of Social Security Pensions – European and Global Vision. In J. Meszaros (ed) *Pension Systems in the Crisis: Response and Resistance*. (pp 105–131). Central Administration of National Social Insurance.

5 Holzmann, R. (2013). Participation in Mandated and Voluntary Social Risk Management Arrangements: The Role and Limits of Financial Education and Other Interventions. In M. Froelich, D. Kaplan, C. Pages, J. Rigolini and D. Robalino (Eds.), *Social Insurance and Labor Markets: How to Protect Workers While Creating Good Jobs*. (pp 147–179). Oxford University Press for Inter-American Development Bank, Institute for the Study of Labor and World Bank.

6 Holzmann, R. and Jousten, A. (2013). Addressing the Legacy Costs in an NDC Reform: Conceptualization, Measurement, Financing. In R. Holzmann, E. Palmer and D. Robalino (Eds.), *NDC Pension Schemes in a Changing Pension World. Volume 2: Gender, Politics and Financial Stability*. (pp 277–304). The World Bank.

7 Holzmann, R., Hinz, R. and Tuesta, D. (2013). Early Lessons from Country Experiences with Matching Contribution Schemes. In R. Hinz, R. Holzmann, N. Takayama and D. Tuesta (Eds.), *Matching Contributions for Pensions: A Review of International Experience*. (pp 3–26). The World Bank.

8 Holzmann, R., Palmer, E. and Robalino, D. (2013). The Economics of Reserve Funds in NDC Schemes: Role, Means and Size to Manage Shocks. In R. Holzmann, E. Palmer and D. Robalino (Eds.) *NDC Pension Schemes in a Changing Pension World. Volume 2: Gender, Politics and Financial Stability*. (pp 343–358). The World Bank.

9 McDonald, P. (2013). Challenges for European Family and Fertility Research. In G. Neyer, G. Anderson, H. Kulu, L. Bernardi and C. Buhler (Eds.), *The Demography of Europe*. (pp 15–27). Springer.

10 McDonald, P. and Reimondos, A. (2013). Relationship Pathways and First Birth in Australia. In A. Evans and J. Baxter (Eds.), *Negotiating the Life Course. Stability and Change in Life Pathways*. (pp 69–98). Springer.

11 Strickland, C.M. (2013). A Bayesian Approach to Multivariate State Space Modelling: A Study of a Fama-French Asset Pricing Model with Time Varying Regressors. In C.L. Alston, K.L. Mengersen and A.N. Pettitt (Eds.), *Case studies in Bayesian Statistical Modelling and Analysis*. (pp 252–266). Wiley & Sons.

12 Strickland, C.M. and Alston, C.L. (2013). Bayesian Analysis of the Normal Linear Regression Model. In C.L. Alston, K.L. Mengersen and A.N. Pettitt (Eds.), *Case studies in Bayesian Statistical Modelling and Analysis*. (pp 66–89). Wiley & Sons.

13 Strickland, C.M., Alston, C.L., Denham, R.J. and Mengersen, K.L. (2013). A Python Package for Bayesian Estimation using Markov Chain Monte Carlo. In C.L. Alston, K.L. Mengersen and A.N. Pettitt (Eds.), *Case studies in Bayesian Statistical Modelling and Analysis*. (pp 421–460). Wiley & Sons.

C1 JOURNAL ARTICLES: ARTICLES IN SCHOLARLY REFEREED JOURNALS

1 Agnew, J.R., Bateman, H. and Thorp, S. (2013). Financial Literacy and Retirement Planning in Australia. *Numeracy*, 6 (2), 1–25. doi: 10.5038/1936-4660.6.2.7.

2 Agnew, J.R., Bateman, H. and Thorp, S. (2013). Superannuation Knowledge and Plan Behaviour. JASSA. *The Finsia Journal of Applied Finance*, 1, 45–50.

3 Agnew, J.R., Bateman, H. and Thorp, S. (2013). Work, Money, Lifestyle: Plans of Australian Retirees. JASSA. *The Finsia Journal of Applied Finance*, 1, 40–44.

4 Akter, S., D'Ambra, J., Ray, P. and Hani, U. (2013). Modelling the Impact of mHealth Service Quality on Satisfaction, Continuance and Quality of Life. *Behaviour & Information Technology*, 32 (12), 1225–1241. doi: 10.1080/0144929X.2012.745606.

5 Akter, S., Ray, P. and D'Ambra, J. (2013). Continuance of mHealth Services at the Bottom of the Pyramid: The Roles of Service Quality and Trust, *Electronic Markets*, 23 (1), 29–47. doi: 10.1007/s12525-012-0091-5.

6 Alai, D.H., Landsman, Z. and Sherris, M. (2013). Lifetime Dependence Modelling using the Truncated Multivariate Gamma Distribution. *Insurance: Mathematics and Economics*, 52 (3), 542–549. doi: 10.1016/j.insmatheco.2013.03.011.

7 Anstey, K.J. (2013). Current Challenges for Research in Neuroepidemiology. *Australasian Epidemiologist: Neuroepidemiology*, 20 (1), 2.

8 Anstey, K.J. (2013). Optimizing Cognitive Development over the Life Course and Preventing Cognitive Decline: Introducing the Cognitive Health Environment Life Course Model. *International Journal of Behavioral Development*. doi: 10.1177/0165025413512255. In press (available online November 2013).

9 Anstey, K.J., Bahar-Fuchs, A., Herath, P., Rebok, G.W. and Cherbuin, N. (2013). A 12-week Multidomain Intervention versus Active Control to Reduce Risk of Alzheimer's Disease: Study Protocol for a Randomized Controlled Trial. *Trials*, 14. doi: 10.1186/1745-6215-14-60.

10 Anstey, K.J., Cherbuin, N. and Herath, P. (2013). Development of a New Method for Assessing Global Risk of Alzheimer's Disease for use in Population Health Approaches to Prevention. *Prevention Science*, 14 (4), 411–421. doi: 10.1007/s11121-012-0313-2.

11 Anstey, K.J., Cherbuin, N., Eramudugolla, R., Sargent-Cox, K., Easteal, S., Kumar, R. and Sachdev, P. (2013). Characterizing Mild Cognitive Disorders in the Young-old over 8 years: Prevalence, Estimated Incidence, Stability of Diagnosis and Impact on IADLs. *Alzheimer's and Dementia*, 9 (6), 640–648. doi: 10.1016/j.jalz.2012.11.013.

12 Anstey, K.J., Sargent-Cox, K., Cherbuin, N. and Sachdev, P. (2013). Self-reported History of Chemotherapy and Cognitive Decline in Adults Aged 60 and Older: The PATH Through Life Project. *Journals of Gerontology: Medical Sciences*. doi: 10.1093/gerona/glt195. In press (available online December 2013).

13 Bakshi, A., Talaei-Khoei, A. and Ray, P. (2013). Adaptive Policy Framework: A Systemic Review. *Journal of Network and Computer Applications*, 36 (4), 1261–1271. doi: 10.1016/j.jnca.2012.12.007.

14 Bateman, H. and Kingston, G. (2013). Restoring a Level Playing Field for Defined Benefits Superannuation. JASSA. *The Finsia Journal of Applied Finance*, 4, 36–41.

15 Black, D.A., Wilson, L.A., O'Loughlin, K., Noone, J., Kendig, H. and Butcher, J. (2013). Housing Type, Location of Residence and Health Status in Australian Baby Boomers: Results from the Australian Baby Boomer (ABBA) Study. *Australasian Journal of Ageing*. doi: 10.1111/ajag.12119. In press (available online December 2013).

16 Blackburn, C. and Sherris, M. (2013). Consistent Dynamic Affine Mortality Models for Longevity Risk Applications. *Insurance: Mathematics and Economics*, 53 (1), 67–73. doi: 10.1016/j.insmatheco.2013.04.007.

17 Bleicher, K., Cumming, R.G., Naganathan, V., Seibel, M., Creasey, H., Le Couteur, D.G., Handelsman, D.J., Waite, L.M. and Blyth, F. (2013). Predictors of the Rate of BMD Loss in Older Men: Findings from the CHAMP Study. *Osteoporosis International*, 24 (7), 1951–1963. doi: 10.1007/s00198-012-2226-0.

18 Bunce, D., Bielak, A.A.M., Anstey, K.J., Cherbuin, N., Batterham, P.J. and Easteal, S. (2013). APOE Genotype and Cognitive Change in Young, Middle-aged and Older Adults Living in the Community. *Journal of Gerontology: Biological Sciences*. doi: 10.1093/gerona/glt103. In press (available online July 2013).

19 Bunce, D., Bielak, A.M., Cherbuin, N., Batterham, P.J., Wen, W., Sachdev, P.S. and Anstey, K.J. (2013). The Utility of Intraindividual Reaction Time Variability to Predict White Matter Hyperintensities: A Potential Assessment Tool for Clinical Contexts? *Journal of International Neurpsychological Society*, 19 (9), 971–976. doi: 10.1017/S1355617713000830.

20 Burns, R.A. and Machin, A.M. (2013). Psychological Wellbeing and the Diathesis-stress Hypothesis Model: The Role of Psychological Functioning and Quality of Relations in Promoting Subjective Well-being in a Life Events Study. *Personality and Individual Differences*, 54 (3), 321–326. doi: 10.1016/j.paid.2012.09.017.

21 Burns, R.A., Birrell, C.L., Steel, D., Mitchell, P. and Anstey, K.J. (2013). Alcohol and Smoking Consumption Behaviours in Older Australian Adults: Prevalence, Period and Socio-demographic Differentials in the DYNOPTA Sample. *Social Psychiatry and Psychiatric Epidemiology*, 48 (3), 493–502. doi: 10.1007/s00127-012-0558-x.

22 Burns, R.A., Butterworth, P., Luszcz, M. and Anstey, K.J. (2013). Stability and Change in Level of Probable Depression and Depressive Symptoms in a Sample of Middle and Older-aged Adults. *International Psychogeriatrics*, 25 (2), 303–309. doi: 10.1017/S1041610212001470.

23 Burns, R.A., Luszcz, M., Kiely, K., Butterworth, P., Browning, C., Mitchell, P. and Anstey, K.J. (2013). Gender Differences in the Trajectories of Late-life Depressive Symptomology and Probable Depression in the Years Prior to Death. *International Psychogeriatrics*, 25 (11), 1765–1773. doi: 10.1017/S1041610213001099.

24 Burton, E., Lewin, G., Clemson, L. and Boldy, D. (2013). Effectiveness of a Lifestyle Exercise Program for Older People Receiving a Restorative Home Care Service: Study Protocol for a Pragmatic Randomised Controlled Trial. *BMC Health Services Research*, 13 (419). doi: 10.1186/1472-6963-13-419.

25 Burton, E., Lewin, G., Clemson, L., and Boldy, D. (2013). Effectiveness of a Lifestyle Exercise Program for Older People Receiving a Restorative Home Care Service: A Pragmatic Randomized Controlled Trial. *Clinical Interventions in Ageing*, 2013 (8), 1591–1601. doi: 10.2147/CIA.S44614.

26 Byles, J., Forder, P., Grulich, A. and Prestage, G. (2013). It's Okay to Ask: Inclusion of Sexual Orientation Questions is Feasible in Population Health Surveys. *Australian and New Zealand Journal of Public Health*, 37 (4), 390–391. doi: 10.1111/1753-6405.12090.

27 Byles, J., Tavener, M., Parkinson, L., Warner Smith, P., Everingham, C. and Stevenson, D. (2013). Transforming Retirement: New Definitions of Life after Work. *Journal of Women and Aging*, 25 (1), 24–44. doi: 10.1080/08952841.2012.717855.

28 Cahill, S., Stancliffe, R., Clemson, L. and Durvasula, S. (2013). Reconstructing the Fall: Individual, Behavioural and Contextual Factors Associated with Falls in Individuals with Intellectual Disability. *Journal of Intellectual Disability Research*. doi: 10.1111/jir.12015. In press (available online February 2013).

29 Chen, H., Sherris, M., Sun, T. and Zhu, W. (2013). Living with Ambiguity: Pricing Mortality-linked Securities with Smooth Ambiguity Preferences. *Journal of Risk and Insurance*, 80 (3), 705–732. doi: 10.1111/j.1539-6975.2013.12001.x.

30 Chen, R., Clifford, A., Lang, L. and Anstey, K.J. (2013). Is Exposure to Second-hand Smoke Associated with Cognitive Parameters of Children and Adolescents? *Annals of Epidemiology*, 23 (10), 652–661. doi: 10.1016/j.annepidem.2013.07.001.

31 Cherbuin, N. and Anstey, K.J. (2013). Could Ignoring Higher Blood Sugar Levels in the Normal Range in Non-diabetics Compromise Cerebral Health? *Future Neurology*, 8 (1), 5–7. doi: 10.2217/fnl.12.86.

32 Chiarinni, G., Ray, P., Akter, S., Mesella, C. and Ganz, A. (2013). mHealth Technologies for Chronic Diseases and Elders: A Systematic Review. *IEEE Journal on Selected Areas of Communication 2013*, 31 (9), 6–18 doi: 10.1109/JSAC.2013.SUP.0513001.

33 Ching, A., Erdem, T. and Keane, M. (2013). Learning Models: An Assessment of Progress, Challenges and New Developments. *Marketing Science*, 32 (6), 913–938. doi: 10.1287/mksc.2013.0805.

34 Cowlishaw, S., Niele, S. Teshuva, K., Browning, C. and Kendig, H. (2013). Older Adults' Spirituality and Life Satisfaction: A Longitudinal Test of Social Support and Sense of Coherence as Mediating Mechanisms. *Ageing and Society*, 33 (7), 1243–1262. doi: 10.1017/S0144686X12000633.

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C2 JOURNAL ARTICLES: REFEREED JOURNAL, OTHER CONTRIBUTION

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8 Blackburn, C., Hanewald, K., Olivieri, A. and Sherris, M. (2013). Life Insurer Longevity Risk Management in a Multi-Period Valuation Framework. CEPAR Working Paper Series.

9 Cho, D., Hanewald, K. and Sherris, M. (2013). Risk Management and Payout Design of Reverse Mortgages. CEPAR Working Paper Series.

10 Chomik, R. and Piggott, J. (2013). Asia in the Ageing Century: Part 1 – Population Trends, Research Brief. CEPAR, Sydney, Australia.

11 Chomik, R. (2013). Asia in the Ageing Century: Part 2 – Retirement Income. CEPAR, Sydney, Australia.

12 Chomik, R. (2013). Asia in the Ageing Century: Part 3 – Healthcare. CEPAR, Sydney, Australia.

13 Chomik, R., Piggott, J. and Lu, B. (2013). New ways of thinking about retirement and employment: Trends, barriers, and policy options (Chinese text). CEPAR, Sydney, Australia.

14 Dobrescu, L.I. (2013). To Love or to Pay: Savings and Health Care in Older Age. CEPAR Working Paper Series.

15 Fong, J.H., Sherris, M. and Shao, A.W. (2013). Multi-state Actuarial Models of Functional Disability. CEPAR Working Paper Series.

16 Hanewald, K., Post, T. and Sherris, M. (2013). Portfolio Choice in Retirement: What is the Optimal Home Equity Release Product? CEPAR Working Paper Series.

17 Holzmann, R. and Koettle, J. (2013). A Provocative Perspective on Population Aging and Old-age Financial Protection. IZA Discussion Paper.

18 Kudrna, G., Tran, C. and Woodland, A. (2013). The Dynamic Fiscal Effects of Demographic Shift in Australia. CEPAR Working Paper Series.

19 Kumru, C.S. and Sarntisart, S. (2013). Implications of Alternative Banking Systems. CEPAR Working Paper Series.

20 Kumru, C.S. and Sarntisart, S. (2013). Optimal Taxation in Life-cycle Economies in the Presence of Commitment and Temptation Problems. CEPAR Working Paper Series.

21 Loh, V. and Kendig, H. (2013). Productive Engagement across the Life Course: Paid Work and Beyond. CEPAR Working Paper Series.

22 Lucas, N. and Kendig, H. (2013). Individuals, Families and the State: Changing Responsibilities in an Ageing Australia. CEPAR Working Paper Series.

23 Magnani, E. and Zhu, R. (2013). Education and the Household: Intergenerational Transmission of Education in China, 1990–2000. NILS Working Paper Series.

24 Maruyama, S. and Johar, M. (2013). Do Siblings Free-ride in 'Being There' for Parents? CEPAR Working Paper Series.

25 Mavromaras, K. and Zhu, R. (2013). Labour Force Participation of Mature Age Men in Australia: The Role of Spousal Participation. CEPAR Working Paper Series.

26 Meyricke, R. and Sherris, M. (2013). The Determinants of Mortality Heterogeneity and Implications for Pricing Underwritten Annuities. CEPAR Working Paper Series.

27 Pitacco, E. (2013). Biometric Risk Transfers in Life Annuities and Pension Products: A Survey. CEPAR Working Paper Series.

28 Shao, A.W., Sherris, M. and Hanewald, K. (2013). Disaggregated House Price Indices. CEPAR Working Paper Series.

29 Sherris, M. and Meyricke, R. (2013). Longevity Risk, Cost of Capital and Hedging for Life Insurers Under Solvency II. CEPAR Working Paper Series.

30 Sherris, M. and Zhou, Q. (2013). Model Risk, Mortality Heterogeneity and Implications for Solvency and Tail Risk. CEPAR Working Paper Series.

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RESEARCH OUTPUTS

31 Simpson, D.P., Turner, I.W., Strickland, C.M. and Pettitt, A.N. (2013). Scalable Iterative Methods for Sampling from Massive Gaussian Random Vectors. Cornell University Working Paper.

32 Strickland, C.M., Burdett, R.,Denham, R., Kohn, R. and Mengersen, K. (2013). A Bayesian Changepoint Methodology for High Dimensional Multivariate Time Series and Space-time Data: A Study of Structural Change using Remotely Sensed Data. Cornell University Working Paper.

33 Wong, A., Sherris, M. and Stevens R. (2013). Managing Life Insurer Risk and Profitability: Annuity Market Development using Natural Hedging Strategies. CEPAR Working Paper Series.

34 Wu, S., Stevens, R. and Thorp, S. (2013). Die Young or Live Long: Modeling Subjective Survival Probabilities. CEPAR Working Paper Series.

OTHER OUTPUTS

1 Booth, H. and Rioseco, P. (2013). Older Australians Providing Informal Care. National Seniors Australia: Productive Ageing Centre Fact Sheet. January 2013.

2 Booth, H. and Crawford, H. (2013). Staying Connected: Social Engagement and Wellbeing Among Mature-age Australians. National Seniors Australia: Productive Ageing Centre Report. March 2013.

3 Browne, B. (2013). Long Term Care Insurance: A Survey of Providers' Attitudes. National Seniors Australia: Productive Ageing Centre Fact Sheet. May 2013.

4 CEPAR. (2013). Population Ageing Fact Sheet. CEPAR, Sydney, Australia.

5 Cherbuin, N., Lamont, A., Mortby, M. and Anstey, K.J. (June 2013). Poster Presentation. Sulcal Width, Not Cortical Volume, is Associated with Physical Activity and Cognition. Human Brain Mapping Conference. Seattle, USA.

6 Holzmann, R., Mulaj, F. and Peroti, V. (2013). Financial Capability in Low and Middle Income Countries: Measurement and Effectiveness. Knowledge Management Report on the Russia Trust Fund on Financial Literacy and Education. The World Bank.

7 Meyricke, R. and Sherris, M. (May 2013). Poster Presentation. Optimal Longevity Risk Management under Solvency II. Actuaries Summit. Sydney, Australia.

8 Rioseco, P. (November 2013). Poster Presentation. Social Connectedness and Retirement Status: Results from SNAP. 66th Annual Gerontological Society of America Scientific Meeting. New Orleans, USA.

9 Rioseco, P. (November 2013). Poster Presentation. The Effect of Subjective Life Expectancy on Change in Expected Retirement Age Over Time. Health, Education and Retirement Over the Prolonged Life Cycle International Conference. Vienna, Austria.

10 Utomo, I., Utomo, A., Reimondos, A. McDonald, P. and Hull, T. (August 2013). Poster Presentation. Politics, Religion, and the Internet: A Survey of Attitudes and Aspirations of the Indonesian Youth Bulge. The XXVII IUSSP International Population Conference. Busan, South Korea.

E1 CONFERENCE: FULL WRITTEN PAPERS IN REFEREED PROCEEDINGS

1 Browne, B. (November 2013). Long Term Care Insurance: A Survey of Insurer Attitudes. Proceedings of the 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia, 70–74.

2 Feng, J. (July 2013). The Effect of Tax Incentives on Salary Sacrificing to Superannuation. Proceedings of the 42nd Australian Conference of Economists. Perth, Australia.

3 Ghorai, K., Mohanti, A., Bakshi, A., Saha, S. and Ray, P. (January 2013). A Hybrid Case Based Recommender in mHealth for Smoking Cessation. Proceedings of the Hawaii International Conference on System Sciences. Maui, Hawaii.

4 Ying, W., Ray, P. and Lewis, L. (January 2013). A Methodology for Creating Ontology-based Multi-agent Systems with an Experiment in Financial Application Development. Proceedings of the Hawaii International Conference on System Sciences. Maui, Hawaii.

E4 UNPUBLISHED CONFERENCE PRESENTATIONS

1 Ackland, R., Windsor, T., Raissi, M., Rioseco, P., Chen, L., Sadeghi, M. and **Booth, H.** (June 2013). The Social Networks and Ageing Project (SNAP): Integrated Online and Offline Research Methods in the Study of Social Networks in a Mature-age Population. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

2 Agnew, J., **Bateman, H.,** Eckert, C., Iskhakov, I., Louviere, J., Satchell, S. and Thorp, S. (2013). Judging the Quality of Online Financial Advice: The Good, the Bad and the Adviser. Presented at the 2013 Boulder Summer Conference on Consumer Financial Decision Making, Boulder, USA, May 2013 and the 21st Annual Colloquium of Superannuation Researchers, Sydney, Australia, July 2013.

3 Alai, D., **Gaille, S.** and Sherris, M. (June 2013). Modelling Causal Mortality and the Impact of Cause-Elimination. AFIR/ERM PBS LIFE Colloquium. Lyon, France.

4 **Alai, D.,** Ignatieva, K. and Sherris, M. (2013). Modelling Longevity Risk: Generalization of the Olivier-Smith Model. Presented at the AFIR/ERM PBS LIFE Colloquium. Lyon, France, June 2013 and at the CPS Seminar Series, Sydney, Australia, August 2013.

5 **Alai, D.,** Landsman, Z. and Sherris, M. (2013). Multivariate Tweedie Lifetimes: The Impact of Dependence. Presented at the ASTIN Colloquium, The Hague, The Netherlands, May 2013, and the International Congress on Insurance: Mathematics and Economics, Copenhagen, Denmark, July 2013.

6 **Alsalami, M.,** Forder, P., Byles, J., Hasnat, M. and McEvoy, M. (November 2013). Medications use and Mental Health in Women Aged 76–81 Years. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

7 Anstey, K.J. (April 2013). Chemotherapy and Cognition in the 60+ Cohort. The Personality and Total Health Through Life (PATH) Study Bi-annual Conference. Canberra, Australia.

8 **Sargent-Cox, K.** and Anstey, K.J. (November 2013). Indirect Influence of Expectations of Ageing on the Relationship between Age-stereotypes and Sedentary Behaviour. 66th Annual Gerontological Society of America Scientific Meeting. New Orleans, USA.

9 Anstey, K.J. (October 2013). Cognitive Decline in Patients with Diabetes. Directions in Diabetes 2013. Sydney, Australia.

10 Anstey, K.J. (September 2013). The Body Brain Life Program: Baseline Characteristics of an Online Intervention to Reduce Alzheimer's Disease Risk. Dementia Research Forum 2013. Brisbane, Australia.

11 Ashby-Mitchell, K. (November 2013). Cognitive-Impairment-Free Life Expectancy for Australia and Seven Latin American and Caribbean Countries. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

12 Atalay, K. and Barrett, G. (July 2013). The Impact of Age Pension Eligibility Age on Retirement and Program Dependence: Evidence from an Australian Experiment. 1st CEPAR International Conference. Sydney, Australia.

13 Bateman, H. (May 2013). Keynote Speaker. The Changing Savings Landscape. Australian Retail Deposits Conference. Sydney, Australia.

14 Bateman, H. (December 2013). Navigating the Retirement Risk Zone: A Consumer Perspective. Negotiating the Retirement Risk Zone Conference. Sydney, Australia.

15 Bateman, H. (March 2013). A Long Way to the Finish Line. Conference of Major Superannuation Funds (CMSF 2013). Brisbane, Australia.

16 Bateman, H. (November 2013). Information Provision: Why this Matters for Pre-funded Pensions. CEPAR-RIPPA Conference Pre-funded Pension Plans: Theory, Practice, and Issues. Does Pre-funding Work? Sydney, Australia.

17 Bateman, H. and Liu, K. (2013). Population Ageing and Pension Reform in China: Racing Against the Demographic Clock. Presented at the CEPAR Brookings-Tsinghua Center for Public Policy Workshop. Beijing, China, December 2013 and the Chinese Social Policy Workshop. Sydney, Australia, September 2013.

18 Bateman, H., Deetlefs, J., Dobrescu, L.I., Newell, B., Ortmann, A. and Thorp, S. (2013). Just Interested or Getting Involved: An Analysis of Superannuation Attitudes and Actions. Presented at the Paul Woolley Annual Conference, Sydney, Australia, October 2013 and The AIST/ACFS Superannuation Research Symposium, Melbourne, Australia, December 2013.

19 Bateman, H., Dobrescu, L.I., Newell, B., Ortmann, A. and Thorp, S. (2013). As Easy as Pie: How Retirement Savers use Prescribed Investment Disclosures. Presented at the 2013 Boulder Summer Conference on Consumer Financial Decision Making, Boulder, USA, May 2013 and the 21st Annual Colloquium of Superannuation Researchers, Sydney, Australia, July 2013.

20 Bateman, H., Eckhert, C., Geweke, J., Iskhakov, F., Louviere, J., Satchell, S. and Thorp, S. (2013). Disengagement: A Partial Solution to the Annuity Puzzle. Presented at the Netspar International Pension Workshop, Amsterdam, The Netherlands, January 2013; the Marketing and Public Policy Conference, Washington D.C., USA, May 2013; Keynote Speaker. National Employment Savings Trust (NEST) Annual Symposium, London, UK, June 2013 and the 1st CEPAR International Conference, Sydney, Australia, July 2013.

21 Booth, H. (August 2013). A Comparison of the Accuracy of Coherent Mortality Forecasts for Subpopulations Defined by Sex and State – Which Matters Most? The XXVII IUSSP International Population Conference. Busan, South Korea.

22 Booth, H. (November 2013). Coherent Mortality Forecasts for Australia by Sex and State. Workshop on Innovation in Australian Mortality Research: Analysis, Models and Methods. Canberra, Australia.

23 Booth, H. (November 2013). Data Availability, Data Quality and the Probability of Survival at Very Old Ages. Australasian Mortality Data Interest Group (AMDIG) Meetings. Canberra, Australia.

24 Booth, H. and Pennec, S. (December 2013). Kinship Modelling – Who will care for me when I'm 64? 4th Conference of the International Microsimulation Association. Canberra, Australia.

25 Booth, H. and Tickle, L. (November 2013). Grey Expectations: How Long Will we Live? 46th Australian Association of Gerontology National Conference. Sydney, Australia.

26 Booth, H. and Windsor, T. (June 2013). Profiles of Social Network Characteristics among Older Australian Adults: Findings from SNAP. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

27 Booth, H., Nepal, B., Pennec, S. and Edgar, B. (2013). DYNOPTA-SIM: A Dynamic Microsimulation Model of Age-related Disability. Presented at the Care Life Cycle Monthly Meeting, Centre for Population Change, Southampton, UK, October 2013 and the 4th Conference of the International Microsimulation Association. Canberra, Australia, December 2013.

28 Booth, H., Rioseco, P. and Crawford, H. (2013). Demographic Differences in the Association between Social Networks and Self-rated Health in Later Life. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013; The XXVII IUSSP International Population Conference, Busan, South Korea, August 2013 and the Health, Education and Retirement Over the Prolonged Life Cycle International Conference, Vienna, Austria, November 2013.

29 Brady, J., O'Loughlin, K. and Smith-Merry, J. (2013). Understanding the Meaning of Living with Parkinson's Disease in an Australian Community Setting from the Perspective of the Person Diagnosed and their Partner/Carer. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013 and the 12th National Conference of Emerging Researchers in Ageing, Sydney, Australia, November 2013.

30 Burns, R.A. (April 2013). Does Religiosity Really Contribute to Health Outcomes in a General Population? The Personality and Total Health Through Life (PATH) Study Bi-annual Conference. Canberra, Australia.

31 Burns, R.A. (April 2013). Resilience in the PATH Study: Implications for Health, Wellbeing and Suicidality. The Personality and Total Health Through Life (PATH) Study Bi-annual Conference. Canberra, Australia.

32 Burns, R.A. (July 2013). Assessing National Accounts of Population Wellbeing: The Importance of Positive Dimensions of Psychological Wellbeing. 1st CEPAR International Conference. Sydney, Australia.

33 Burns, R.A. (June 2013). Flourishing Across the Lifespan: Does the Absence of Mental Health Really Reflect Psychological Health? The 14th International Congress of the International Federation of Psychiatric Epidemiology. Leipzig, Germany.

34 Burns, R.A. (June 2013). The Role of Physical Health in Explaining Associations between Mental Health and Wellbeing with Mortality. The 14th International Congress of the International Federation of Psychiatric Epidemiology. Leipzig, Germany.

35 Burns, R.A. (November 2013). The Good Life: Full of Fun, Seems to be the Ideal. Australian Association of Gerontology National Conference. Sydney, Australia.

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RESEARCH OUTPUTS

36   Burns, R.A. and Anstey, K.J. (December 2013). Flourishing and Languishing Across the Lifespan: Does the Absence of Psychological Distress Matter? Australasian Society for Psychiatric Research (ASPR) 2013 Conference. Melbourne, Australia.

37   Burns, R.A. and Anstey, K.J. (December 2013). Re-examining the Terminal Decline Hypothesis in Mental Health and Wellbeing in Late Life. Australasian Society for Psychiatric Research (ASPR) 2013 Conference. Melbourne, Australia.

38   Butterworth, P. (May 2013). The Inter-relationship between Mental Health, Work and Retirement in Mature-age Australians: A Key to Effective Social, Welfare and Employment Policies? Rethinking Retirement: Actively Capturing the Vitality for Self and Society Workshop. Brisbane, Australia.

39   Capatina, E. and Hsu, M. (March 2013). Private Health Insurance over the Life-cycle in the Presence of Universal Health Insurance. Western Economic Association 10th Biennial Pacific Rim Conference. Tokyo, Japan.

40   Capatina, E., and Stavrunova, O. (July 2013). Health Shocks and Occupational Mobility. 1st CEPAR International Conference. Sydney, Australia.

41   Capatina, E., Keane, M. and Maruyama, S. (July 2013). Investment in Health over the Life-cycle. 1st CEPAR International Conference. Sydney, Australia.

42   Cherbuin, N. (May 2013). Old Age Mental Health: Life-long Risk Reduction is Key. Rotary Health Symposium. Canberra, Australia.

43   Cherbuin, N., Kumar, R., Sachdev, P. and Anstey, K.J. (July 2013). Dietary Minerals and Risk of Mild Cognitive Impairment: The PATH Through Life Study. Alzheimer's Association International Conference. Boston, USA.

44   Cherbuin, N. (December 2013). On the Difficult Art of Predicting Brain Ageing and Cognitive Decline. New Dimensions in Biomarkers Symposium, University of Canberra. Canberra, Australia.

45   Chomik, R. (May 2013). Pratical Isssues with Pension System Implementation in Australia. CEPAR Brookings-Tsinghua Center for Public Policy Workshop. Beijing, China.

46   Christelis, D. and Dobrescu, L.I. (June 2013). The Impact of Social Activities on Cognitive Ageing: Evidence from Eleven European Countries. 9th CSEF-IGIER Symposium on Economics and Institutions. Capri, Italy.

47   Christiani, Y., Byles, J. and Tavener, M. (November 2013). Hypertension, Obesity, and Hypercholesterolemia among Urban Indonesian Women. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

48   Clemson, L. (July 2013). Keynote Speaker. Opportunities: Ageing and Occupational Therapy Align. 25th National OT Australia Conference. Adelaide, Australia.

49   Clemson, L. (June 2013). Challenges in Implementing Person-Environment Approaches to Falls Prevention. Symposium on a Research and Policy Translation Partnership for Reducing Falls among Older People during the 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

50   Clemson, L. (June 2013). Improving Functional Independence for Older Adults through Occupational Therapy Discharge Planning: The Australian HOME Trial. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

51   Clemson, L., O'Connor, C., Brodaty, H., Gitlin, L., Pizzi, L., Jeon, Y. and Mioshi, E. (July 2013). Activities Instead of Drugs: A Novel Approach to Reducing Neuropsychiatric Behaviours in People with Dementia. 1st CEPAR International Conference. Sydney, Australia.

52   Cumming, R.G. (November 2013). Keynote Address. Public Health and Ageing in Sub-Saharan Africa – A Personal Perspective. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

53   Cumming, R.G., Blyth, F., Naganathan, V., Allman-Farinelli, M., Hirani, V. and Waern, R. (November 2013). A Snapshot of the Nutritional Adequacy of Men Participating in the Concord Health and Ageing in Men Project (CHAMP). 52nd National Scientific Conference of the Australian Society for Medical Research (ASMR). Ballarat, Australia.

54   Fan, X. (2013). Retiring Cold Turkey. Presented at the China Meeting of the Econometric Society (CMES), Beijing, China, June 2013; the Center for International Research on the Japanese Economy (CIRJE), University of Tokyo, Tokyo, Japan, June 2013 and the Econometrics Workshop, Beijing, China, August 2013.

55   Fan, X. (July 2013). A Ben-Porath Model with Labour Supply and Retirement. 1st CEPAR International Conference. Sydney, Australia.

56   Farag, I., Sherrington, C., O'Rourke, S., Ferreira, M., Lord, S.R., Close, J.C.T., Vogler, C.M., Deane, C.M., Cumming, R.G. and Howard, K. (November 2013). Health and Community Service use in Older Adults Recently Discharged from Hospital: Utilisation, Costs and Impact of a Home-exercise Intervention. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

57   Feng, J. (2013). The Effect of Employer Superannuation Contributions on Household Consumption and Saving. Presented at the 1st CEPAR International Conference, Sydeny, Australia, July 2013 and the 21st Annual Colloquium of Superannuation Researchers, Sydney, Australia, July 2013.

58   Fong, J.H., Shao, A.W., and Sherris, M. (2013). Multi-state Actuarial Models and Functional Disability. Presented at the 2013 Asia-Pacific Risk and Insurance Association Annual Conference, New York, USA, July 2013; the 21st Annual Colloquium of Superannuation Researchers, Sydney, Australia, July 2013; the 1st CEPAR International Conference, Sydney, Australia, July 2013 and the 48th Actuarial Research Conference, Philadelphia, USA, August 2013.

59   Fong, J.H. (November 2013). Ageing Asia and Pension Reforms: The Case of the Asian Tiger Economies. CEPAR-RIPPA Conference Pre-funded Pension Plans: Theory, Practice, and Issues. Does Pre-funding Work? Sydney, Australia.

60   Fung, M., Ignatieva, K. and Sherris, M. (June 2013). Systematic Mortality Risk: An Analysis of Guaranteed Lifetime Withdrawal Benefits in Variable Annuities. AFIR/ERM PBS LIFE Colloquium. Lyon, France.

61   Gaille, S., Alai, D.H. and Sherris, M. (December 2013). *Elimination de certaines causes de décès et projections.* Conference on Life Insurance. Hosted by the French Institute of Actuaries. Paris, France.

62   Gaille, S., Alai, D.H. and Sherris, M. (July 2013). Modelling Cause-of-Death Mortality and the Impact of Cause-elimination. International Congress on Insurance: Mathematics and Economics. Copenhagen, Denmark.

63   Gaille, S., Alai, D.H. and Sherris, M. (November 2013). Causes-of-Death Mortality: Impact of Cause-elimination and Links between the Causes. The Future of Human Longevity: Cardiovascular Health, Longer Lives. Ruschlikon, Switzerland.

64   Garabato, N. and Aranco, N. (July 2013). Ability to Work at Older Ages. 1st CEPAR International Conference. Sydney, Australia.

65   Ghorai, K., Jahan, S., Ray, P. and Chylinski, M. (December 2013). Mobile Phone Including Smart Phone based Persuasive System Design for Controlling Hypertension and Diabetes in Bangladesh. Australian Conference on Information Systems. Melbourne, Australia.

66 Ginnivan, N., Sargent-Cox, K.J., Levy, B. and Anstey, K.J. (2013). Transitioning Through Life Stages: Similarities and Differences in Self-perceptions of Ageing between Young and Old in Two Differing Cultures. Presented at the 20th IAGG World Congress of Gerontology and Geriatrics, Seoul, South Korea, June 2013 and the 1st CEPAR International Conference, Sydney, Australia, July, 2013.

67 Gong, C., Kendig, H., Harding, A., Miranti, R. and McNamara, J. (November 2013). National and Small Area Profiles of Economic Disadvantage and Advantage among Older Australians. 46th Australian Association of Gerontology National Conference. Sydney, Australia.

68 Hanewald, K. (May 2013). Equity Release Products, Product Design, Pricing and Risk Analysis. Actuaries Summit. Sydney, Australia.

69 Harmann, M., Oriani, R. and Bateman H. (July 2013). Fund Evolution in Australian Superannuation Industry: The Role of Leaders and Stakeholders for Superannuation Funds. 21st Annual Colloquium of Superannuation Researchers. Sydney, Australia.

70 Harris, M., Loxton, D., Sibbritt, D. and Byles, J. (November 2013). The Influence of Perceived Stress on the Onset of Arthritis in Women. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

71 Hewitt, J., Refshauge, K., Henwood, T., Goodall, S. and Clemson, L. (November 2013). Enabling Active Ageing in Residential Aged Care: Strength and Balance Exercise for the Prevention of Falls. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

72 Hirani, V., Blyth, F., Cumming, R.G., Naganathan, V., Handelsman, D.J., Le Couteur, D.G., Waite, L.M. and Seibel, M.J. (November 2013). Vitamin D Status and Associations with Intrusive and Chronic Pain in Older Australian Men: The Concord Health and Ageing in Men Project. 52nd National Scientific Conference of the Australian Society for Medical Research (ASMR). Ballarat, Australia.

73 Hirani, V., Cumming, R.G., Naganathan, V., Blyth, F., Handelsman, D.J., Le Couteur, D.G., Waite, L.M. and Seibel, M.J. (November 2013). Optimum Serum 25-hydroxyvitamin D Concentrations for Beneficial Health Outcomes, Physical Performance Measures, Reduced Risk of Disability, Falls and All-cause Mortality: The Concord Health and Ageing in Men Project. 52nd National Scientific Conference of the Australian Society for Medical Research (ASMR). Ballarat, Australia.

74 Hirani, V., Naganathan, V., Cumming, R.G., Blyth, F., Handelsman, D.J., Le Couteur, D.G., Waite, L.M. and Seibel, M.J. (June 2013). Associations between Frailty and Serum 25-Hydroxyvitamin D and 1, 25-Dihydroxyvitamin D Concentrations in Older Australian Men: The Concord Health and Ageing in Men Project. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

75 Hoang, C. (August 2013). Living Arrangements for the Elderly in Vietnam: Adaptation to Change. The XXVII IUSSP International Population Conference. Busan, South Korea.

76 Hoang, C. (July 2013). Informal Care and Support for the Elderly in Vietnam. 1st CEPAR International Conference. Sydney, Australia.

77 Holzmann, R. (August 2013). Social Insurance and Labor Markets: Behavior and Redistribution. 8th IZA / World Bank Conference on Employment and Development. Bonn, Switzerland.

78 Holzmann, R. (November 2013). Financial Literacy: Knowledge and other Constraints for Effective Participation in Pre-funded Pension Plans. CEPAR-RIPPA Conference Pre-funded Pension Plans: Theory, Practice, and Issues. Does Pre-funding Work? Sydney, Australia.

79 Hosseini-Chavoshi, M. and McDonald, P. (July 2013). Demographic and Socio-economic Determinants of Core Activity Need for Assistance among Older Australians. 1st CEPAR International Conference. Sydney, Australia.

80 Hosseini-Chavoshi, M., McDonald, P. and Abbasi-Shavasi, M.J. (August 2013). Tempo and Quantum of Fertility in Iran: An Application of the Synthetic Parity Progression Ratio Method. The XXVII IUSSP International Population Conference. Busan, South Korea.

81 Dobrescu, L.I. and Iskhakov, F. (2013). Bequest Motives in a Life-cycle Model with Intergenerational Interactions. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013; the Econometric Society Australasian Meeting, Sydney, Australia, July 2013; the 36th National Bureau of Economic Research Summer Institute, Cambridge, USA, July 2013 and the CPS Seminar Series, Sydney, Australia, December 2013.

82 Keane, M. (2013). Keynote Address. The Tax-Transfer System and Labor Supply. Presented to the Central Planning Bureau (CPB), New Micro-econometric Modelling Program, The Hague, The Netherlands, May 2013; and the Empirical Foundations of Supply-Side Economics, Chicago, USA, September 2013.

83 Keane, M. and Stavruova, O. (July 2013). Adverse Selection, Moral Hazard and the Demand for Medigap Insurance. 1st CEPAR International Conference. Sydney, Australia.

84 Kendig, H., O'Loughlin, K., Byles, J., Nazroo, J. and Loh, V. (June 2013). Social Class over the Life Span and Well-being for Ageing Baby Boomers in Australia. Paper presented at Symposium on Lucky and Unlucky Cohorts and Later Life – Contemporary and Future Old Age in Distinct Welfare Regimes during the 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

85 Kendig, H. (May 2013). Influences of Life Histories, Inequality and Social Life on Retirement. Rethinking Retirement: Actively Capturing the Vitality for Self and Society Workshop. Brisbane, Australia.

86 Kendig, H. (October 2013). Keynote Speaker. The Opportunities and Challenges of Ageing Australia. Australian Physiotherapy Association Conference. Melbourne, Australia.

87 Kendig, H. (November 2013). Keynote Address. Evidence-based Action for Ageing Well. 46th Australian Association of Gerontology National Conference. Sydney, Australia.

88 Kendig, H. (December 2013). Social Determinants of Health. Inequalities over the Life Course. National Social Determinants of Health Conference. Sydney, Australia.

89 Kendig, H., Browning, C. and Burns, R. (November 2013). Living Well with Chronic Disease in Australia: Trajectories to Death. 66th Annual Gerontological Society of America Scientific Meeting. New Orleans, USA.

90 Kendig, H., Browning, C. and Lucas, N. (November 2013). Ageing in Place in Australia: Longitudinal Predictors and Policy Influences. 66th Annual Gerontological Society of America Scientific Meeting. New Orleans, USA.

91 Kendig, H., Byles, J., O'Loughlin, K., Loh, V., Forder, P. and Mishra, G. (September 2013). Australian Baby Boomers, Inequalities in Wellbeing, and Social Determinants over the Life Course. PHAA 42nd Annual Conference. Melbourne, Australia.

92 Kendig, H. and Lucas, N. (April 2013). Individuals, Families, and the State: Changing Responsibilities in an Ageing Australia. 20th Biennial General Conference of the Association of Asian Social Science Research Councils. Cebu, Philippines.

93 Kiely, K.M. and Butterworth, P. (September 2013). Understanding the Dynamics of Welfare Receipt and Mental Health in Australia. Australian Social Policy Conference. Sydney, Australia.

94 Kiely, K.M., Luszcz, M.A. and Anstey, K.J. (June 2013). Do Hearing Aids Protect Against Cognitive Decline? Or Does Higher Cognitive Function Predict Hearing Aid Use? 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

95 Kiely, K.M., Luszcz, M.A. and Anstey, K.J. (November 2013). Dual Sensory Loss and Depression: The Importance of Hearing Loss, ADLs and Social Engagement. Symposium on Functional Consequences of Age-related Hearing Loss for Older Adults during the 66th Annual Gerontological Society of America Scientific Meeting. New Orleans, USA.

96 Kim, S., Sargent-Cox, K., Cherbuin, N. and Anstey, K.J. (June 2013). Comparison of Attitudes and Beliefs about Dementia and other Chronic Diseases in Australians and South Koreans. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

97 Kluge, F. and Hanewald, K. (July 2013). The Impact of Family Structure on Risk Attitudes and Economic Behaviour during the Financial Crisis. 21st Annual Colloquium of Superannuation Researchers. Sydney, Australia.

98 Kudrna, G. (November 2013). Does Pre-funding of Retirement Income Work? CEPAR-RIPPA Conference Pre-funded Pension Plans: Theory, Practice, and Issues. Does Pre-funding Work? Sydney, Australia.

99 Kudrna, G. and Woodland, A. (April 2013). Macroeconomic and Welfare Effects of the 2010 Changes to Mandatory Superannuation. 18th Australasian Macroeconomic Workshop. Canberra, Australia.

100 Kudrna, G. and Woodland, A. (July 2013). Progressive Tax Changes to Superannuation in a Lifecycle Framework. 21st Annual Colloquium of Superannuation Researchers. Sydney, Australia.

101 Kudrna, G., Tran, C. and Woodland, A. (2013). The Dynamic Fiscal Effects of Demographic Shift in Australia. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013 and the University of Pardubice, Pardubice, Czech Republic, September 2013.

102 Kumru, C.S., Piggott, J. and Thanopoulos, A. (July 2013). Optimal Capital Income Taxation with Means-tested Benefits? 1st CEPAR International Conference. Sydney, Australia.

103 Kumru, C.S., Piggott, J. and Thanopoulos, A. (August 2013). Resource Testing and Self-control Problems. Asian Meeting of the Econometric Society. Singapore.

104 Lai, A. (August 2013). Default Investment Strategies for DC Pension Plans. National Honours Colloquium. Sydney, Australia.

105 Lo, T., Parkinson, L., Cunich, M. and Byles, J. (2013) The Cost of Arthritis: A Micro-costing Approach. Presented at the International Health Economics Association (iHEA) 9th World Congress, Sydney, Australia, July 2013 and the 1st CEPAR International Conference, Sydney, Australia, July 2013.

106 Lo, T., Parkinson, L., Cunich, M. and Byles, J. (June 2013). Agreement Study between Self-reported Doctor-diagnosed Arthritis and Joint Symptoms. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

107 Loh, V. (July 2013). Social and Demographic Determinants of Productive Engagement by Older Australians. 1st CEPAR International Conference. Sydney, Australia.

108 Loh, V. and Kendig, H. (July 2013). Socioeconomic and Demographic Determinants of Future Engagement in Paid Work and other Productive Activities. 10th Industrial and Organisational Psychology Conference. Perth, Australia.

109 Loh, V. and Kendig, H. (June 2013). Ageing Productively: Longitudinal Patterns among Older Australians. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

110 Loh, V. and O'Loughlin, K. (November 2013). Older Adults with Multiple Chronic Illnesses in Australia: Who are they? 66th Annual Gerontological Society of America Scientific Meeting. New Orleans, USA.

111 Loh, V., Sargent-Cox, K. and Kendig, H. (November 2013). Psychosocial Determinants of Subjective Wellbeing in Later Life. 46th Australian Association of Gerontology National Conference. Sydney, Australia.

112 Lu, B. (December 2013). Superannuation in Australia. CEPAR-Chinese Academy of the Social Sciences Workshop on Social Security Reforms. Beijing, China.

113 Lu, B. (November 2013). Prefunding in China? CEPAR-RIPPA Conference Pre-funded Pension Plans: Theory, Practice, and Issues. Does Pre-funding Work? Sydney, Australia.

114 Lu, B., He, W. and Piggott, J. (May 2013). Should China Introduce a Social Pension? CEPAR Brookings-Tsinghua Center for Public Policy Workshop. Beijing, China.

115 Lu, B., Yang, Y., Piggott, J. and Hong, M. (July 2013). How do People Predict their Life Expectancy? Results from Rural China. 1st CEPAR International Conference. Sydney, Australia.

116 Lusardi, A., Michaud, P. and Mitchell, O.S. (July 2013). Plenary Presentation. Optimal Financial Knowledge and Wealth Inequality. 21st Annual Colloquium of Superannuation Researchers. Sydney, Australia.

117 Magnani, E. (2013). Intra-household Effects of Population Ageing: Women, Mothers and Carers in China. Presented at the 9th Eurasia Business and Economics Society Conference, Rome, Italy, January 2013 and the CEPAR-Zhejiang University joint Workshop, Hangzhou, China, May 2013.

118 Magnani, E. (2013). Intergenerational Transmission of Education in China and the Rural-urban Divide: Three Areas of Concern. Presented at the CEPAR-South Western University of Finance and Economics Joint Workshop, Chengdu, China, December 2013 and the CEPAR-Chinese Academy of the Social Sciences Workshop on Social Security Reforms, Beijing, China, December 2013.

119 Magnani, E. (December 2013). Older Workers' Labour Market Performance: Integrating Labour Market's Supply-side and Demand-side Responses to Structural Change. CEPAR Brookings-Tsinghua Center for Public Policy Workshop. Beijing, China.

120 Magnani, E. and Zhu, R. (2013). Dispersion, Evolution and Determination: Intergenerational Transmission of Education in China 1990–2000. Presented at The 9th Australasian Development Economics Workshop, Canberra, Australia, June 2013 and the 5th International Symposium on Human Capital and the Labour Market, Beijing, China, December 2013.

121 Majeed, T., Forder, P. and Byles, J. (November 2013). Workforce Participation Patterns in Young and Middle Age Women – Impact of Chronic Diseases and Competing Activities. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

122 Maruyama, S. and Heinesen, E. (April 2013). On Returns to Birthweight. 4th Australasian Workshop on Econometrics and Health Economics. Launceston, Australia.

123 Mauryama, S. and Heinesen, E. (2013). Understanding Returns to Birthweight. Presented at the CAER 10th Summer Workshop in Health Economics, Sydney, Australia, January 2013; Osaka University, Osaka, Japan, March 2013; 9th World Congress on Health Economics, Sydney, Australia, August 2013; 67th European Meeting of the Econometric Society, Gothenburg, Sweden, August 2013; Waseda University, Tokyo, Japan, September 2013; Japanese Economic Association Autumn Meeting, Tokyo,

Japan, September 2013; 22nd European Workshop on Econometrics and Health Economics, Rotterdam, The Netherlands, September 2013 and at Lancaster University, Lancaster, UK, October 2013.

124 Mavromaras, K., and Zhu, R. (2013). Labour Force Participation of Mature Age Men in Australia: The Role of Spousal Participation. Presented at the CEPAR-Zhejiang joint Workshop, Hangzhou, China, May 2013 and the Econometric Society Australasian Meeting, Sydney, Australia, July 2013.

125 McDonald, P. (December 2013). The Evolution of Population and Family Policy in Australia. East-West Center-Korean Institute for Health and Social Affairs Conference on Low Fertility. Honolulu, USA.

126 McDonald, P. (May 2013). Change in Demography, the Scientific Study of Population. Change Symposium. Canberra, Australia.

127 McDonald, P. (November 2013). International Perspectives on Low Fertility. Family, Gender and Generations: Permanencies and Changes Conference. Campinas, Brazil.

128 McDonald, P. (October 2013). Keynote Speaker. The Changing Demography of Australia: What Happens when the Baby-boomers Retire? Migration Institute of Australia National Conference. Canberra, Australia.

129 Meyricke, R. and Sherris, M. (July 2013). Private Retirement Income Streams and the State Pension System: An Economic Analysis of Alternative Policies. 1st CEPAR International Conference. Sydney, Australia.

130 O'Loughlin, K., Alpass, F., Keeling, S. and Kendig, H. (June 2013). Reflections on Australian and New Zealand Policy Initiatives in the Interface between Work and Care. Symposium on Global Approaches to Policy Supporting Work and Care in Late Middle Age at the 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

131 O'Loughlin, K., Loh, V. and Kendig, H. (July 2013). The Interrelations between Caregiving, Paid Work, and Health Status for Australia's Baby Boomers. 1st CEPAR International Conference. Sydney, Australia.

132 O'Loughlin, K., Loh, V. and Kendig, H. (June 2013). Care-giving, Paid Work and Health Status among Australia's Baby Boomers. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

133 Piggott, J. and Whitehouse, E. (2013). Intergenerational Solidarity and Population Ageing: Attitudes in Europe. Presented at the CEPAR – South Western University of Finance and Economics Joint Workshop (Keynote Address), Chengdu, China, December 2013 and the CEPAR-Chinese Academy of the Social Sciences Workshop on Social Security Reforms, Beijing, China, December 2013

134 Piggott, J. (December 2013). Demographic Shift, Intergenerational Solidarity and Elders' Care. CEPAR-South Western University of Finance and Economics Joint Workshop. Chengdu, China.

135 Piggott, J. (December 2013). The Lump-of-Labour Fallacy: Retirement Age and Youth Employment. CEPAR Brookings-Tsinghua Center for Public Policy Workshop. Beijing, China.

136 Piggott, J. and Mitchell, O.S. (September 2013). Population Ageing and Workplace-related Pensions. Harvard-CEPAR Workshop on the Economics of Population Ageing. Cambridge, USA.

137 Qu, J. (August 2013). A Productivity and Efficiency Study of the Australian Superannuation Industry: the Impact of Competition Constraint. National Honours Colloquium. Sydney, Australia.

138 Raftery, A., Ferguson, A. and Bateman, H. (July 2013). Cost, Investment Performance and Asset Allocation of Superannuation Funds in Australia. 21st Annual Colloquium of Superannuation Researchers. Sydney, Australia.

139 Raissi, M. and Ackland, R. (July 2013). Australian Seniors Online: Evidence from Facebook. 1st CEPAR International Conference. Sydney, Australia.

140 Ray, P. (December 2013). Using ICF to Understand Attitude of Community Dwelling Elderly Towards Communication and Education Technology in New Delhi, India. Health Systems in Asia: Equity, Governance and Social Impact. Singapore.

141 Ray, P. (March 2013). Keynote Speaker. Towards Ubiquitous Healthcare in the World: mHealth Perspective. Indian Conference on Medical Informatics and Telemedicine. Kharagpur, India.

142 Rioseco, P. (July 2013). Subjective Time to Retirement in Older Workers: The Role of Social Connectedness. 1st CEPAR International Conference. Sydney, Australia.

143 Rioseco, P. (June 2013). Social Connectedness and Retirement Status: Age Patterns and Age. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

144 Rioseco, P. and Booth, H. (June 2013). Who uses Online Social Networking? Offline Social Connectivity Determinants of Online Activity. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

145 Sargent-Cox, K.A., Donelly, C., Vangas, T., Aitken, C. and Anstey K.J. (July 2013). Indirect Influences of Expectations of Ageing on the Relationship between Age-stereotypes and Sedentary Behaviour. 1st CEPAR International Conference. Sydney, Australia.

146 Sargent-Cox, K., Cherbuin, N., Morris, L., Butterworth, P. and Anstey, K.J. (April 2013). The Effect of Health Behaviour Change on Self-rated Health across the Adult Life: A Longitudinal Study. The Personality and Total Health Through Life (PATH) Study Bi-annual Conference. Canberra, Australia.

147 Shah, T., Rabhi, F. and Ray, P. (October 2013). OSHCO: A Cross-Domain Ontology for Semantic Interoperability across Medical and Oral Health Domains. IEEE Healthcom 2013. Lisbon, Portugal.

148 Shah, T., Rabhi, F., Ray, P. and Taylor, K. (December 2013). Enhancing Automated Decision Support across Medical and Oral Health Domains with Semantic Web Technologies. Australian Conference on Information Systems. Melbourne, Australia.

149 Shao, A.W., Sherris, M. and Hanewald, K. (2013). Reverse Mortgage Pricing and Risk Analysis Allowing for Idiosyncratic House Price Risk and Longevity Risk. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013; the 9th International Longevity Risk and Capital Markets Solutions Conference, Beijing, China, September 2013 and the SEM Seminar, China Center of Insurance and Risk Management, Tsinghua University, Beijing, China, September 2013.

150 Sherris, M. (September 2013). Longevity and Morbidity Projections. Harvard-CEPAR Workshop on the Economics of Population Ageing. Cambridge, USA.

151 Sherris, M. and Cho, D. (January 2013). Portfolio Selection for Stocks in ASX: An Application of Multiple Criteria Decision Making. Western Risk and Insurance Association Annual 47th Meeting. Las Vegas, USA.

152 Sherris, M., and Qiao, S. (February 2013). Managing Systematic Mortality Risks with Group Self Pooling and Annuitisation Schemes. National Conference on Recent Advances in Statistics with Application to Finance and Actuarial Science. Rajasthan, India.

153 Sherris, M., Cho, D. and Hanewald, K. (2013). Risk Management and Payout Design of Reverse Mortgages. Presented at the Western Risk and Insurance Association Annual 47th Meeting, Las Vegas, USA, January 2013; the National Conference on Recent Advances in Statistics with Application to Finance and Actuarial Science, Rajasthan, India, February 2013 and the 1st International Conference, Sydney, Australia, July 2013.

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RESEARCH OUTPUTS

154 Sun, Y. (August 2013). Optimal Consumption-Investment for Retired Individuals under Longevity Risk. National Honours Colloquium. Sydney, Australia.

155 Thristiawati, S. (July 2013). Economic Wellbeing of Older Persons in Indonesia: Socio-cultural Dimension. 1st CEPAR International Conference. Sydney, Australia.

156 Tran, C. (February 2013). Fiscal Policy as a Temptation Control Policy. The 31st Australasian Economic Theory Workshop. Brisbane, Australia.

157 Tran, C. (July 2013). Temptation and Taxation with Elastic Labour. Western Economic Association International 88th Annual Conference. Seattle, USA.

158 Tran, C. (July 2013). The Macroeconomics of Health Savings Accounts. 19th International Conference in Computing in Economics and Finance. Vancouver, Canada.

159 Tran, C. and Woodland, A. (November 2013). Trade-offs in Means-tested Pension Design. Asian-Pacific Conference on Economic Dynamics. Ho Chi Minh City, Vietnam.

160 Tran, C. and Chuang, T. (2013). Ageing, Capital Accumulation and Economic Growth. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013 and the 21st Annual Colloquium of Superannuation Researchers, Sydney, Australia, July 2013.

161 Utomo, A., Utomo, I., McDonald, P., Reimondos, A. and Hull, T. (August 2013). Transition into Marriage in Greater Jakarta: Courtship, Parental Influence and Self-choice Marriage. The XXVII IUSSP International Population Conference. Busan, South Korea.

162 Utomo, I., McDonald, P., Reimondos, A., Utomo, A. and Hull, T. (August 2013). Life Situations of Young Fathers in Greater Jakarta, Indonesia. The XXVII IUSSP International Population Conference. Busan, South Korea.

163 Waern, R., Cumming, R.G, Naganathan, V., Blyth, F., Reid, J., Allman-Farinelli, M. and Hirani, V. (2013). The Nutritional Profile of Older Men Living in Sydney, Australia: A Preliminary Analysis of Data from the Concord Health and Ageing in Men Project (CHAMP). Presented at the 20th IAGG World Congress of Gerontology and Geriatrics, Seoul, South Korea, June 2013 and the 1st CEPAR International Conference, Sydney, Australia, July 2013.

164 Waern, R., Cumming, R.G., Naganathan, V., Blyth, F., Allman-Farinelli, M. and Hirani, V. (November 2013). Diet History Questionnaire for Older Men: Development, Use and Preliminary Evaluation. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

165 Wales, K., Clemson, L., Lannin, N.A., Cameron I.D. and Salkeld, G. (July 2013). Cost Effectiveness of Occupational Therapy Services for Older Adults: Planning, Implementing and Preliminary Results. 1st CEPAR International Conference. Sydney, Australia.

166 Wesson, J.B., Clemson, L., Reppermund, S. and Brodaty, H. (July 2013). Measuring Performance of Everyday Tasks and Functional Cognition in Older People: Preliminary Findings of Sydney Memory and Ageing Sub-study. 1st CEPAR International Conference. Sydney, Australia.

167 Wesson, J.B., Clemson, L., Reppermund, S. and Brodaty, H. (November 2013). Enabling Function: How do we Measure Performance in Complex Everyday Activities to Estimate Functional Cognition in Older Adults? A Systematic Review and Evaluation of Measurement Properties. 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

168 Windsor, T. (November 2013). Retirement Village Living: Who Considers Relocation and what Characteristics of Retirement Villages are seen as Important? Living Well Longer: Research in Ageing in the Illawarra. AAG Research Symposium. Wollongong, Australia.

169 Windsor, T. and Luszcz, M. (November 2013). Longitudinal Changes in Positive and Negative Affect among the Oldest-old. Gerontological Society of America Annual Scientific Meeting. New Orleans, USA.

170 Windsor, T. and Luszcz, M. (November 2013). Volunteering, Mental Health and Social Engagement among the Oldest-old. Gerontological Society of America Annual Scientific Meeting. New Orleans, USA.

171 Wong, A., Sherris, M. and Stevens, R. (2013). Managing Life Insurer Risk and Profitability: Annuity Market Development Using Natural Hedging Strategies. 1st CEPAR International Conference. Sydney, Australia, July 2013 and 21st Annual Colloquium of Superannuation Researchers, Sydney, Australia, July 2013.

172 Woodland, A. and Bruins, M. (June 2013). Estimation of Labour Supply Models with Grouped Data. Workshop in Honour of Jan Magnus. Tilburg, The Netherlands.

173 Woodland, A. and Piggott, J. (September 2013). Taxation and Demographic Change. Harvard-CEPAR Workshop on the Economics of Population Ageing. Cambridge, USA.

174 Woodward, L. (July 2013). Comparing the Perceptions and Feelings of Older Men and Women after Having a Fall and Lower Limb Fracture: A Qualitative Study. 1st CEPAR International Conference. Sydney, Australia.

175 Woodward, L., Clemson, L., Sherrington, C. and Willis K. (November 2013). The Perceptions of Older People on Exercise and Participation: Do Men and Women's Views Differ? 12th National Conference of Emerging Researchers in Ageing. Sydney, Australia.

176 Woodward, L., Sherrington, C., Clemson, L., Moseley, A., Lord, S. and Cameron, I. (October 2013). Gender Influence on Physical Functioning and Recovery among Older People after Hip Fracture. Australia Physiotherapy Association Conference 2013: 'New Moves'. Melbourne, Australia.

177 Wu, S., Stevens, R. and Thorp, S. (2013). Modelling Subjective Survival Rates: Beyond Point Estimates of Expected Lifetimes. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013 and the 12th National Conference of Emerging Researchers in Ageing, Sydney, Australia November 2013.

178 Wu, S., Stevens, R. and Thorp, S. (September 2013). Die Young or Live Long: Modeling Subjective Survival Probabilities. Association for Social Policy Annual Meeting (VFS2013). Düsseldorf, Germany.

179 Xu, M. (August 2013). Methods for Modelling the Mortality of Heterogeneous Populations. National Honours Colloquium. Sydney, Australia.

180 Yap, J., Sherris, M. and Fong, J.H. (August 2013). Changing Australian Disability and its Impact on Health Care. National Honours Colloquium. Sydney, Australia.

181 Yu, Y. (April 2013). The Body Mass-mortality Association in the United States: A Reassessment of Secular Trends. The 2013 Annual Meeting of the Population Association of America. New Orleans, USA.

182 Yu, Y. (August 2013). Trends in the Body Mass-mortality Association in the United States: A Re-assessment. The XXVII IUSSP International Population Conference. Busan, South Korea.

183 Yu, Y. (2013). Four Decades of Educational Differences in Body Mass in the United States: Period and Cohort Patterns. Presented at the 1st CEPAR International Conference, Sydney, Australia, July 2013 and the XXVII IUSSP International Population Conference, Busan, South Korea, August 2013.

184 Zhao, J. (July 2013). Trends in the Sex Ratio of Cardiovascular Disease Mortality in East Asia, in Comparison to the West: An Age-Period-Cohort Analysis. 1st CEPAR International Conference. Sydney, Australia.

185 Zhao, J. (November 2013). Comparability of Recorded Cause of Death Across three Chinese Societies. Australasian Mortality Data Interest Group (AMDIG) Meetings. Canberra, Australia.

186 Zhao, J. (November 2013). What can we Learn from Multiple-Causes-of-Death Data? The Example of Cardiovascular Disease Mortality in two Chinese Cities. Workshop of Innovations in Australian Mortality Research: Analysis, Models and Methods. Canberra, Australia.

187 Zhao, J., Jow-Ching Tu, E. and Zhao, Z. (2013). Socioeconomic Development and Sex Differences in Cardiovascular Disease Mortality between Selected East Asian and Western Populations. Presented at the Institute for Health Metrics and Evaluation, University of Washington, Seattle, USA, March 2013 and the XXVII IUSSP International Population Conference, Busan, South Korea, August 2013.

188 Zhu, R., Goode, A. and Mavromaras, K. (November 2013). Family Income and Child Health in China. HEDGE Workshop on Development Issues in the Asian Century. Wollongong, Australia.

INVITED PRESENTATIONS TO MAJOR INTERNATIONAL MEETINGS

1 Anstey, K.J. (October 2013). Short-term and Long-term Effects of Chemotherapy on Cognitive Function in an Older Cohort: The PATH Through Life Project. International Psychogeriatric Association Conference. Seoul, South Korea.

2 Anstey, K.J. (October 2013). Keynote Speaker. A Life-course Approach to Cognitive Health and Late-life Dementia Prevention: Evidence and Conundrums. Australasian Epidemiology Association Meeting. Brisbane, Australia.

3 Brinch, C.N., Hernaes, E. and Zhiyang, J. (July 2013). Salience and Social Security Benefits. 1st CEPAR International Conference. Sydney, Australia.

4 Browning, C. and Yang, H. (April 2013). Challenges in the Provision of Community Aged Care in China. Regional World Health Summit Meeting. Singapore.

5 Cumming, R.G. (November 2013). Health Care for Older People in Australia and Falls Prevention. 2nd International Geriatrics Conference. Hanoi, Vietnam.

6 Fang, H. and Aizaway, N. (July 2013). Equilibrium Labour Market Search and Health Insurance Reform. 1st CEPAR International Conference. Sydney, Australia.

7 Holzmann, R. (December 2013). Keynote Speaker. Addressing Longevity through Private Annuities: Issues and Options. CINTIA (*Centro Interuniversitario* Netspar Italy) Inaugural Conference. Venice, Italy.

8 Holzmann, R. (July 2013). A Provocative Perspective on Population Ageing and Old-Age Financial Protection. 1st CEPAR International Conference. Sydney, Australia.

9 Holzmann, R. (September 2013). Keynote Speaker. A National Pension System for the Homo-hundred Area. Retirement Strategy Forum 2013. Seoul, South Korea.

10 Holzmann, R. (September 2013). Keynote Speaker. The Implicit Pension Debt: Concept and Role in Pension Economics and Policy Reform. Pension Adequacy and Sustainability Conference. Budapest, Hungary.

11 Keane, M. (July 2013). Keynote Speaker. Complex Decision Making and Cognitive Decline. 1st CEPAR International Conference. Sydney, Australia.

12 Keane, M. (October 2013). The Life-Cycle Decisions of Black, Hispanic and White Women. Heckman Labor Workshop, University of Chicago. Chicago, USA.

13 Kendig, H. (June 2013). The Improvability of Ageing Experiences over the Life Course. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

14 Kendig, H. (October 2013). Plenary Speaker. Research-Informed Ageing Policy in Australia. International Federation on Ageing International Istanbul Initiative on Ageing. Istanbul, Turkey.

15 Kendig, H. and Browning, C. (June 2013). Successful Ageing in Australia and China: A Social Sciences Approach. Symposium on New Perspectives on Successful Ageing: Cross-cultural and Inter-disciplinary Approaches during the 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

16 Kendig, H., Byles, J., Nazroo, J., Loh, V. and O'Loughlin, K. (June 2013). Ageing Baby Boomers and Cohort Equity in Australia. 20th IAGG World Congress of Gerontology and Geriatrics. Seoul, South Korea.

17 Lu, B., He, W. and Piggott, J. (March 2013). Should China Introduce a Basic Social Pension? The Harvard-Stanford Economics of Population Aging in China and India Workshop. Stanford, USA.

18 Nazroo, J. (July 2013). Keynote Speaker. Age, Wellbeing and Inequality: Evidence from the English Longitudinal Study of Ageing. 1st CEPAR International Conference. Sydney, Australia.

19 Piggott, J. and Chomik, R. (March 2013). Elderly Support Policies as RCL's. International Economics Association Roundtable. Bangkok, Thailand.

20 Piggott, J. (August 2013). Keynote Address. History, Demography and Economics in First Pillar Pension Design: The Role of Means Testing. 9th Annual Conference on Social Security. Hangzhou, China.

21 Saito, Y. (July 2013). The Changes in Health Transition by Sex over 10 Years in Japan and the Effect of Changes on Health Expectancy. 1st CEPAR International Conference. Sydney, Australia.

22 Sherris, M. (February 2013). Modelling and Managing Longevity Risks. 15th Global Conference of Actuaries (15th GCA). Mumbai, India.

23 Sherris, M. (July 2013). Plenary Presentation. Developments in Mortality and Longevity Risk Modeling. 4th China International Conference on Insurance and Risk Management. Kunming, China.

24 Sherris, M. (June 2013). Keynote Speaker. Longevity and Mortality Model Risks in the Valuation and Risk Management of Long Term Insurance Contracts. Colloquium of the International Actuarial Association. Lyon, France.

25 Sherris, M. and Zhou, Q. (June 2013). Model Risk, Mortality Heterogeneity and Implications for Solvency and Tail Risk. 2013 Symposium: Recreating Sustainable Retirement: Resilience, Solvency, and Tail Risk. Philadelphia, USA.

26 Silverstein, M. (July 2013). Migration of Adult Children and Health care Utilization among Older Adults in Rural China. 1st CEPAR International Conference. Sydney, Australia.

SEMINAR PRESENTATIONS

1 Alai, D.H., Landsman, Z. and Sherris, M. (December 2013). A Multivariate Tweedie Lifetime Model: Censoring and Truncation. *Département de Mathématiques et de Statistique*, University of Montréal. Montréal, Canada.

2 Anstey, K.J. (May 2013). Data Synthesis Approaches to Developing Translational Research in Ageing: Focussing on Dementia and Sensory Function. University of Newcastle. Newcastle, UK.

RESEARCH OUTPUTS

3   Anstey, K.J. (October 2013). Diabetes and Obesity as Risk Factors for Cognitive Decline and Dementia. The John Curtin School of Medical Research Seminar Series. Canberra, Australia.

4   Ashby-Mitchell, K. (September 2013). Cognitive Impairment and Cognitive Impairment Free Life Expectancies In Australia and Latin America and the Caribbean. DCRC Forum. Brisbane, Australia.

5   Bateman, H. (January 2013). Rationality, Risk Presentation and Retirement Portfolio Choices. Department of Economics, University of Graz. Graz, Austria.

6   Booth, H. (October 2013). Accuracy and Bias in Coherent Mortality Forecasting for Subpopulations based on Sex and State: Applications to European Countries and Australian States. Centre for Population Change, University of Southampton. Southampton, UK.

7   Capatina, E., Keane, M. and Maruyama, S. (April 2013). Investment in Health and Human Capital over the Life-cycle. CPS Seminar Series. Sydney, Australia.

8   Cherbuin, N. (June 2013). How can Epidemiology Contribute to Neuroimaging and Brain Research? *Centre Hospitalier Universitaire Vaudois.* Lausanne, Switzerland.

9   Christelis, D., Dobrescu, L.I. and Motta, A. (March 2013). Early Life Conditions and Financial Risk Taking in Older Age. European Central Bank Seminar Series. Frankfurt, Germany.

10   Dobrescu, L.I. (2013). To Love or to Pay: Savings and Consumption in Old Age. Presented at Research School of Economics, Australian National University, Canberra, Australia, March 2013 and School of Economics and Finance, Massey University, Auckland, New Zealand, November 2013.

11   Fan, X. (September 2013). The Effect of Working History on Wages: Testing Asymmetric Employer Learning in the Labor Market. School of Economics at Shanghai University of Finance and Economics. Shanghai, China.

12   Hoang, C. (April 2013). Modes of Aged Care in Vietnam: Adaptation to Change. PhD Mid-term Seminar, Australian Demographic and Social Research Institute, ANU. Canberra, Australia.

13   Holzmann, R. (April 2013). Matching Contributions for Pensions: A Review of International Experiences. University of Malaya Seminar. Kuala Lumpur, Malaysia.

14   Holzmann, R. (December 2013). An Optimistic Outlook on Population Ageing and Old-age Financial Protection. Austrian Academy of Science/Pension Initiative Seminar. Vienna, Austria.

15   Holzmann, R. (February 2013). Portability of Pension, Health and other Social Benefits: Facts, Concepts, Issues. International Centre for Migration Policy Development Workshop. Prague, Czech Republic.

16   Holzmann, R. (June 2013). Global Pension Systems and their Reform: Worldwide Drivers, Trends and Challenges. Public Finance Lecture, Generali Seminar. Trieste, Italy.

17   Holzmann, R. (March 2013). Nonfinancial Defined Contribution Pension Schemes in a Changing Pension World: Lessons and Issues. Banca D'Italia Seminar. Rome, Italy.

18   Hosseini-Chavoshi, M., Abbasi Shavazi, M. and McDonald, P. (March 2013). Low Fertility in Iran: A New Policy Debate. Australian Demographic and Social Research Seminar, ANU. Canberra, Australia.

19   Hunter, N. (November 2013). Longevity and the Life Course in Australia: Implications for Age-based Policy Settings. Centre for Population Change, University of Southampton. Southampton, UK.

20   Iskhakov, F., Rust, J. and Schjerning, B. (2013). Recursive Lex-icographical Search: Finding all Markov Perfect Equilibria of Finite State Directional Dynamic Games. Presented at La Trobe University, Melbourne, Australia, September 2013 and The Australian National University, Canberra, Australia, October 2013.

21   Keane, M. (2013). Income Taxation in a Life-cycle Model with Human Capital. Presented at Georgetown University Econometrics Workshop, Washington, USA, September 2013; CEP/LSE Labour Seminar, London, UK, November 2013 and Economics Department The Interdisciplinary Center Herzliya, Tel Aviv, Israel, December 2013.

22   Keane, M. (December 2013). Complex Decision Making and Cognitive Decline. Department of Social Policy, London School of Economics. London, UK.

23   Kudrna, G. (September 2013). Retirement Income Policy in Australia. University of Pardubice. Pardubice, Czech Republic.

24   Kumru, C.S. and Sarntisart, S. (2013). Optimal Taxation in Life-cycle Economies in the Presence of Commitment and Temptation Problems. Presented at Deakin University, Melbourne, Australia, March 2013; The University of South Australia, Adelaide, Australia, March 2013; Academia Sinica, Taiwan, September 2013 and National Chengchi University, Taiwan, September 2013.

25   Magnani, E. (May 2013). Education and the Household: Educational Transmission in China, 1990–2000. Minzu University of China. Beijing, China.

26   Maruyama, S. and Johar, M. (2013). Do Siblings Free-Ride in 'Being There' for Parents? Presented at the University of Technology, Sydney, Australia, February 2013; University of Queensland, Brisbane, Australia, May 2013; University of Kyoto, Kyoto, Japan, September 2013; University of Tokyo, Tokyo, Japan, September 2013 and Keio University, Tokyo, Japan, September 2013.

27   Meyricke, R. (May 2013). Retirement Income, Longevity Risk Management and the State Pension in Australia. CPS Seminar Series. Sydney Australia.

28   Pitacco, E. (October 2013). Biometric Risk Transfers in Life Annuities and Pension Products: A Survey. CEPAR Public Seminar. Sydney, Australia.

29   Ray, P. (September 2013). Assistive Technologies for Aged Care. University of Third Age. Sunshine Coast, Australia.

30   Rioseco, P. (October 2013). Social Connectedness and Retirement in Australia. PhD Final Seminar, Australian Demographic and Social Research Institute, ANU. Canberra, Australia.

31   Shao, A.W., Fong, J.H. and Sherris, M. (March 2013). Actuarial Models of Functional Disability. CPS Seminar Series. Sydney, Australia.

32   Tran, C. and Woodland, A. (2013). Trade-offs in Means Tested Pension Design. Presented at Monash University, Melbourne, Australia, April 2013; University of Melbourne, Melbourne, Australia, August 2013 and Deakin University, Melbourne, Australia, September 2013.

33   Windsor, T. (August 2013). Social and Emotional Ageing. German Centre for Gerontology Summer School. Berlin, Germany.

34   Wu, S., Stevens, R. and Thorp, S. (March 2013). Modelling Subjective Survival Probability: Beyond Point Estimates. CPS Seminar. Sydney, Australia.

35   Yu, Y. and Booth, H. (November 2013). The Changing Role of Smoking in Educational Differences in Female Mortality. Australian Demographic and Social Research Institute Seminar Series, ANU. Canberra, Australia.

36   Zhao, J. (March 2013). Longevity Advances and Mortality Changes in Cardiovascular Disease: Hong Kong, Shanghai and Taipei: Theoretical Discussion and Policy Implications. Australian Demographic and Social Research Institute, ANU. Canberra, Australia.

37   Zhao, J. (September 2013). Sex Differentials in Cardiovascular Disease Mortality in East Asia: An Age-Period-Cohort Analysis. Graduate School of Public Health, Seoul National University. Seoul, South Korea.

MEDIA & COMMUNICATIONS

In 2013, CEPAR focussed on extending its reach through the communication platforms established in 2012. We continued to grow our e-newsletter, website and social media audiences to maximise our end-user engagement. Concentrating on Twitter and the e-newsletter has resulted in significant growth in their audiences. We have also maintained our strong media performance. Combined with steady growth in website traffic, this year has seen CEPAR's communication activity continue to contribute to the advancement of the Centre's local and international reputation as a leader in the field of population ageing research.

MEDIA

In 2013 our media strategy centred on promoting CEPAR's new research findings and providing expert commentary on public policy issues, particularly in the areas of aged care and superannuation. This approach yielded good results including local and international coverage of new retirement age research in the second half of the year. We continue to perform strongly in the print and audio media channels.

WEBSITE AND ONLINE MEDIA

The website continues to be the centrepiece of CEPAR's communication strategy. With 15,335 visits (40,396 page views), it serves as the gateway to the Centre's activity with information on:

• Research publications
• Other publications such as research briefs and fact sheets
• CEPAR events
• Media coverage
• Latest news
• Research training and mentoring
• Employment opportunities.

With an increasing percentage of new visitors to the site (43.64 per cent) our audience reach is expanding. Our social media presence has also continued to grow in 2013. Concentrating on Twitter as the most appropriate channel to use to showcase CEPAR's research, we have steadily built the audience to 595 followers. We have also used our events program this year to grow our newsletter audience significantly to 736 subscribers.

These two audiences provide CEPAR with an interested online community with which to communicate about the Centre's research and activities. This audience is drawn from a diverse range of groups including insurance companies, aged care providers, dementia groups, superannuation organisations, government departments, the media, community groups, students, academics and the general public. This audience range is a positive outcome of CEPAR's attention to its multidisciplinary approach.

MEDIA FOCUS

One piece of research that received a good deal of media attention this year was 'Does retirement age impact mortality?' Published in the *Journal of Health Economics*, the topic proved to be of interest to media outlets around the country and internationally. Centre Director John Piggott collaborated with international economists, including CEPAR Associate Investigators Erik Hernaes and Simen Markussen, to produce a ground breaking new examination of the link between retirement and death. Access to a comprehensive Norwegian dataset gave the authors the opportunity to bring new insights to an important question in the debate on retirement age and longevity.

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MEDIA & COMMUNICATIONS

PRINT

Canberra Weekly Magazine,
Research targets older drivers
5 December 2013, featuring
Kaarin J. Anstey

The Canberra Times,
*Over 75's step up to oil wheels
of road research*
3 December 2013, featuring
Kaarin J. Anstey

The Canberra Times,
Are older drivers bad drivers?
2 December 2013, featuring
Kaarin J. Anstey

This same article was syndicated
and appeared in *The Sydney
Morning Herald* and *The Age*

Ageless Magazine,
*Grey expectations:
How long will we live?*
December 2013, featuring
Heather Booth

Australian Financial Review,
*Why Australia needs to get real
on population growth*
30 November 2013, featuring
Peter McDonald

Australian Financial Review,
*Few answers to age old
pension problem*
25 November 2013, featuring
John Piggott

The Australian,
Call to test SMSF Trustees
19 November 2013, interview
with Robert Holzmann

Courier Mail,
Plan puts regions back in spotlight
9 November 2013, featuring
Peter McDonald

The Sydney Morning Herald,
*Life expectancy: Will we just
keep getting older?*
8 November, 2013, interview
with John Piggott

The Canberra Times,
Long live Canberrans
8 November 2013, featuring
Hal Kendig and Heather Booth

Australian Financial Review,
*Lifestyle swap fuels boom
in apartments*
1 November 2013, featuring
Peter McDonald

Australian Property Investor,
*Ask the expert: What will tenants
be looking for in a property in
20 years time?*
November 2013, featuring
Heather Booth

Herald Sun,
*Mums in their 40s outnumber
teen mums*
24 October 2013, featuring
Peter McDonald

This same article was syndicated
and appeared in the *Cairns Post,
Perth Now, Courier Mail, Tasmania
Mercury, Adelaide Now, The Daily
Telegraph* and *The Australian*

The Australian,
*Older women more prone
to sleep problems*
17 October 2013, featuring
research co-authored by
Hal Kendig and Colette Browning

The Advertiser,
Safety first for investors
September 30 2013, featuring
Micheal Sherris

Financial Times UK,
*Retirement will not be
the death of you*
23 September, featuring
John Piggott

The Daily Telegraph,
*Retire later and still enjoy
a long life*
24 September, featuring
John Piggott

Daily Mail UK,
*Retirement age has NO impact on
life expectancy...unless you are
forced out of work without a choice*
24 September, featuring
John Piggott

The Times,
*Retirement age 'has no effect
on lifespan'*
25 September, featuring
John Piggott

Daily Mirror,
Health notes
26 September, featuring
John Piggott

Business Standard,
*Men retiring early not likelier
to die sooner*
27 September, featuring
John Piggott

The Sydney Morning Herald,
*Stopping work early does not
mean you die sooner*
17 September 2013, interview
with John Piggott

This same article was
syndicated and appeared
in the *Mudgee Guardian*

The Australian,
Working longer won't kill you
17 September, featuring
John Piggott

The Age,
*Stopping work early does not
mean you die sooner*
17 September, featuring
John Piggott

Asia-Pacific Banking and Finance,
Does retiring increase longevity?
17 September, featuring
John Piggott

Australian Financial Review,
*Efficient draw down structures
needed as the population ages*
16 September 2013,
by John Piggott

Australian Financial Review,
Asia faces end of special dividend
27 May 2013, featuring
John Piggott and Rafal Chomik

Australian Financial Review,
*Ageing population spells
trouble for Asia*
23 May 2013, featuring
John Piggott and Rafal Chomik

In the Black Magazine,
*Is superannuation
a zero-sum game?*
3 May 2013, interview with
John Piggott

Australian Financial Review,
*Henry expert slams Labor
super threats*
2 April 2013, featuring
John Piggott

The Australian,
*When it comes to the taste
test, investors prefer to eat
humble pie chart*
19 March 2013, featuring
research by Isabella Dobrescu
and Hazel Bateman

Newcastle Herald,
PM worker bash 'nasty'
15 March 2013, featuring
Peter McDonald

Canberra Times,
A new front in vilification wars
6 March 2013, featuring
Peter McDonald

Be Magazine,
Use it or lose it
March 2013, by Kaarin J. Anstey

Australian Financial Review,
Costs of tax reform bungles
15 February 2013, featuring
John Piggott

Australian Financial Review,
*Meddling could wreck world
class super*
14 February 2013, by John Piggott

Australian Financial Review,
*Super is not a political
football, CBA warns*
14 February 2013, featuring
John Piggott

Hervey Bay Observer,
Australia grows old
13 February 2013, featuring
Rafal Chomik

Coffs Coast Advocate,
*Australian 'phenomenon' of
population ageing to affect costs*
9 February 2013, featuring
Rafal Chomik

This same article was
syndicated and appeared
in the *Sunshine Coast Daily*.

Australian Financial Review,
Where will the super axe fall?
9 February 2013, featuring
John Piggott

Fraser Coast Chronicle,
*Australians are getting older
but more active as they age*
5 February 2013, featuring
Rafal Chomik

Sydney mX,
Piling on the years
5 February 2013, featuring
Rafal Chomik

Warwick Daily News,
Aussies are now older on average
5 February 2013, featuring
Rafal Chomik

East Asia Forum Quarterly,
*Ageing societies involved
in a race against time*
January–March 2013,
by Rafal Chomik and John Piggott

East Asia Forum Quarterly,
Asia's silver revolution
January–March 2013,
by Heather Booth

East Asia Forum Quarterly,
Low fertility: an East Asian dilemma
January–March 2013,
by Peter McDonald

RADIO

6PR Perth Breakfast,
Long life vs healthy life
13 December 2013, interview
with Carol Jagger

ABC National News,
New retirement age statistics
10 December 2013, interview
with John Piggott

ABC Newcastle,
New retirement age statistics
10 December 2013, interview
with John Piggott

ABC Canberra,
Older drivers test
2 December 2013, interview
with Kaarin J. Anstey

Radio National,
Background Briefing
At the end of the road?
1 December 2013, interview
with Kaarin J. Anstey

666 ABC Canberra, Drive,
A new approach to older drivers
1 December 2013, interview
with Kaarin J. Anstey

ABC News,
Raising the pension age to 70
22 November 2013, interview
with Peter McDonald

ABC Radio Newcastle,
*Advisory Panel on Positive
Ageing chopped as Australian
life expectancy rises*
8 November 2013, interview
John Piggott

2UE Sydney, Mornings
*New research reveals no link
between retirement and death*
21 September 2013, interview
John Piggott

ABC Adelaide,
*New research reveals no link
between retirement and death*
19 September, interview
John Piggott

3AW Melbourne, News,
*UNSW study defies belief that men
who retire earlier also die earlier*
17 September 2013, interview
John Piggott

ABC NewsRadio Sydney,
Afternoons,
*New study from
researchers at CEPAR*
17 September 2013, interview
John Piggott

2GB Sydney Money News,
*CEPAR says no link between
retirement and death*
17 September 2013, interview
John Piggott

2UE Sydney, Mornings,
*New research says no link
between retirement age and death*
17 September 2013, interview
John Piggott

ABC 702 Sydney, News,
*No link between
retirement and death*
17 September 2013, interview
John Piggott

ABC National Radio AM Program,
*New research says no link between
retirement age and death*
17th September 2013, interview
John Piggott

Tbs eFM, Seoul, Korea,
Ageing in Asia
1 August 2013, interview
with John Piggott

ABC Adelaide, Afternoons,
*Age Friendly Business
Industry Forum*
4 July 2013, interview with
John Beard

ABC Canberra, Drive,
Australians working into their 60s
23 May 2013, interview with
Peter McDonald

Radio National, Breakfast,
*Speculation continues
over changes to super tax*
3 April 2013, interview with
John Piggott

Radio National, Canberra,
Sunday Extra,
Reforms to superannuation
10 February 2013, interview
with John Piggott

ABC Radio News,
*Industry warns off Government
superannuation taxes*
8 February 2013, featuring
John Piggott

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TELEVISION

WIN Canberra,
Test to predict driver safety
2 December 2013, featuring
Kaarin J. Anstey

SKY Business News,
*Age Friendly Business
Industry Forum*
4 July 2013, interview with
Heather Ridout

WIN News, Canberra,
*Australians are working
well into their 60's*
23 May 2013, featuring
Peter McDonald

ABC TV, The Business,
*High income earners
in the Treasurer's sights*
3 April 2013, featuring
Michael Sherris

ABC TV, Lateline,
*Crean says super changes
must not be retrospective*
2 April 2013, featuring
John Piggott

WIN News, Canberra,
*Baby boomers unprepared
for retirement*
22 January 2013, featuring
Hal Kendig

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ONLINE

Australian Ageing Agenda,
Australian lessons for Asia
17 December, featuring
Rafal Chomik

The Conversation,
*Australia is ageing, but is lifting
the retirement age inevitable?*
25 November 2013, by Rafal Chomik

Australia Blog,
*Careers before babies:
Over 40s pregnancy rise*
25 October 2013, featuring
Peter McDonald

Netdoctor.co.uk,
*Retirement age has
no effect on lifespan*
26 September, featuring
John Piggott

Ageconcern.co.uk,
Pension age not linked to death
26 September, featuring
John Piggott

Business Spectator,
*Men retiring early not likely
to die sooner*
18 September 2013, featuring
John Piggott

ABC Online,
*New research says there is no link
between retirement age and death*
17 September 2013, featuring
John Piggott

News.com.au,
*Stopping work early does not
mean you die sooner*
17 September, featuring
John Piggott

SeniorAU.com,
*Preparing for retirement
brings benefits beyond dollars*
26 August 2013, featuring
Hal Kendig and Kate O'Loughlin

Australian Ageing Agenda,
*Aged care missing in
Coalition health picture*
23 August 2013, interview
with Hal Kendig

The Conversation,
*A more sustainable Australia:
Staying in work as we age*
20 August 2013, by Rafal Chomik

Knowledge@ASB,
*Can Asia meet the healthcare
demands of its ageing
populations?*
15 August 2013, featuring Rafal
Chomik and Robert Cumming

The Conversation,
*To create a fairer super system,
keep gender out of it*
7 August 2013, by Rafal Chomik

Knowledge@ASB,
*Annuities under pressure:
Can retirement planning keep
pace in an age of longevity?*
6 August, featuring
Michael Sherris

Leading Company,
*Asia in the ageing century:
A new boom in retirement planning*
5 August 2013, featuring
Rafal Chomik

Plan Sponsor,
*The bottom line: Aussie
replacement rates today*
15 July 2013, featuring
Rafal Chomik

Knowledge@ASB,
*Asia in the ageing century:
A new boom in retirement planning*
18 June 2013, featuring
Rafal Chomik

The Distillery,
Age old wisdom
27 May 2013, featuring
John Piggott and Rafal Chomik

Banking Day,
*Reverse mortgage lenders
are too risk averse*
22 May 2013, featuring
Katja Hanewald

Adele Horin Blog,
A city to grow old in
20 May 2013, featuring CEPAR

Pensions & Investments,
*Striving to create that perfect
defined contribution plan*
13 May 2013, featuring
Rafal Chomik

Open Forum,
*Population ageing beyond
the balance sheet*
16 April 2013, by Rafal Chomik

Knowledge@ASB,
*Gender inequality: A case
for investing in informal care*
11 March 2013, by Rafal Chomik

The Conversation
remains an important
online vehicle for
CEPAR. For example,
Rafal Chomik's articles
attracted over 6000
readers in 2013.

END USER LINKS

PRESENTATIONS TO GOVERNMENT, INDUSTRY AND THE BUSINESS COMMUNITY

1   Anstey, K.J. (September 2013). The Impact of Cognitive Ageing, Cognitive Impairment and Dementia on Driving Safety in Older Adults. Minister's Dementia Advisory Group. Canberra, Australia.

2   Anstey, K.J. (March 2013). Prevalence and Impact of Cognitive Impairment in Adults Aged in their 60s: Implications for Employment in Late-life. FaHCSIA Social Policy Workshop. Canberra, Australia.

3   Browne, B. (September 2013). Long Term Care in Australia: What Place for Insurance? Australian Association of Gerontology (ACT Branch) AGM. Canberra, Australia.

4   Kendig, H. (August 2013). Direction-setting for Living Longer Living Better Reforms. Presentation to the National Aged Care Alliance. Canberra, Australia.

5   Kendig, H. (August 2013). Direction-setting for Living Longer, Living Better Reforms. National Aged Care Alliance. Canberra, Australia.

6   Kendig,H. (August 2013). Healthy Ageing and Community Support: Some Research and Policy Perspectives. Uniting Care Australia. Melbourne, Australia.

7   Kendig, H. (September 2013). Canberra as an Age-Friendly City? New Thinking and Policy Directions. Jamison Southern Cross Club. Canberra, Australia.

8   **Kendig, H.**, O'Loughlin, K., Browning, C. and Heese, K. (November 2013). Attitudes Towards Intergenerational Equity in Australia. Older Australians Working Group. Department of Human Services. Canberra, Australia.

9   Loh, V. (March 2013). Productive Engagement Across the Life Course: Paid Work and Beyond. FaHCSIA Social Policy Workshop. Canberra, Australia.

10   McDonald, P. (June 2013). International Migration to Victoria and Australia: Recent Trends and Future Prospects. Victorian Department of Transport, Planning and Local Infrastructure. Melbourne, Australia.

11   McDonald, P. (May 2013). The Role of Family Migration in Australia's Permanent Migration Program. Department of Immigration and Citizenship. Canberra, Australia.

12   McDonald, P. (November 2013). The Impact of Immigration on Future Labour Supply and GDP per capita in Australia. Department of Immigration and Citizenship. Canberra, Australia.

13   McDonald, P. (September 2013). Migration to Australia: Impact of Changing Government Policies. Australian Population Association. Adelaide, Australia.

14   Piggott, J. (February 2013). Population Ageing as an Issue for Secondary Education. State Principals Association. Sydney, Australia.

15   Piggott, J. (February 2013). Social Security and Pension System in Australia. Hong Kong Social Security Delegation. Sydney, Australia

16   **Piggott, J.** and Whitehouse, E. (March 2013). Intergenerational Solidarity (IGS) and Population Ageing: Attitudes in Europe. FaHCSIA Social Policy Workshop. Canberra, Australia.

17   **Piggott, J.** and Chomik, R. (April 2013). Base and Minimum Pensions. Presentation to the Government of Kazakhstan. Astana, Kazakhstan.

18   Piggott, J. (October 2013). Retirement Income Design with an Ageing Demographic. The Treasury Seminar. Canberra, Australia.

19   Sherris, M. (June 2013). Longevity Risk Research Update. PwC Staff from Sydney, Melbourne and Perth Offices. Sydney, Australia.

20   Tran, C. (November 2013). Ageing and Pension System in Australia. Presented to a delegation from Hangzhou, China for the Australian Technical Experts Network. Canberra, Australia.

21   Windsor, T. (June 2013). Factors Influencing Relocation to a Retirement Living Community. Aged and Community Services SA & NT Retirement Living Conference. Adelaide, Australia.

BRIEFINGS, COMMITTEE MEMBERSHIPS AND PARTICIPATION IN ROUNDTABLE AND PANEL DISCUSSIONS

1   Anstey, K.J. (2013). Committee Member of the Ministerial Advisory Council on Ageing. Canberra, Australia.

2   Anstey, K.J. (April 2013). Participant in CSIRO Independent review of the Preventative Health Flagship. Melbourne, Australia.

3   Anstey, K.J. (August 2013). Panel Discussion: Mental Capital in an Ageing Society – The Policy Implications of Age-Related Cognitive Decline. Crawford School of Public Policy, ANU. Canberra, Australia.

4   Anstey, K.J. (February 2013). Workshop Facilitator for Older Persons Forum, ACT Legislative Assembly. Canberra, Australia.

5   Anstey, K.J. (May 2013). Appointed to the NHMRC Research Translation Faculty Steering Group. Melbourne, Australia.

6   Bateman, H. (2013). Member of the Unisuper Consultative Committee. Sydney, Australia.

7   Bateman, H. (2013). Member of the Federal Government's Superannuation Roundtable. Canberra, Australia.

8   Booth, H. (2013). Member of the Canberra Centenarians Forum Organising Committee. Canberra, Australia.

9   Booth, H. and Anstey, K.J. (2013). Member of the ACT Age-Friendly Cities Conference Steering Committee. Canberra, Australia.

10   Cumming, R.G. (November 2013). Ministry of Health Roundtable Participant. Hanoi, Vietnam.

11   Holzmann, R. (March 2013). Policy Panel Discussion 'Designing Fiscally Sustainable and Equitable Pension Systems in Emerging Europe in the Post-crisis World'. International Monetary Fund and Fiscal Affairs Department – European Department Conference. Vienna, Austria.

12   Kendig, H. (April 2013). Building on Turning Grey into Gold and the First Year of the Panel: What are the Future Priorities and Directions on Ageing? Policy Consultation with the Advisory Panel on Positive Ageing. Canberra, Australia.

13   McDonald P. (October 2013). Department of Veterans Affairs, Briefing on Client Database Structure. Canberra, Australia.

14   McDonald, P. (2013). Appointed President of the International Union for the Scientific Study of Population. Paris, France.

15   McDonald, P. (2013). Member of the Australian Ministerial Advisory Council on Skilled Migration. Canberra, Australia.

16   McDonald, P. (2013). Member of the Council of Advisors of Population Europe. Berlin, Germany.

17   McDonald, P. (February 2013). Briefing with government officials and University of Yangon Vice Chancellor and Deputy Vice Chancellor on the creation of a demographic research centre in the University of Yangon. Yangon, Myanmar.

18   McDonald, P. (May 2013). Briefed Vice Chancellor on the creation of a Social Research Institute at An Giang University. Long Xuyên, Vietnam.

19 McDonald, P. (November 2013). Briefings and discussions on the draft population law for Iran, including meetings with the Vice President for Women's Affairs, the Minister for Health, and Members of the Iranian Parliament. Tehran, Iran.

20 McDonald, P. (October 2013). Meeting with Futures Group to discuss research cooperation. Canberra, Australia.

21 Piggott, J. (February 2013). Could Superannuation Contributions be Invested More Effectively on Behalf of Future Retirees? CIFR Superannuation Roundtable. Sydney, Australia.

22 Piggott, J. (February 2013). Meeting with representatives of the Congressional Budget Office. Sydney, Australia.

23 Piggott, J. (February 2013). Roundtable debate on 'Assessing how Super Funds are Encouraging Members to Make Appropriate Decisions about Funding their Retirement'. Moderated by State Street Center for Applied Research. Boston, USA.

24 Piggott, J. (October 2013). Treasury Briefing. Canberra, Australia.

25 Piggott, J. and de Cure, M. (February 2013). Briefing on Ageing Policy for Seniors with Hon. Bronwyn Bishop (then) Shadow Minister for Seniors. Sydney, Australia.

26 Piggott, J. and de Cure, M. (September 2013). Meeting with CBA to discuss Research Collaboration. Sydney, Australia.

PUBLIC TALKS

1 Anstey, K.J. (September 2013). Social and Environmental Determinants of Ageing Well over the Lifecourse: The Example of Cognitive Function. Launch of Australia's Welfare 2013 by the Australian Institute of Health and Welfare. Canberra, Australia.

2 Anstey, K.J. (March 2013). 21 Days to Brain Healthy Habits. Brain Awareness Week – Alzheimer's Australia's promotion of Your Brain Matters. Canberra, Australia.

3 Booth, H. (August 2013). The Prospect of the Century. Canberra Centenarians Forum. Canberra, Australia.

4 Booth, H. and McDonald, P. (May 2013). Asian Demographic Time Bombs: Population Trends and the Future of Asian Societies. Panel Speakers, East Asian Bureau of Economic Research Public Forum. Canberra, Australia.

5 Booth, H. (November 2013). How Long will we Live? The Longevity Revolution and what it means for Australia. The 2013 Borrie Lecture – (Bi) Annual Lecture of the Australian Population Association. Canberra, Australia.

6 Byles, J. (August 2013). Advanced Old Age as a Field of Research. Canberra Centenarians Forum. Canberra, Australia.

7 Clemson, L. (May 2013). Pam Albany Guest Lecture: Avoiding Program Drift for Positive Falls Outcomes – The Wisconsin Experience. 20th NSW Falls Prevention Network Forum. Sydney, Australia.

8 Cumming, R.G. (July 2013). Population Ageing and Australian Business. 1st CEPAR International Conference Industry Forum. Sydney, Australia.

9 Holzmann, R. (June 2013). Population Aging and Retirement Income Systems: Issues, Choices and Selection. University of Malaya. Kuala Lumpur, Malaysia.

10 Jagger, C. (December 2013). Pathways of Health in the Very Old: Lessons for Health and Care Practice and Policy. Canberra, Australia.

11 Kendig, H. (May 2013). Canberra as an Age-Friendly City? New Thinking and Policy Directions. ANU Public Forum. Canberra, Australia.

12 McDonald, P. (March 2013). Recent Trends in Australia and the Region. International Conference on Migration and Multiculturalism: Policy Lessons from Europe and Australia. Canberra, Australia.

13 McDonald, P. (May 2013). Changes in Employment at Older Ages in Australia: Trends and Differentials. ANU. Canberra, Australia.

14 Nazroo, J. (July 2013). Age, Wellbeing and Inequality: Evidence from the English Longitudinal Study of Ageing. Canberra, Australia.

15 Piggott, J. and Chomik, R. (May 2013). Ageing in Asia. AMP Research Brief Launch. Sydney, Australia.

16 Piggott, J. (September 2013). Keith Hancock Lecture: Retirement Income Design with an Ageing Demographic. UNSW, Sydney, Australia.

17 Piggott, J. (September 2013). Keith Hancock Lecture: Retirement Income Design with an Ageing Demographic. ANU, Canberra, Australia.

18 Sherris, M. (February 2013). The Future Actuary and Role of Actuarial Education. 2013 Actuarial Gala Function and Awards (AGFA). Mumbai, India.

19 Sherris, M. (July 2013). Challenges for Business and Government. How to Respond. 1st CEPAR International Conference Industry Forum. Sydney, Australia.

20 Whiteford, P. (August 2013). Implication of Extended Longevity for Retirement Income Security. Canberra Centenarians Forum. Canberra, Australia.

CENTRE FINANCE

CONSOLIDATED FINANCIAL STATEMENT 2011–2013

INCOME	2011 ($)	2012 ($)	2013 ($)	
ARC Centre Grant distributed as follows:				
University of New South Wales	1,203,350	1,344,910	1,287,115	
Australian National University	313,000	330,162	582,759	
University of Sydney	312,000	329,107	101,872	
ARC Post Award Funding distributed as follows:				
University of New South Wales		205,026	205,026	
Australian National University		255,000	340,000	
NSW Science Leveraging Fund distributed as follows:				
University of New South Wales		160,674	119,704	NOTE 1
University of Sydney		186,935	63,065	
University of New South Wales	678,000	678,000	678,000	
Australian National University	130,250	13,730	350,420	
University of Sydney	130,000	130,000	38,900	
Department of Families, Housing, Community Services and Indigenous Affairs	50,000			
Department of Innovation, Industry, Science & Research			44,000	
Department of Health and Ageing	45,455			
Commonwealth Treasury	50,000	50,000	50,000	NOTE 2
Medibank	50,000		36,364	
AMP	50,000	50,000	50,000	
PwC			50,000	
Emerging Researchers in Ageing Conference				
Registration Fees	10,255			
Sponsorship	6,382	-2,000		
Academy of Social Sciences Australia		6,500		
Research Institute for Policies on Pension and Aging, Japan			56,000	
CEPAR International Conference Registration Fees			10,848	
UNSW Contestable Funds			27,226	
Total income	3,028,692	3,738,044	4,091,299	

NOTE 1: In 2011 CEPAR was awarded a $500,000 grant from the NSW Science Leveraging Fund. Under the Deed of Agreement with NSW Trade and Investment, the full amount of the grant was paid to the University on trust in 2011. However, release of each year's funding allocation was contingent on approval by the funding body. Funds released plus interest earned on funds held at UNSW in the relevant year are shown here.

NOTE 2: A total of $250,000 was received in 2013, covering the period 2013–2017. $50K is reported in 2013. The remaining $200K will be subsequently reported over the period 2014–2017.

EXPENDITURE	2011 ($)	2012 ($)	2013 ($)
Salaries	813,109	2,254,769	3,358,535
Scholarships	–	105,324	124,475
Travel	63,487	291,975	568,550
Emerging Researchers in Ageing initiative: annual contribution	60,000	69,803	54,771
Events	25,250	60,387	100,684
Other research related expenses	16,852	37,766	83,099
Recruitment and relocation expenses	16,935	47,648	5,344
Centre administration, consumables and I.T. maintenance	30,418	38,507	36,156
Equipment	16,738	49,336	24,743
Website, branding and marketing	48,403	94,800	86,273
Total expenditure	1,091,192	3,050,315	4,442,631
Opening balance at the beginning of the year	–	1,937,500	2,625,229
Closing balance as at the year end	1,937,500	2,625,229	2,273,897

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ESTIMATES OF FUTURE INCOME & EXPENDITURE

INCOME

The Centre's main source of funds in 2014 will continue to be the Australian Research Council ARC). The administering and collaborating organisations, as well as the partner organisations will continue to make contributions at the contractual rates. UNSW will provide an additional $170,000 in 2014 in the form of a Vice-Chancellor's Fellowship for one of our early career researchers (ECRs) plus supplementary support for research fellows based in CEPAR who are funded by a Laureate Fellowship grant. CEPAR Investigators have also submitted ARC grant applications for 2014 funding, the results of which are pending. In total, we estimate 2014 Centre income to be approximately $3.2 million.

EXPENDITURE

In 2014 the Centre plans to continue to fund a number of successful initiatives implemented in previous years as well as expand its engagement with stakeholders and the wider community. Salaries for ECRs will continue to account for a large portion of the Centre budget. We anticipate that we will spend approximately $3.8 million in total of which about $3 million will be allocated to salaries and scholarship stipends. The activities described below will draw on 2014 income as well as funds carried forward from 2013.

PERSONNEL

It is anticipated that the Centre will spend approximately $2.4 million in 2014 on research personnel, most of whom will be ECRs.

It is expected that twenty three students will be supported by CEPAR scholarships in 2014 at a total cost of $135,000. This includes five scholarships for new honours students and four new supplementary PhD scholarships awarded in 2014 as well as continuing students.

MENTORING OPPORTUNITIES FOR ECRS AND STUDENTS

CEPAR will continue to support the Emerging Researchers in Ageing (ERA) initiative in 2014 as well as offer workshops/ master classes for ECRs and PhD students. We will also organise a multidisciplinary workshop for honours students working in the field of Population Ageing research.

Funds will continue to be made available to support PhD student conference participation and provide opportunities for both research fellows and PhD students to spend time at one of our international partner organisations with the aim of building links between these key international hubs of ageing research and the next generation of researchers.

The anticipated cost of these initiatives in 2014 is approximately $155,000.

SUPPORT FOR PARTNER AND ASSOCIATE INVESTIGATORS

Funds will continue to be made available to support the involvement of our partner and associate investigators in the research program. It is anticipated that approximately $150,000 will be spent in 2014 on travel and research assistance to support the development and execution of collaborative research projects.

OUTREACH AND DISSEMINATION OF RESEARCH FINDINGS

Conferences and workshops showcase the Centre's research, increase our international footprint, and provide opportunities for our industry partners to engage with the Centre. A joint Policy Dialogue, hosted in conjunction with the Crawford School of Public Policy, is planned for July 2014 and a pensions and taxation workshop will be convened at the UNSW node in November. In July, we will join forces with the School of Risk and Actuarial Studies at UNSW to host the 22nd Annual Colloquium of Superannuation Researchers. CEPAR will also provide supplementary funds to secure additional high profile speakers for the 2014 Academy of Social Sciences Annual Symposium. In addition we will support a number of other workshops as well as sponsor two invited symposia at the International Association of Sociology World Congress in Yokohama, Japan.

Leading international experts will visit the Centre under CEPAR's Distinguished Visitor Program and funds will be available for CEPAR personnel to visit international partners and present research findings at major conferences. A series of research briefs aimed at the wider community is also planned. It is expected that these activities will be supported by a combination of industry and collaborating university funds. Total estimated expenditure for outreach activities in 2014 is $450,000.

OTHER

About $530,000 will be spent on supporting the operation of the Centre. Salaries for administrative personnel account for the bulk of funds.

NEW GRANTS AWARDED IN 2013

OUR RESEARCHERS WERE SUCCESSFUL IN SECURING ADDITIONAL GRANT FUNDING IN 2013. THE FOLLOWING GRANTS WERE AWARDED TO RESEARCH TEAMS WHICH INCLUDED CEPAR CHIEF INVESTIGATORS OR RESEARCH FELLOWS.

ARC GRANTS

GEWEKE, J., KEANE, M., IMAI, S., FRISCHKNECHT, B., MCCAUSLAND, W., DURHAM, G.
ARC Discovery Grant 2013: Massively Parallel Algorithms for Bayesian Inference and Decision Making

Total amount awarded: $800,000

MCDONALD, P., UTOMO, I., HULL, T.
ARC Discovery Grant 2013: Transition to Adulthood in Greater Jakarta: A Longitudinal Perspective

Total amount awarded: $349,007

OTHER AUSTRALIAN COMPETITIVE GRANTS

ANSTEY, K.J., WOOD, J.
NHMRC Project Grant: Validation of Evidence-based Screening Instruments to Identify Unsafe Older Drivers and Prevent Injury

Total amount awarded: $877,030

MAGNANI, E., PIGGOTT, J., LU, B.
Australia-China Science and Research Fund 2013: Intergenerational Solidarity in China: Public and Private Time and Money Transfers in an Era of Demographic Change

Total amount awarded: $44,000

OTHER GRANTS

ANSTEY, K.J., WOOD, J., MCKETIN, R., ISBEL., S.
NRMA ACT Road Safety Trust: Validation of a Virtual Driver Assessment Tool for Older Drivers

Total amount awarded: $85,904

PIGGOTT, J., MAGNANI, E., LU, B.
UNSW Contestable Funding 2013: Collaboration and Capacity Building in China: Strengthening Research Links in Population Ageing

Total amount awarded: $27,226

MCDONALD, P., DEMOGRAPHIC INSIGHT P/L
Department of Immigration and Citizenship: The Impact of Immigration on Labour Force and GDP per capita

Total amount awarded: $88,000

MCDONALD, P., DEMOGRAPHIC INSIGHT P/L
Department of the Treasury: Projections of Housing Demand for Australia

Total amount awarded: $99,247

SHERRIS, M., REEVES, J., PAPAGEORGIOU, N., BEWLEY, R.
Centre for International Finance and Regulation: Developing Risk Management Methods for Superannuation Investments

Total amount awarded: $80,000

UTOMO, I., MCDONALD, P.
Ford Foundation, Indonesia: Youth and Young Adult Reproductive Choices

Total amount awarded: $288,205 (USD)

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