

ANNUAL REPORT 2012



Australian Government
Australian Research Council

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



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Australian Government

Department of Health and Ageing

Department of Families, Housing,
Community Services and Indigenous Affairs

The Treasury



Trade &
Investment



BAIN & COMPANY 

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 will build a new generation of researchers to global standard with an appreciation of the multidisciplinary nature of population ageing.

MISSION

CEPAR'S MISSION IS TO PRODUCE RESEARCH THAT WILL TRANSFORM THINKING ABOUT POPULATION AGEING, INFORM BUSINESS PRACTICE 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 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.

DIRECTOR'S REPORT & HIGHLIGHTS



PROFESSOR JOHN PIGGOTT

IT'S BEEN AN IMPORTANT YEAR FOR CEPAR. OVER THE LAST 12 MONTHS, WE HAVE MOVED FROM THE MECHANICS OF ESTABLISHING THE CENTRE TO DEVELOPING STRATEGIES DESIGNED TO MEET ITS OBJECTIVES.

Research activity is growing fast. We have been active in recruitment, and are now approaching full capacity in terms of our research appointments. We have invested much time in developing our relationships with partner organisations – an immensely rewarding experience that is providing us with new insights and perspectives on the impacts of the ageing demographic. We have also consolidated

our existing international ties and are beginning the process of extending our reach into other international networks and organisations.

We have also begun to crystallise our vision for the future. This will be an ongoing process, but we took some important steps in 2012, on which I will elaborate below.

This report is designed to provide a substantive account of the Centre's

achievements thus far, including initiatives which have only just begun.

This will allow us to use the document not only to provide an account of our activities to the Australian Research Council (ARC), but to introduce CEPAR to newly engaged and potential partners and researchers.

Through 2012, our research has flourished, as indicated in the main body of this report. More than 60 research projects are listed in this year's report, and some of these are aggregations of individual projects.

Of particular note is the multifaceted approach to issues in health investment, as human capital or as a requirement for a longer and more rewarding later life. As well, the massive research program built around issues in mortality and longevity, and longevity risk management make a major contribution to our understanding of these issues.

THE CULTURE WHICH HAS BEEN DEVELOPED IN THE CEPAR COMMUNITY ENCOURAGES RESEARCH ANCHORED IN MULTIPLE DISCIPLINES.

These two research foci exemplify this. Researchers from many different disciplines – economics, actuarial, demography, epidemiology, psychology, sociology – have participated.

The development of research capacity is one of CEPAR's core goals. We have implemented a number of initiatives to nurture young researchers and are seeing increasing interest from both junior faculty and PhD students in having a CEPAR affiliation – reflecting CEPAR's growing reputation.

After nearly two years of operation, we are now approaching full capacity in terms of research fellow appointments. One reason for our success with research is that we have been careful with our appointments, taking time to recruit the very best young scholars. The large majority of our research fellows are within a few years of their PhD, still evolving as researchers.

We work hard at providing an environment which exposes them to a range of disciplinary approaches to the issues at hand. The additional \$1.25 million grant awarded to CEPAR by the ARC last year for research capacity building has been critical in facilitating the construction of a postdoctoral workshop program. We are able to offer these workshops in relevant topics which are accessible to young researchers from differing backgrounds, and in which young researchers not otherwise affiliated to CEPAR may participate.

THIS KIND OF RESEARCH CAPACITY BUILDING IS DESIGNED TO ENCOURAGE AN APPRECIATION OF OTHER PERSPECTIVES, AND OTHER BODIES OF KNOWLEDGE, TO BETTER INFORM RESEARCH PROJECT FORMULATION.

An important part of our mission is to develop a pool of next-generation scholars with this experience and mind-set.

While CEPAR's primary purpose is to produce research to support society in its transition to a changed demographic structure, the organisation by its nature, is accumulating an extraordinary stock of knowledge on population ageing. This not only functions as a crucible to inspire new directions in research, it also has value as a unique bank of expertise which we try to leverage through knowledge dissemination. With this in mind,

a couple of months. Briefs on retirement products, aged care policy, and the challenges of cognitive decline will follow.

This year, as the Centre reached maturity, we have begun to engage more fully with our end users with a view to influencing policy formulation and reform. Two examples will suffice. It is no accident that the first briefing paper analysed mature labour force participation. This is a hot issue in population ageing research, because increasing longevity makes existing patterns of retirement unsustainable

IN 2012 WE LAUNCHED A BRIEFING PAPER SERIES, WHICH IS DESIGNED TO PROVIDE AN INFORMED PERSPECTIVE ON IMPORTANT ISSUES RELATING TO AN AGEING DEMOGRAPHIC.

The first, on Mature Age Labour Force Participation, has already appeared. Others, focused on the rapidly ageing demographic in the Asian region, will be published in the next

in the longer term, and healthier ageing makes retirement delay feasible. Several research projects touch on this topic. This gelled with policy interaction. Several papers

on the topic were presented at the FaHCSIA CEPAR Roundtables. A CEPAR policy forum at the annual Conference of Economists in Melbourne, which featured international and Treasury speakers, partly focused on this question. I was invited to present at a policy forum on the issue organised by the Age Discrimination Commissioner, and served on the advisory committee for the Australian Law Reform Commission enquiry into barriers to mature labour force participation. Hal Kendig and I also met with the Positive Ageing Panel to discuss the work of the Centre and ways our research can assist their endeavours to provide guidance and advice on how people can age well. The value of workforce attachment was a major topic. Rafal Chomik's contribution to the Shades of Grey series being run by *The Conversation* provides further evidence of this policy interaction.

Another example relates to Aged Care. Again, a number of research projects focus on this issue. In the public arena, Hal Kendig presented to the Aged Care Continuum Committee for the Economic Development of Australia and delivered a Parliamentary

Library Lecture on 'The Imperative for Fundamental and Ongoing Aged Care Reform'. To generate further debate on an area of policy where the framework in Australia has now been laid out, but where an enormous amount of policy formulation has yet to be executed, CEPAR joined forces with the Crawford School of Public Policy at ANU, in Canberra, to host a Policy Dialogue on Aged Care. Opened by the Australian Minister for Mental Health and Ageing, the Hon. Mark Butler, the day featured international academics, senior Australian policy professionals, and a range of Australia-based academic experts. The Dialogue attracted some 150 participants. Presentations were lively and participant engagement was strong. This event provided a unique opportunity to showcase our significant expertise and multidisciplinary talent base to a broad audience on an important topic, and both CEPAR and Crawford ended the day thinking that this was an experiment worth repeating.

Policy impact is always hard to assess, but a pre-requisite is participation in the policy debate, and these activities are evidence of this engagement.

Internationally, CEPAR's activities are gaining exposure through research presentations. Increasingly, as our corpus of research grows, we have sought to organise full sessions on population ageing, with heavy or exclusive CEPAR involvement. To support the inaugural IAGG Africa Region Conference on Ageing in Africa, Bob Cumming organised a special CEPAR funded session on 'Adapting Africa's Health Systems to Manage Non-Communicable Disease in Older Persons'. At the Asian Population Association Conference in Bangkok, a CEPAR sponsored session focused on intergenerational support of the elderly was chaired by Peter McDonald. Domestically, CEPAR also sponsored a number of symposia, including one on Promoting Active Ageing as part of the 45th Australasian Association of Gerontology National Conference and the Psychology of Healthy Ageing Symposium held at the Centre for Research on Ageing, Health and Wellbeing at ANU.

DIRECTOR'S REPORT & HIGHLIGHTS

The Centre also hosted 33 international visitors in 2012, ranging from early career researchers to international leaders in the field of population ageing. As part of our distinguished visitors program we organised and hosted public lectures by Professor Emily Grundy, Cambridge University's first Chair of Demography, and Professor Ermanno Pitacco from the University of Trieste. Our personnel were invited to visit almost 40 leading research institutions in 2012.

LOOKING FORWARD, IN JULY THIS YEAR WE WILL HAVE OUR FIRST INTERNATIONAL CONFERENCE ON POPULATION AGEING.

The challenge is to create a program which will appeal to experts from multiple disciplines. And later in the year, in partnership with the Project for Intergenerational Equity at Hitotsubashi University, we will host a conference devoted to pension reform.

This coming year will also see CEPAR ramping up its efforts to expand research capacity building in China, the world's most rapidly ageing large economy. We were fortunate to win a grant from the Department of

Foreign Affairs and Trade to support this, and have other grant applications pending. Postdoctoral researchers and PhD students will participate in CEPAR-hosted workshops in both China and Australia on a range of topics related to population ageing, with participation by leading academics and policy specialists in both countries. Several Chinese universities will be involved, with Zhejiang University, rated the country's best for the last two years, playing a leading role.

We hope this will build long-term relationships between researchers in the two countries, and help coalesce regional research activity into the causes and consequences of an ageing demographic. If this model is successful, we may try to launch similar programs in other emerging Asian countries.

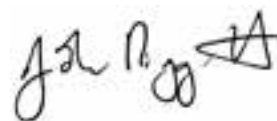
2013 will also see CEPAR further develop our partnerships with industry and government. These relationships are important in understanding the gaps in

knowledge experienced by policy and product makers. They also provide access to useful data for our researchers on work that is already underway. For example, CEPAR's insights and experience in longevity risk modelling and product development have proven to be of particular interest to the actuarial community, both in Australia and internationally. CEPAR will be building on these strong foundations to deliver transformative research in the coming years.

Finally, one of the most rewarding activities I have been involved in this year has been the strategic development sessions we have undertaken with the considerable assistance of Bain & Co. Following extended discussions about strategy development with Bain, a research strategy retreat was convened. About 20 CEPAR participants, representing the various groups within the Centre, were invited to participate. We are in the process of finalising the document – that will happen in the first half of 2013 – but ideas are now well-developed. Some of these ideas are mentioned in the Strategic Directions section following. But just as important, the

day demonstrated a strong sense of shared purpose for the activities and goals of CEPAR, across participants, nodes, and disciplines, which was very encouraging.

Overall, we have met or exceeded most of our Key Performance Targets for 2012, as we did in our first year of operation. And CEPAR's Management and Advisory groups have begun the process of formalising our strategy. When the strategy document is finalised, it will be used as the basis for discussion and decision-making into the future.



John Piggott

HIGHLIGHTS

64 PROJECTS

89 JOURNAL PUBLICATIONS

FIRST CEPAR RESEARCH BRIEF LAUNCHED ON
MATURE-AGE LABOUR FORCE PARTICIPATION

AGED CARE POLICY DIALOGUE CO-HOSTED WITH
ANU'S CRAWFORD SCHOOL OF PUBLIC POLICY

PETER MCDONALD AND KAARIN ANSTEY
APPOINTED INAUGURAL FELLOWS OF THE
INSTITUTE OF PUBLIC POLICY AT ANU

HAL KENDIG DELIVERED THE KEYNOTE ADDRESS
AT THE 4TH ANNUAL DR ROBERT C.K. LAWRENCE
ELDERCARE SEMINAR AT THE NATIONAL
COUNCIL OF SOCIAL SERVICES SINGAPORE

CENTRE FOR RESEARCH ON AGEING, HEALTH
AND WELLBEING AT THE AUSTRALIAN NATIONAL
UNIVERSITY ESTABLISHED UNDER THE
DIRECTORSHIP OF KAARIN ANSTEY

JOHN PIGGOTT DELIVERED THE KEYNOTE
ADDRESS AT THE NETSPAR CONFERENCE
IN THE NETHERLANDS

AI HEATHER BOOTH JOINT WINNER OF ANU'S CASS
AWARD FOR EXCELLENCE IN SUPERVISION 2012

PETER MCDONALD DELIVERED THE MAJOR
KEYNOTE ADDRESS TO THE CONFERENCE OF
THE BRITISH SOCIETY FOR POPULATION STUDIES,
NOTTINGHAM AND OPENING PLENARIES AT
THE EUROPEAN POPULATION AND ASIAN
POPULATION CONFERENCES

MICHAEL KEANE ELECTED A FELLOW OF THE
ACADEMY OF SOCIAL SCIENCES IN AUSTRALIA

MICHAEL KEANE INVITED TO SPEND A YEAR AT
NUFFIELD COLLEGE AT THE UNIVERSITY OF OXFORD

MICHAEL SHERRIS AND ASSOCIATE
INVESTIGATOR (AI) KATJA HANEWALD¹ AWARDED
MELVILLE FINANCIAL SERVICES PRIZE BY THE
INSTITUTE OF ACTUARIES

MICHAEL SHERRIS AND CEPAR VISITOR, SEVERINE
GAILLE, WON AN INTERNATIONAL ACTUARIAL
ASSOCIATION AWARD FOR THEIR PAPER
PRESENTED AT THE MEXICO COLLOQUIUM 2012

SPECIAL CEPAR SPONSORED SESSION AT THE
INAUGURAL IAGG AFRICA REGION CONFERENCE ON
AGEING IN AFRICA ORGANISED BY BOB CUMMING

AI COLETTE BROWNING APPOINTED HONORARY
PROFESSOR AT PEKING UNIVERSITY AND CO-
DIRECTOR OF THE UNIVERSITY'S NEW HEALTH
AND AGEING RESEARCH CENTRE

¹ Along with Maathumai Nirmalendran, a recent UNSW Honours graduate now
with Finity Consulting,

CHAIRMAN'S MESSAGE



MARC DE CURE

Population ageing is a vitally important issue that will confront many countries over the coming decades. The fact that it's occurring is certain, but there are many uncertainties that need to be better understood. We know little about the likely course of life expectancy improvements, for example. We know even less about what it means for society. And still less about how government, business, and the community might respond most effectively as the demographic transition unfolds. It is a key element underlying the economic and social issues Japan has faced over the last decade and more recently many European countries are facing. And it's a rapidly emerging issue in the

United States, Australia and China. It needs to be properly researched. Equally important, in the light of research outcomes,

POLICY AND PRODUCT RESPONSES NEED TO BE DEVELOPED AHEAD OF TIME TO MINIMISE ANY ADVERSE IMPACTS AND MAXIMISE OPPORTUNITIES AT A BUSINESS, COUNTRY AND GLOBAL LEVEL.

The creation of an ARC Centre of Excellence in Population Ageing Research (CEPAR) is testament to the importance of the issue from a research perspective. In recent years population ageing is increasingly being recognised as a critical issue by governments, professionals, businesses and community groups. It's interesting to note its recognition at the recent World Economic Forum discussions at Davos. And driving the implications home in a very tangible way, rating agencies are now considering the impact of ageing populations in their assessment of countries and, no doubt, businesses. Special interest groups such as National Seniors Australia and the mainstream media are also focusing on the issue, and this facilitates broader community awareness and engagement.

CEPAR undertakes research in areas likely to have the most significant impact on understanding and addressing the issues

arising from our ageing demographic. But it is seeking to go beyond this to promote awareness of the issues and research outcomes. This approach requires a strategic understanding of the issues, alignment of the research agenda to areas of greatest significance, iterative exchange of ideas and transfer of knowledge between all key stakeholders, and engagement with the broader community. The better and faster the exchange between researchers, and also between researchers and end users, the more powerful will be research impact. In this, the Advisory Board has a key role to play.

CEPAR is breaking new ground in its approach which may be a good model for research initiatives in other areas. Engagement can be frustrated by longer timeframes of research, researchers' preference for innovation, desire for academic independence, and academic structures which can clash with end users' shorter term focus, preference for incremental change, their desire for more immediate results and a greater influence over the policy agenda.

The Advisory Board became fully operational in 2012. Its central role is to facilitate the engagement process by bringing relevant parties together. It functions as a conduit for engagement between researchers and stakeholders, spanning research focus, support and dissemination. But it also serves as a mechanism through which Board members come to understand each other's perspectives.

I'm pleased to report that much progress was made by the Board in 2012, including agreement on its charter and key priorities and identifying opportunities for research support.

Other key activities in 2012 included:

- Continued engagement with the Leaders' Forum to enlist support of CEOs and department heads helping to drive home the message that this is an important strategic issue
- Enlisting the support of Bain & Company and Bryant Plavsic on a pro bono basis to assist with a review of the research strategy and resultant priorities, and working with research personnel at all levels to ensure the research programs and collaboration are attuned to key priorities
- Providing support and advice to the Centre's leadership team

Our challenge is to continue to build connections with business, government and community groups to facilitate excellent research outcomes which transform policy and practice, providing a good return on investment to the ARC and sponsor organisations.

Marc de Cure

STRATEGIC DIRECTIONS

IN 2012, CEPAR HAS CONSOLIDATED ITS POSITION AS A LEADING GLOBAL RESEARCH CENTRE FOCUSED ON POPULATION AGEING. RESEARCH IS FLOURISHING, AND OUR ORGANISATION OF RESEARCH CAPACITY BUILDING HAS BEEN COMPLETED AND IS PROCEEDING WELL.

CEPAR's reputation is building – we are engaging more and more with business and government on issues connected to demographic change. And we have begun to expand our international footprint. With these initiatives under control, we are thinking about new goals for 2013 and beyond. Through 2012 we worked on a fully developed strategy for the next several years, and our 2013 goals are strongly aligned with this strategy. Five areas of activity for 2013 are covered below, beginning with strategy development itself. The others are: conferences, infrastructure, research capacity building, and community resources.

ARTICULATING STRATEGY

Based on our experience over the first 18 months of the Centre's operation, and with the support of Bain & Company, we have converged on a strategic plan for the Centre's next three years of operation. As part of this, we organised a research strategy retreat, an important milestone, leading to new thinking about research directions, and affirming a sense of shared purpose. Flowing from these activities, a strategy document will be available in the first half of 2013.

This process has been a rewarding and challenging one, because so much of what CEPAR is doing is new, especially in the social sciences. An articulated strategy allows us to orient Centre activities and initiatives to its core purpose. It is a lens through which the disparate activities of the Centre are brought into focus and connected, and in this way clarifies its future directions.

CONFERENCES IN 2013

Dissemination of our research is critical. Organising conferences allows us to share our research, contribute to the debate, promote the Centre and the issue of population ageing itself, and strengthen ties with external stakeholders.

CEPAR will play a central role in a number of conferences and workshops to be held through the year. First, we are organising our first international conference. It will be a multi-disciplinary event focused on population ageing, to be held at UNSW on July 2-4. Its purpose is to showcase the range of CEPAR research, and, equally, to invite external participants from multiple disciplines to engage in deliberations on the issue. The event will provide an opportunity to expand linkages between CEPAR researchers and others around the world, and to emphasise the importance of population ageing, and its multi-faceted research requirements.

In June, Kate O'Loughlin and Hal Kendig will convene a workshop in Seoul of international collaborators conducting research on Work and Care. Later in July,

CEPAR will co-host the Superannuation Colloquium. This has traditionally been organised by a small centre at UNSW, the Centre for Pensions and Superannuation. In assuming joint stewardship with the ASB School of Risk and Actuarial Studies, we hope to bring new energy to the event, and to expand its scope.

Later in the year, CEPAR will join forces with the Project on Intergenerational Equity, at the Research Institute for Policies on Pension and Aging (RIPPA), Japan, to organise a conference on pre-funded pension plans. And finally, we are planning to join with Harvard University to co-host a workshop on population ageing, tied to a Handbook of Population Ageing, edited by Alan Woodland and John Piggott, and to be published by Elsevier. The Elsevier handbook series is perhaps the most prestigious in the Economics discipline. We are fortunate to have secured outstanding contributors from around the world – a description of the project itself appears in the body of the report. In the present context, the conference should be seen as one more effort to bring together researchers concerned with population ageing, and to raise the profile of the issue.

STRATEGIC DIRECTIONS

STRENGTHENING RESEARCH INFRASTRUCTURE

The empirical analysis of demographic change in Australia is hampered by the lack of strong data. This is a major gap in Australia's social sciences research arsenal. Many countries around the world have developed internationally comparable panel surveys to capture the behaviour and circumstances of older cohorts. These include not only the developed economies of North America and Europe, but emerging nations such as China, India, and Korea, among many others. But although our policy structures and business environment are very different from elsewhere, there are few databases which allow convincing comparison of the resulting behaviours with those of our neighbours and comparator developed nations. CEPAR has now established that the ARC will regard surveys of this kind as social science research infrastructure, and will be seeking Large Infrastructure and Equipment Fund (LIEF) partners over the next 12 months, to work towards a grant application to fund an Australian survey. If successful, scholars

world-wide would be able to include Australia in their international research, and the range and quality of analysis available to policymakers in Australia would dramatically improve.

BUILDING RESEARCH CAPACITY

Research capacity building is central to our core purpose. As reported elsewhere, we now have a well-developed program in place to support this, including financial support, and a range of postdoctoral workshops. The 2013 ERA conference will be hosted by CEPAR Associate Investigators Lindy Clemson and Kate O'Loughlin based in the Ageing, Work and Health Research Unit at the University of Sydney. Kaarin Anstey will again lead the Annual National Research Methods Workshops at ANU to increase skills in population-based research in Australia.

The primary clientele for these activities are Australia-based researchers. But we have become increasingly aware over the last 18 months that young researchers in many countries are concerned about the issue of population ageing, yet do not have the organisational

resources to connect to the wider research community. We are initiating a program to forge links with these young scholars, and to help them connect with each other, starting with China. We expect this to develop relationships between universities in China and CEPAR, and between the scholars themselves, building a firmer foundation for next-generation researchers on population ageing in countries where it is most urgently needed, and generating long term research profile for CEPAR. We have chosen China because of strong existing connections there, and because we have been successful in raising funds from the Department of Foreign Affairs and Trade for this purpose. We have also applied for UNSW funding. Two workshops are planned which will provide opportunities for young researchers to meet established scholars, both China based experts and CEPAR personnel.

If this is successful in China, we will consider applying the same model to other countries in Asia.

RESOURCES FOR THE COMMUNITY: A THREE YEAR PROJECT

A longer term initiative is related to informing policy debate and raising community awareness about population ageing in Australia. It takes two forms. First, we are beginning to plan a resource for the use of both professionals and the wider community, which will provide information and insights into population ageing. We have been talking with teacher organisations and education authorities about what might be done for secondary students, so that they become familiar with the idea that population ageing is a process which will impact them throughout their lives. A web-based resource, possibly with interactive components, is being contemplated.

Relatedly, we are considering investing in undertaking applied research topics which are important from a policy standpoint. These research projects, which will typically be informed by a multi-disciplinary perspective, would appear as special reports rather than as academic papers. They would be informative to policy, and

would raise awareness of certain aspects of demographic change that had not been previously appreciated in the broader community. Again, these ideas are preliminary, but fall within our mandate, in informing policy and raising awareness of the issue of population ageing.

CEPAR's development is now well underway. We have organisational structures in place to accommodate developments in our research programs, in research capacity building, in government and industry engagement, and in international linkages. We are excited by the new horizons that keep opening in this vital area of knowledge-building, about our shared sense of purpose, and about our vision for the future. And strategically, we have a sense of how and what to progress and execute in these arenas of our activity. New frontiers – building research capacity internationally, and developing research infrastructure – are challenges that face us over the next couple of years. Longer term, new resources to raise community and policy awareness of the challenges and opportunities of population ageing will be developed.

A close-up photograph of two hands shaking in a firm grip. The hands are positioned horizontally across the frame. The person on the left is wearing a dark grey suit jacket and a white shirt cuff. The person on the right is wearing a dark suit jacket and a white shirt cuff. The background is a solid dark grey. A large white number '1' is superimposed over the right side of the handshake. The word 'SECTION' is written in white, uppercase, sans-serif font on the left side of the handshake.

SECTION

GOVERNANCE
& STRUCTURE

The governance structure of the Centre supports strategic development as well as engagement between researchers, industry and government. Central to CEPAR’s

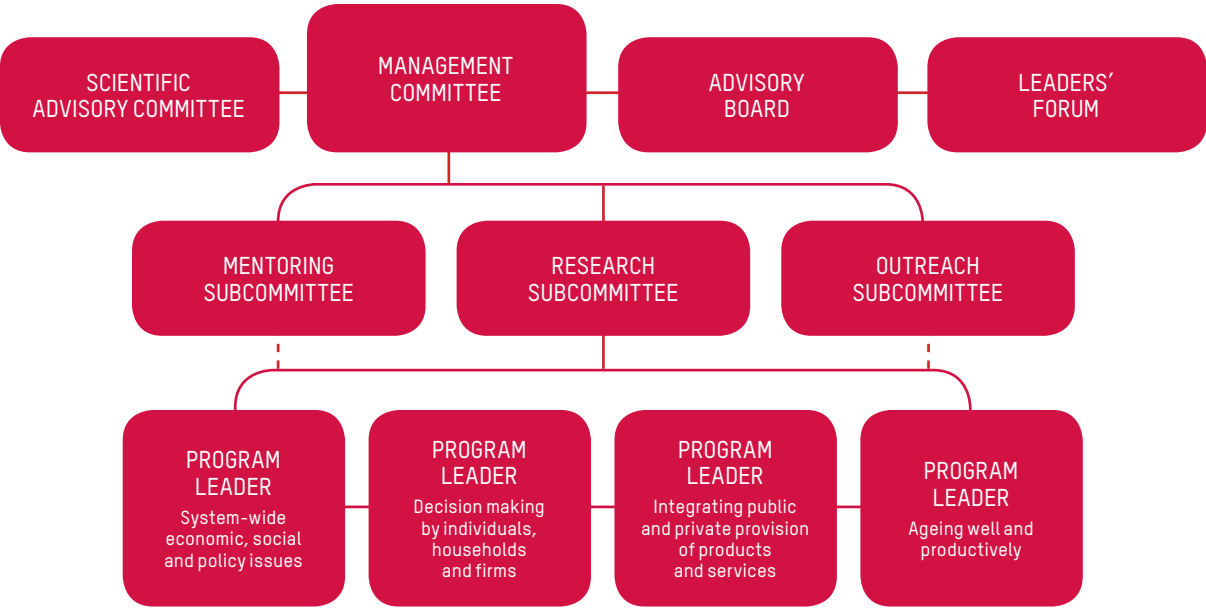
governance are the Centre Director and the Management Committee who have overall responsibility for Centre performance, holding ultimate

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



SCIENTIFIC ADVISORY COMMITTEE

The Scientific Advisory Committee provides advice on the strategic direction of the Centre from a global perspective, with emphasis on research programs. Members of the Committee will actively build the

international profile of the Centre and identify potential international partners and linkage opportunities.

The Scientific Advisory Committee will meet for the first time in 2013. The 2013 meeting will be scheduled to coincide with the Centre’s inaugural international

conference thus providing an opportunity for Committee members to engage in depth with the Centre’s research and personnel.

The Scientific Advisory Committee comprises five international leaders in the area of population ageing,

drawn from a range of fields reflecting the Centre’s multidisciplinary nature.

SCIENTIFIC ADVISORY COMMITTEE MEMBERS

Professor David 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 Program on the Global Demography of Aging. He is also a Faculty Research Associate at the National Bureau of Economic Research, 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. 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 between 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 Environment at Oxford University, 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. 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. His research on household financial decision making has focused on long-term saving for retirement utilising theories and methods from the behavioural and social sciences in the context of risk and uncertainty.

Professor Yasuhiko Saito, Advanced Research Institute for the Sciences and Humanities, 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 Merrill 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, 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*.

Professor Hans-Werner Sinn, University of Munich and Ifo Group

Hans Werner-Sinn is Professor of Economics and Public Finance at the University of Munich. He is also the President of Ifo Institute for Economic Research and the Director of the Centre for Economic Studies at the University of Munich. He is a National Bureau of Economic Research fellow; a fellow of the European Economic Association; a lifetime member of the Council of Economic Advisors to the German Federal Ministry of Economics; and a member of the Bavarian Academy of Sciences, the Northrhine-Westfalian Academy of Sciences and the Executive Committee of the International Economic Association. His current research interests include public finance, economics of transition, allocation theory, risk and insurance, natural resources and trade theory.

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 will 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.

The Board will meet at least annually. Additionally, the Director or Chair will meet bilaterally with individual members to discuss particular issues. The Board met for the first time on 22 August 2012.

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

ADVISORY BOARD MEMBERS

MARC DE CURE	CHAIR
HELEN BARTLETT	Pro Vice-Chancellor and President, Gippsland campus, Monash University and Convenor, Emerging Researchers in Ageing Initiative
STEPHEN BUNKER	Research Consultant, Medibank
JOHN CREEDY	Professor of Economics, University of Melbourne
JONATHAN DEANE	General Manager, Group Strategy, AMP
ALAN DUNCAN	Director, National Centre for Social and Economic Modelling, University of Canberra
ANNE GORDON	Director of Operations, CEPAR
ROB HEFEREN	Executive Director, Revenue Group, The Treasury
CATHERINE NANCE	Partner, PricewaterhouseCoopers
JOHN PIGGOTT	Director, CEPAR
JEROMEY TEMPLE	Director, Productive Ageing Centre, National Seniors Australia
EDWARD WHITEHOUSE	Principal Administrator, Directorate for Employment, Labour and Social Affairs, OECD
SERENA WILSON	Deputy Secretary, Department of Families, Housing, Community Services and Indigenous Affairs
REPRESENTATIVE	Department of Health and Ageing

LEADERS' FORUM MEMBERS

MARC DE CURE	CHAIR
JENNIFER ALEXANDER	Royal Australasian College of Physicians
CAMERON CLYNE	National Australia Bank
CRAIG DUNN	AMP
LES FIELD	UNSW
JANE HALTON	Department of Health and Ageing
JEFF HARMER	Formerly Department of Families, Housing, Community Services and Indigenous Affairs
KEN HENRY AC	Special Advisor to the Prime Minister
MARK JOHNSON	PricewaterhouseCoopers Australia
JOHN LAKER	Australian Prudential Regulatory Authority
JOHN PIGGOTT	Director, CEPAR
MATTHEW QUINN	Stockland
HEATHER RIDOUT	Formerly Australian Industry Group
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 listed company Director and business advisor and previously held senior executive roles in leading financial and professional services groups. 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.

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 2012, the Committee comprised:

JOHN PIGGOTT	CENTRE DIRECTOR (CHAIR)
PETER McDONALD	Deputy Director and Australian National University Node Leader
HAL KENDIG	Chief Investigator and University of Sydney Node Leader
ALAN WOODLAND	Chief Investigator and University of New South Wales Node Leader
ANNE GORDON	Director of Operations

The Committee meets formally at least four times a year. Consultation also takes place via email and teleconferencing. In 2012, the Committee met on 26 April, 28 June, 15 October and 13 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 2012, the subcommittee met on 14 June and 15 October. In addition, subcommittee members joined a range of other CEPAR personnel at an intensive one day retreat to discuss research directions and strategy on 6 November 2012.

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 2012 consisted of the Centre Director, the Director of Operations plus Associate Investigators Kate O’Loughlin, Heather Booth, Lisa Magnani and Daniel Alai (ECR representative).

The subcommittee met on 28 May and 30 August, 2012.

OUTREACH SUBCOMMITTEE

The Outreach subcommittee oversees professional education programs, 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 4 June, 4 September and 5 November 2012. Membership comprised the Centre Director, the Director of Operations plus Chief Investigator Kaarin Anstey, Associate Investigator Katja Hanewald and CEPAR’s Communications and Marketing Manager, Melanie Brake.

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 Australian Demographic and Social Research Institute. Professor Peter McDonald, the Centre's Deputy Director, serves as ANU Node Leader.

In 2012 Professor Hal Kendig led the University of Sydney node which consists of researchers working in the Faculty of Health Sciences as well as the School of Public Health. In 2013, Professor Robert Cumming assumes the node leadership following Professor Kendig's move to ANU's Centre for Research on Ageing, Health and Wellbeing.

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, Australian School of Business, University of New South Wales

AGEING WELL AND PRODUCTIVELY

Program leader: Professor Hal Kendig, Ageing, Work & Health Research Unit, Faculty of Health Sciences, University of Sydney

INTERNATIONAL UNIVERSITY PARTNERS

Our partner investigators are drawn from world class research schools:

The University of Manchester

The University of Newcastle, United Kingdom

The University of Nottingham/Institute for Fiscal Studies

The Wharton School

The University of Pennsylvania

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

Hitotsubashi University

Indira Gandhi Institute of Development Research

Pennsylvania State University

Ragnar Frisch Centre for Economic Research, Oslo

St Gallen University

University of Naples Federico II

University of Parma

University of Trieste

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 and Ageing

Department of Families, Housing, Community Services and Indigenous Affairs

NSW Trade and Investment

AMP

Medibank

NAB

PricewaterhouseCoopers

Stockland

Bain & Company

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
AUSTRALIAN NATIONAL UNIVERSITY

Professor Kaarin 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

Professor Hal Kendig
Ageing, Work and Health Research Unit, Faculty of Health Sciences
UNIVERSITY OF SYDNEY
[Centre for Research on Ageing, Health and Wellbeing, Australian National University from January 2013]

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

Scientia Professor Alan Woodland
Australian School of Business
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PARTNER INVESTIGATORS

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School of Economics
UNIVERSITY OF NOTTINGHAM/
INSTITUTE FOR FISCAL STUDIES

Professor Hanming Fang
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UNIVERSITY OF PENNSYLVANIA

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Professor Helen Bartlett
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Faculty of Economics
UNIVERSITY OF TRIESTE

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DEVELOPMENT RESEARCH

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Centre for the Study of Choice
UNIVERSITY OF TECHNOLOGY,
SYDNEY

Professor Martin Sliwinski
Gerontology Center
PENNSYLVANIA STATE UNIVERSITY

Professor Noriyuki Takayama
Institute of Economics Research
HITOTSUBASHI UNIVERSITY

Professor Peter Whiteford
Crawford School of Public Policy
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Dr Tim Windsor
School of Psychology
FLINDERS UNIVERSITY

² Not all Associate Investigators were actively involved in the research program in 2012.

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Dr Fedor Iskhakov
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Dr Ralph Stevens
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Dr Chris Strickland
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Dr J Lynn Francis
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Dr Vasant Hirani
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Dr George Kudrna
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Dr Vanessa Loh
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Dr Ramona Meyricke
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Commencing 2013:

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CEPAR affiliated students are listed on pages 100-106.

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Lenny Li
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(until 30 November 2012)
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AUSTRALIAN NATIONAL UNIVERSITY NODE

SECTION



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.

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

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STRAND 1

SYSTEM-WIDE ECONOMIC, SOCIAL AND POLICY ISSUES

Research in the system-wide research strand this year embraced research into broad policy initiatives, and into changes in society driven by an ageing population. (More narrowly based policy research is reported in other strands.) It also encompassed research into demographic change itself, the associated environment and forecasting issues. Demographic change is necessarily system-wide, and this strand is therefore the largest.

Policy-related research in 2012 included:

- **AGED CARE POLICY REFORM, FROM BOTH THE CLIENT AND CARER PERSPECTIVES**

This is a highly relevant topic in the Australian context, because it is such an active area of policy formulation. But it has global significance as well. With pension reform well underway in many countries, the new frontier of population ageing is aged care. The conflict between work and care, the use of IT in aged care coordination, and the role of family-based aged care all receive specific attention, with perspectives from Economics, Sociology, Information Systems and Demography.

- **ECONOMY WIDE MODELLING, TAKING ACCOUNT OF OVERLAPPING GENERATIONS, TO ANALYSE THE IMPACTS OF POLICY REFORM INDUCED BY AN AGEING DEMOGRAPHIC ON LABOUR SUPPLY AND SAVING**

Understanding how economic welfare is impacted by policy interventions is a challenging research task. Cutting-edge models, incorporating overlapping generations and stochastic processes, are used to assess pension reform, sometimes within a broader policy context.

Other research, analysing the process of demographic change and its social environment, focused on:

- **SOCIAL ATTITUDES TOWARDS AGEING**

There is growing concern that negative attitudes towards older people are impacting on older people, both in the workplace and in the wider community. Relatedly, the relationship between generations is seen to be under increasing stress as populations age. Survey analysis is undertaken to determine more precisely the nature and covariates of these phenomena, including contributions from economics and sociology.

- **LONGEVITY RISK, MORTALITY PROJECTIONS AND LONGEVITY RISK MANAGEMENT**

Several projects focus on this related set of issues, drawing on economic, actuarial and demographic expertise.

In addition, Centre personnel have been centrally involved in two important edited books. One focuses on various aspects of ageing in Australia. The other brings together international academic, policy and practice perspectives on various aspects of demographic change, its causes, and its consequences.

RESEARCHERS

KATE O'LOUGHLIN
VANESSA LOH
HAL KENDIG

Workforce participation and informal caregiving 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 paid work and caregiving, transitions between them, and impacts on ageing individuals, families, and the broader economy.

The Work and Care project has two key objectives:

- 1 To build international comparative knowledge on older workers and caregiving 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 the interplay between work and caregiving and its relationships with health, wealth and wellbeing. This will be achieved through cross-sectional analyses of Australian data on work and caregiving 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 caregiving and the impact on individuals, families and the broader economy with a particular focus on the baby boomer cohort and the gendered nature of caregiving.

The specific research questions being addressed include:

- 1 Do retirement schemes offer any flexibility for caregivers who need to leave the workforce?
- 2 To what extent do cross-national differences in retirement schemes impact on caregivers' work choices?
- 3 How do caregiving 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 caregiving, 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?



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 (CRAHW) 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*.

OUTCOMES ACHIEVED

In 2012 cross-sectional analysis of Australian data on work and caregiving was carried out. The data came from the 2011–12 Life History and Health Survey administered to a sample of 60–64 year olds drawn from the NSW 45 and Up Study (N=1269). The survey included items on a range of life history and health related variables including work and caregiving. Preliminary findings indicate caregiving is associated with lower levels of paid work and poorer health and wellbeing; work and caregiving intersect in different ways for men and women; caregiving workload and/or levels of caregiving are important factors.

These findings were presented at:

- 1 International workshop – Older workers and caregiving: Statistical evidence from the UK, Australia and Canada, Centre for International Research on Care, Labour and Inequalities, University of Leeds, UK, 21–22 May 2012
- 2 FaHCSIA Roundtable on Work Participation, Canberra, 24 October 2012

The findings from this cross-sectional examination of work and caregiving are now being prepared for publication. A retrospective examination of caregiving and work histories across the life course and their impact on health and wellbeing at late middle-age is now under way.

NEXT STAGE

In 2013 we plan to commence the cross-national comparisons, disseminate findings and expand the collaborative focus through the following planned activities:

- 1 Second international workshop – Older workers and caregiving: Statistical evidence from the UK, Australia, Canada and New Zealand, University of Sydney, 14–15 February 2013. Since the Leeds workshop, the collaborating partners have been working to bring together the existing data sources from each country based on an agreed set of core variables. The second workshop will allow us to further this work and also plan a timeframe and publication schedule for the cross-national comparisons.
- 2 Paper titled ‘Reflections on Australian and New Zealand policy initiatives in the interface between work and care’ to be presented at the Symposium on Global Approaches to Policy Supporting Work and Care in Late Middle Age, 20th IAGG World Congress of Gerontology and Geriatrics, 23–27 June 2013, Seoul, Korea.
- 3 CEPAR-sponsored post-IAGG conference seminar (28–29 June) that will bring together invited international scholars to present their research around paid work and caregiving in varying geographic, social, economic and political contexts. Peer-reviewed papers from the seminar will be published in a Special Edition of *Ageing and Society*.

Preliminary findings indicate caregiving is associated with lower levels of paid work and poorer health and wellbeing



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.’

READINESS AND ADOPTION OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN RESIDENTIAL AGED CARE COORDINATION

22

RESEARCHER

PRADEEP RAY

Australia has been witnessing an increasing demand for aged care services. As the population ages, this is projected to increase at a faster rate. A number of international studies suggest that implementation of Information and Communication Technologies (ICT) in aged care increases productivity directly and generates indirect benefits through reduced management and administration costs, reduced staff turnover and improved client satisfaction with the delivery of care. However, few studies have been conducted in aged care settings in Australia to identify the need for ICT implementation, and to assess the impact of ICT interventions.

This collaborative project aims to:

- understand service delivery models in residential care;
- collect and analyse the evidence of ICT applications in aged care;
- develop and apply an ICT requirements framework for aged care services; and
- build a prototype system for aged care services.

This project is being undertaken in two phases:

- Phase 1 (completed in Oct 2012) resulted in the creation of a new Patient Services Model (PSM) to improve care delivery and efficacy for a specific “grouping” of elderly patients.

This model has been realised as a proof-of-concept prototype using an HSAGlobal software platform called Collaborative Care Management Solution (CCMS)

- Phase 2 (from Oct 2012) involves the construction of a prototype Patient Services Management Platform (PSMP) that can be taken into a clinical trial to test the impact of a new PSM on patient care outcomes. Clinical trials will be conducted in a residential aged care facility to test the PSMP and develop the software requirements for a collaborative care platform that can be deployed in any residential care environment.

- Phase 1 involved four major steps. First, information on aged care services from multiple sources was analysed. Sources included relevant government policies at the federal and state levels, forms used by HammondCare and informal discussions with HammondCare stakeholders. Second, a systematic literature review was conducted by researchers from multiple disciplines (public health, information systems, computer science and management) to analyse the evidence of ICT applications for aged care in the developed world. Third, the software specifications for the aged care platform were developed. Fourth, Asia-Pacific ubiquitous

Healthcare Research Centre (APUHC) members and the HSAGlobal team built a prototype system for aged care by configuring the HSAGlobal CCMS platform.

The next phase will involve in-depth interviews with HammondCare staff and care workers to finalise the requirements of the target collaborative care platform.

This project is jointly funded by CEPAR, Smart Services CRC, HSAGlobal, HammondCare and the APuHC.

Clinical trials will be conducted in a residential aged care facility to test the Patient Services Management platform



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 (eHCD) led to the establishment of the WHO Collaborating Centre on eHealth at UNSW. 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. Under his leadership, APuHC was invited in 2010 by the Aged Care Industry IT Council to develop a long-term strategic IT plan for the aged care sector in Australia. This has led to the ongoing \$1million collaborative initiative on aged care involving academic and industry organisations in Australia, New Zealand, UK and USA.

RESEARCHER

HEATHER BOOTH

Community-based aged care places considerable responsibility on the family. Traditional population-based macro-models of care take no account of heterogeneity in the availability of family carers to older individuals. This study uses population-based microsimulation to model detailed family structures to examine the availability (supply) of carers by kin-relationship within the families of older individuals (demand). The aim is to understand how changing marriage, fertility (including childlessness) and longevity determine both the supply of and demand for aged care within families, with a view to informing the future burden on family members and ongoing

feasibility of current community-based care. Contrasts between different kin structures will be explored. Specialist software for demographic microsimulation (SOCSIM) is employed.

The project is 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 goal of this larger project is to build capacity in dynamic microsimulation and to apply it to major research questions in the interface between anthropology, demography and economic history. The first phase of the project – capacity building – was completed in early 2012. The project has brought two sophisticated

dynamic microsimulation systems, SOCSIM and CAMSIM, to Australia and has built capacity in their use and application through two tailored workshops each led by the world expert on that system. The three week workshop on the SOCSIM Microsimulation System was led by Professor Mike Murphy from the London School of Economics. The second three-week workshop was led by Jim Oeppen from the Max Planck Institute for Demographic Research, and covered the CAMSIM Microsimulation System and its application.

Microsimulation involves heavy data demands, and the data required for demographic microsimulation span 200 years. Compiling the database for the simulation is a major project activity.

The installation and testing of the software for the two demographic microsimulation systems (SOCSIM and CAMSIM) was also a major undertaking. This complex procedure is now simplified.

This project (2012–2014) is supported by the ANU College of Arts and Social Sciences funding for interdisciplinary research.

The aim is to understand how changing marriage, fertility (including childlessness) and longevity determine both the supply of and demand for aged care within families, with a view to informing the future burden on family members and ongoing feasibility of current community-based care



ASSOCIATE PROFESSOR
HEATHER BOOTH

BSc(Econ) (Hons) London,
MSc Southampton, PhD London
ASSOCIATE INVESTIGATOR

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

Heather's research interests in ageing include social networks, self-rated health and wellbeing, and the provision of family-based informal aged care. Other related interests are stochastic mortality modelling and forecasting, stochastic population forecasting, mortality, and microsimulation modelling of the older Australian population.

Heather leads the Social Networks and Ageing Project (2010–2013) and is a lead investigator on the AWAP-funded collaborative DYNOPTA project which combines data from multiple Australian longitudinal studies of ageing. She also coordinates the ANU Interdisciplinary Microsimulation Project.

RESEARCHERS

HAL KENDIG
COLETTE BROWNING
KATE O'LOUGHLIN
KARLA HEESE

External collaborator

MERRIL SILVERSTEIN
(CEPAR SCIENTIFIC
ADVISORY COMMITTEE)

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 for older people in the

workplace and in the 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.

A research program currently underway is investigating issues of ageing and attitudes. Our 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. Analysis of the 2009 Australian Social Survey of Attitudes (AuSSA) data is underway 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).

OUTCOMES ACHIEVED

The work was presented at a number of conferences including the International Federation on Ageing's 11th Global Conference on Ageing, the Annual Scientific Meeting of the Gerontological Society of America, the International Sociological Association Forum in Buenos Aires and the 45th Australian Association of Gerontology National Conference.

We are currently investigating retirement and workforce participation issues for those aged 50-64 years, including age discrimination. In September, Professor Kendig and colleagues from the Ageing Work and Health Research Unit co-hosted a Sydney Ideas lecture with the Age Discrimination Commissioner, the Hon. Susan Ryan AO.

NEXT STAGE

- 1 Building on the relationship established by O'Loughlin and Kendig with the Australian Human Rights Commission, a linkage proposal for further work on attitudes and age discrimination is being explored
- 2 Further journal articles are expected to be produced
- 3 Plans are being developed for possible data collection for the 2015 AuSSA. 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.



PROFESSOR COLETTE BROWNING
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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 Australian 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.

Professor Browning has published widely in major international journals and is the series editor with Professor Shane Thomas, for a forthcoming book series on *Healthy Ageing* for Springer Publishing.

RESEARCHERS

JOHN PIGGOTT

External collaborator

ED WHITEHOUSE
(CEPAR ADVISORY BOARD)

‘Intergenerational solidarity’ (IGS) means different things to different people. In this project, we view IGS as a means to an end: a mechanism for supporting mutually beneficial exchanges between generations. Because needs and resources vary across the life-cycle, each generation gains from such exchanges. They can go in both directions. Forwards, towards younger generations, are investments in infrastructure, innovation and environmental protection. Backwards, to older generations, are pensions, and public and

family care for older people.

This perspective on IGS highlights social and economic policy issues. 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.

Population ageing is placing IGS under stress. The two-way exchange of time and money between generations works best in times of demographic balance. Social and economic changes might also imperil IGS. Greater labour force participation of women and more complex as well as smaller families weaken bonds between family members and reduce opportunities for informal caring. This project unites two new databases to determine whether, and how, demographic, social and economic changes

are indeed affecting perceptions of IGS.

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.

Statistical analysis is now complete, and we are moving to the writing up stage. We are aiming to have a draft at the submission stage in the first half of 2013.

Population ageing is placing intergenerational solidarity under stress. The two-way exchange of time and money between generations works best in times of demographic balance



SCIENTIA PROFESSOR JOHN PIGGOTT
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CENTRE DIRECTOR

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*.

AUSTRALIA'S OLDER POPULATION: COHORT ANALYSIS OF DEMOGRAPHIC CHANGE

RESEARCHERS

PETER MCDONALD
MEIMANAT
HOSSEINI-CHAVOSHI

This study aims to generate projections of the evolving structure of Australia's population through the next several decades. The objectives are to compile the demographic patterns of a range of socio-economic characteristics of Australia's older population from different available databases in a single source; and project a selection of the same characteristics of the Australian aged population over the thirty-year period, 2011–2041.

The projections will determine:

- 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
- values and attitudes of older Australians.

So far, an analysis has been completed of the geographic distribution of older persons in Australia as shown by the 2011 Census. The geographic level used in this analysis is the S3 level. The analysis shows the geographic distribution of persons aged 65 years and over, aged 80 years and over, and the expected growth in the next 15 years of persons aged 80 and over. It also shows the numbers and proportions aged 65 years and over and 80 years and over living in non-private dwellings. The proportions aged 65 years and over have been mapped. Analysis continues of the construction of the Australian population at older ages by multiple characteristics.

The analysis shows the geographic distribution of persons aged 65 years and over, aged 80 years and over, the expected growth in the next 15 years of persons aged 80 and over, and the numbers and proportions aged 65 years and over and 80 years and over living in non-private dwellings



DR MEIMANAT HOSSEINI-CHAVOSHI
BS (Public Health) Isfahan
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RESEARCH FELLOW

Meimanat Hosseini-Chavoshi is a CEPAR Research Fellow in the Australian Demographic and Social Research Institute (ADSRI) at the Australian National University. Prior to her graduate education at

ANU, 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 designing, implementing and data analysis of several national health surveys in the areas of demographic and health issues, fertility transition, adolescents, and ageing.

Over the past five years, in addition to her work at the ADSRI, 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.

She has a strong publication record and has received a major book award, the World Prize for Book of the Year of the Islamic Republic of Iran, in 2010.

Meimanat will benefit from her involvement with CEPAR through expansion of her knowledge and understanding of ageing issues in Australia.

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. Projected mortality improvements in the next few decades will lead to further ageing. The size of Australia's population is also expected to increase. This demographic development will have significant macroeconomic implications. 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 activity.

The aim of this project is to develop a framework to study the effects of the dynamic evolution of the age structure for the Australian economy.

Our demographic OLG model consists of a population model with demographic projections and an economic general equilibrium model. The population projection model has already been fitted with the input data on fertility, mortality and net immigration rates derived from the Productivity Commission's MoDEM 2.0. The economic model is an extended version of that developed by Kudrna and Woodland (2011) that includes a richer fiscal structure with public expenditures on health, education, aged care, family benefits and the Age Pension.

Accounting for realistic demographic transition paths allows us to capture more accurately interactions between demographic shift and economic factors. Preliminary results indicate that while aggregate output will increase due to the larger population, output per capita will decrease mainly because of the negative effects of population ageing on per capita labour supply. The government will need to increase taxes in the future in order to maintain a balanced budget with substantially larger age-related expenditures.

We plan to use the model to examine the sensitivity of the economic and fiscal effects of ageing with respect to different assumptions about fertility, mortality and net immigration rates, and to analyse relevant policy questions, including tax and pension reforms. We also plan to incorporate interactions between parents and children into the model structure, with parents incurring costs of raising children and also deriving utility from children's consumption.

It is expected that this research will generate working papers and publications.

The results indicate that while aggregate output will increase due to the larger population, output per capita will decrease mainly because of the negative effects of population ageing on per capita labour supply



SCIENTIA PROFESSOR
ALAN WOODLAND
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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.

RESEARCHERS

CAGRI KUMRU
JOHN PIGGOTT

This project studies the interaction between capital income taxation and a means-tested age pension in the context of an overlapping generations model, calibrated to the UK economy. Recent literature has suggested a rehabilitation of capital income taxation (Conesa et al. [2009]), predicated on the idea that capital is a complement with retirement leisure. This leads naturally to the conjecture that a publicly funded age pension contingent upon holdings of capital or capital income may have a similar effect. We formalise this using a stochastic OLG model with multiple individuals differentiated by labour productivity and pension entitlement. Our preliminary findings suggest that a means-tested pension has effects similar to capital income taxation in a life-cycle context.

This project was initiated in early 2011. An early version of the paper was presented at the Second LeeX International Conference on Theoretical and Experimental Macroeconomics, Barcelona, Spain, in June 2011.

Feedback led to substantial changes, and a revised draft has now been presented at a number of international conferences and seminars, including the Dynamics, Economic Growth, and International Trade (DEGIT) 2012 Conference, Milan, September 2012. A final version was presented at two international conferences in Taiwan.

We expect to submit our paper to a high quality international journal early in 2013.

This leads naturally to the conjecture that a publicly funded age pension contingent upon holdings of capital or capital income may have a similar effect

RESEARCHER

HEATHER BOOTH

External collaborators

ROB HYNDMAN

HAN LIN SHANG

FARAH YASMEEN
(ALL MONASH UNIVERSITY)

LEONIE TICKLE
(MACQUARIE 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. The refined methods are also applied to fertility and migration, enabling fully-stochastic population forecasting. France and Australia are examples. New cohort forecasts of mortality have also been produced by Tickle and Booth.

Building on earlier research, a 'coherent' method for forecasting the mortality of subpopulations has been developed³. Coherent forecasts for subpopulations are constrained within broad structural relationships among subpopulations as

defined by past experience. 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 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 method demonstrate that the coherent forecasts are at least as accurate in overall terms as comparable independent forecasts, and that forecast accuracy is homogenised across subpopulations. Coherent forecasts are clearly advantageous in population forecasting where subpopulations are involved.

The method has been applied to populations by sex and to populations by state. For Australia, the coherent forecasts suggest that the sex gap in life expectancy at birth will decrease by diminishing amounts, reaching two years by the end of the century.

The gap would never be closed, nor is it forecast to diverge. In comparison, comparable independent forecasts produce higher male than female life expectancy by 2100. A similar pattern is obtained for life expectancy at other ages.

Application to age-state-specific mortality rates for Australia using data for 1950–2003 demonstrates the flexibility of the coherent method. 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.

Current research focuses on forecast accuracy. Does subdividing a population by sex (within state) or by state (within sex) produce the more accurate forecasts for subpopulations defined by sex and state? A planned extension of the method is to subdivide populations by two or more dimensions, with application by sex and state.

For Australia, the coherent forecasts suggest that the sex gap in life expectancy at birth will decrease by diminishing amounts, reaching two years by the end of the century

³ Rob Hyndman, Heather Booth and Farah Yasmeen (online 10 October 2012) Coherent mortality forecasting: the product-ratio method with functional time series models. *Demography*, 50.

RESEARCHER

XIAODONG FAN

External collaborators

ANANTH SESHADRI
CHRISTOPHER TABER
(BOTH WISCONSIN)

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. In the United States, with the ageing of the baby boom generation, these have become some of the most significant issues facing policymakers. The US Government, like most others in the world, is seeking the most efficient solution to these challenges.

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 Social Security Normal Retirement Age (NRA) from age 65 to age 67, all the previous literature takes the same age-wage profile as the baseline model where the NRA is 65 and re-estimates retirement behaviour in the new environment where the NRA is 67. As wages have already been declining significantly approaching the previous NRA of 65, under the new policy of NRA at 67 working is

not likely to be attractive to many workers as wages will be expected to further decline from 65 to 67. It is assumed that such policy changes will also affect the age-wage profile. If one is expecting an NRA of age 67 instead of age 65 and retiring later is optimal, then he or she will certainly try to keep their wage high during the extra working time. Omitting these effects will likely generate bias in the counterfactual policy experiments.

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 Panel Study of Income Dynamics (PSID) data. After estimating the baseline model, we conduct two sets of counterfactual policy experiments. 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 NRA two years (from age 65 to 67). We find in both counterfactual policy experiments, workers invest more in their human capital at older ages, which leads to an increase of more than 20% in wages and over 60% in labour force participation rates near retirement.

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



DR XIAODONG FAN

BE ME Tsinghua, MS UTexas Austin,
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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.'

RESEARCHERS

KATJA HANEWALD
MICHAEL SHERRIS

House price uncertainty presents a substantial risk to private and institutional investors and to the large financial sector providing housing-related financial products such as mortgage loans; equity release products, including reverse mortgages and home reversion schemes; asset-backed securities; and mortgage-backed securities. Despite this, there is limited detailed analysis of models for quantifying house price risk and limited analysis based on house price data other than at a market-wide level. This partly reflects the limited availability of detailed data.

The project shows how house price risk models that combine the time-series and cross-sectional dimensions of the data can be used to improve the analysis of risks in a range of financial products. A comprehensive analysis of house prices is provided based on postcode-level data for Sydney. House price growth is found to vary considerably across postcode areas and exhibits very large variations over short time horizons with standard deviations of up to 150% of average growth rates.

Different approaches to jointly modelling the development of postcode-level house prices over time and over the cross-section are presented. Panel data models with variable parameters and random effects successfully

capture the cross-sectional heterogeneity observed in house prices at the postcode level. Variable slope parameters quantify how house prices in different postcode areas vary with the market house price index. The sensitivity of house price growth to the market index is higher for areas with higher growth rates. These are typically postcode areas located close to the city centre.

Panel data models were used to quantify the effects of other exogenous factors on house price growth. A model estimated for quarterly house price growth rates identifies macroeconomic and financial variables as drivers of house price growth. Significant effects are also found for seasonal dummy variables and regional

characteristics included in the model. An alternative model uses socio-demographic characteristics observed in the census years 1981–2006. The results from this model show that higher house price growth is observed in postcode areas with increasing average income levels and where the population gets younger. The models developed and compared are relevant for actuarial, banking and insurance applications.

This project was presented at international academic conferences and at a conference for industry practitioners in Australia. A final paper will be submitted for journal publication early in 2013.

The results from this model show that higher house price growth is observed in postcode areas with increasing average income levels and where the population gets younger



DR KATJA HANEWALD
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ASSOCIATE INVESTIGATOR

Katja Hanewald is a Senior Research Associate in the Australian Institute for Population Ageing Research at the Australian School of Business, University of New South Wales.

Katja joined UNSW in January 2011. Prior to this, she worked as a research assistant at the Dr. Wolfgang Schieren Chair for Insurance and Risk Management and in the Collaborative Research Center 649: Economic Risk at Humboldt-Universität zu Berlin.

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.'

INDIVIDUAL HOUSE PRICE MODELS AND HOUSE PRICE INDICES

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RESEARCHERS

ADAM WENQIANG SHAO
(CEPAR PHD STUDENT)
MICHAEL SHERRIS
KATJA HANEWALD

House price indices are important indicators of property values. Banks or insurance companies often base the assessment of the risk and returns of real estate portfolios and housing-related financial products on (national or city-level) aggregate house price indices. The CEPAR project “Postcode-Level House Price Risk Analysis for Banking and Insurance Applications” by Hanewald and Sherris has demonstrated that house price variability at a postcode-level is significant compared to the market index. Individual houses

show even greater variability due to heterogeneity of individual properties. This motivates our study on individual house price models and house price indices. We employ and compare individual house price models that capture the heterogeneity of individual houses and provide construction of house price indices at a portfolio level or at an individual property level.

We compare a range of alternative house price models for constructing aggregate and stratified house price indices based on a data set of individual house transactions in the Sydney residential property market from 1971 to 2011. The growth rates in house price indices estimated from these alternative models

differ and result in a large variability in index levels over long time periods. Of the nine models we compared, a hybrid hedonic-repeat sales model is shown to provide the best fit and the most accurate predictions. Individual house price indices are found to show substantially more volatility than an aggregate house price index. This finding implies a risk assessment based on an aggregate house price index will understate the house price risk in financial products like equity release products or mortgage loans secured by individual properties.

The results of this project provide the building block for several applications. The related CEPAR project “Home Equity Release Products Allowing for

Idiosyncratic House Risk” by Shao, Sherris and Hanewald applies the individual house price models developed in this study to the pricing and risk management of equity release products. Another application is indexed-based hedging. Hedging methods based on aggregate house price indices cover only a limited part of house price risk. The models developed here allow us to investigate the risk of heterogeneous portfolios at a more disaggregated level.

The results of this project will produce a CEPAR working paper to be submitted for journal publication in early 2013.

Of the nine models we compared, a hybrid hedonic-repeat sales model is shown to provide the best fit and the most accurate predictions



PROFESSOR MICHAEL SHERRIS
BA Macq, MBA Syd, FIA, FIAA, FSA
CHIEF INVESTIGATOR

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 (ERMII). He was named Australian Actuary of the Year 2007 in recognition of his contributions to actuarial research and education both internationally and within Australia.

HOME EQUITY RELEASE PRODUCTS ALLOWING FOR IDIOSYNCRATIC HOUSE PRICE RISK

RESEARCHERS

ADAM WENQIANG SHAO
(CEPAR PHD STUDENT)
MICHAEL SHERRIS
KATJA HANEWALD

Australians hold a large proportion of their savings in the form of home equity. This “nest egg” has been recognised as an important source of financing the retirement needs of an ageing population. The Productivity Commission (2011) recommended that home equity should be considered as a means to fund aged care costs and that home equity release products would allow individuals to unlock this wealth. Due to limited public access to individual house transactions data, previous studies on reverse mortgage pricing and risk management typically assess house price risk using aggregate house price indices. However, there are significant differences between the average house price and individual house prices. A risk assessment based on an overall house price index does not adequately reflect the risks that providers of equity release products face.

This project quantifies the impact of individual house price risk on the pricing of home equity release products and providers’ solvency reserves.

The house price model developed in the CEPAR project “Individual House Price Models and House Price Indices” by Shao, Sherris and Hanewald is employed to model house price risk in home equity release products. We developed a two-step method to project future prices of individual properties. The first step involves forecasting of an aggregate house price index using a VAR model that allows for regime switching to reflect different periods of economic growth and volatility. In the second step, individual house prices are forecasted by linking individual house prices to the overall house price index. The resulting house price scenarios are used to price the No-Negative Equity Guarantees that are typically embedded in equity release products.

The results of our research confirm that house price risk is not accurately reflected by an aggregate house price index and that portfolio-level, or better individual house price indices, should be used to price home equity release products and to determine providers’ solvency capital. Our study provides new insights into designing more reliable and affordable financial products that effectively help retirees to finance their consumption and care costs.

The results of this research have been presented at the 11th Emerging Researchers in Ageing Conference and at an Australian actuarial conference. The project will produce a CEPAR working paper to be submitted for journal publication in 2013.

Our study provides new insights into designing more reliable and affordable financial products that effectively help retirees to finance their consumption and care costs

THE FINANCIAL IMPACT OF NATURAL HEDGING OF LONGEVITY RISK FOR LIFE INSURERS

RESEARCHERS

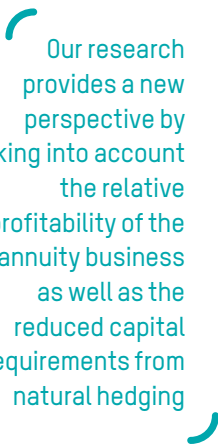
MICHAEL SHERRIS
ANDY WONG
(CEPAR HONOURS STUDENT)
RALPH STEVENS

Longevity risk arising from systematic improvement and uncertainty in survival probabilities for individuals makes it costly for life insurers to offer annuity products. Annuity providers as well as pension funds are transferring longevity risk to reinsurers who rely on offsetting longevity risk on annuities with the mortality risk for their life insurance policies. This offset is referred to as natural hedging. Natural hedging is considered a way that insurers can manage their exposure to longevity risk through liability portfolio composition.

Existing literature in the area of natural hedging has examined ways of structuring portfolios to minimise risk or immunise portfolios against changes in mortality. Our research provides a new perspective by taking into account the relative profitability of the annuity business as well as the reduced capital requirements from natural hedging. Asset liability

management is used to show the relative effects of these factors and the interaction between them. Risk minimising portfolios for different policy types and profit loading factors are assessed along with the sensitivity of optimal portfolios to changes in policy pricing. Term insurance with level premiums is found to be the most effective life insurance policy for natural hedging. Profit loadings are found to influence natural hedging portfolios. Higher relative profit loadings for a policy type leads to increased weighting in the policy, reflecting the increased profit contribution. Capital requirements for life insurers are assessed along with the impact of natural hedging on these capital requirements. Natural hedging significantly reduces overall capital requirements reflecting the diversification benefits. Finally, dynamic pricing is assessed where life insurers can adjust their premiums in the future to reflect their mortality experience. In this situation there is much reduced benefit from using natural hedging.

The research results were presented to the Australian Actuarial Education and Research Symposium at Monash University on 7 December 2012. A working paper will be prepared and submitted for publication early in 2013.



Our research provides a new perspective by taking into account the relative profitability of the annuity business as well as the reduced capital requirements from natural hedging

RESEARCHERS

KATJA HANEWALD
MICHAEL SHERRIS

This project develops a theoretical framework for individual portfolio multi-period decision making taking into account systematic mortality risk and the range of products individuals have available to manage longevity risk. A discrete state and discrete time framework is developed that allows both optimal portfolio selection and theoretical risk pricing to be carried out. At the same time the model is set in a framework that allows for effective computation of strategies and for it to be made more realistic by allowing for incomplete markets and other features of longevity product markets found in practice.

This project develops a complete markets discrete state and discrete time model allowing for stochastic and systematic mortality and risky assets. The role of life annuities, Group Self-annuitisation Schemes (GSA's) and longevity bonds in an individual portfolio is assessed. The risk neutral computation approach is used to determine optimal

portfolios in a single period and a multi-period setting with finite horizon and finite states modelled with a Markov-chain. The impact of an incomplete market for longevity risk will be assessed. Results will be illustrated under different utility assumptions and the impact of systematic mortality risk on risk premiums, demand for annuities and on optimal retirement product decisions is formally assessed.

The model framework allows recent advances in computational techniques for discrete decision problems to be applied to longevity risk management. Theoretical pricing models for longevity products as well as optimal risk management strategies allowing for systematic risk and the theoretical impact of market imperfections will be implemented in the framework, providing a basis for addressing a range of current research issues around optimal consumption and product selection with systematic risk not previously considered.

This project extends the research in the CEPAR project "Individual Post-Retirement Longevity Risk Management under Systematic Mortality Risk." In 2012, we have developed the basic framework for this project and obtained first numerical results. The research will continue in 2013 and is expected to produce a number of papers for submission to leading international discipline journals and presentation to local and international conferences.

A discrete state and discrete time framework is developed that allows both optimal portfolio selection and theoretical risk pricing to be carried out

RESEARCHERS

DANIEL ALAI
MICHAEL SHERRIS

External collaborator

SEVERINE GAILLE
(UNIVERSITY OF LAUSANNE)

Changes in underlying mortality rates significantly impact life insurer annuity business as well as private and public pension systems. Mortality studies at an individual level mortality require data that is often limited and aggregate population mortality studies miss important details. The study of causal mortality combines population data with cause-of-death data and provides new perspectives on mortality risks. In a causal model the impact of cause-elimination can be investigated so that, for

example, the potential impact of a cure for a disease can be quantified. This is of interest since purely statistical mortality forecasting methods are not able to incorporate such events in a consistent way. Causal models provide a mixture of statistical as well as intuitive and scenario-based forecasts.

The study of causal mortality does introduce challenges; the principal one being that causes-of-death are inherently dependent. This dependence is due to the competing nature of the various causes of death. This project provides a probabilistic framework to overcome this difficulty and gain insight into population mortality trends as well as produce forecasts. We use internationally classified cause-of-death categories

and data obtained from the World Health Organization. We model causal mortality simultaneously in a multinomial logistic framework, which naturally accounts for the inherent dependence amongst the competing causes. This model framework allows us to investigate the effects of improvements in, or the elimination of, cause-specific mortality in a sound probabilistic way. We compare the subsequent impact on survival with previous causal models and identify that the approach is conservative in quantification of mortality-risk.

The impact of cause-elimination on aggregate mortality is quantified using residual life expectancy and applied to an Australian case study. That is, we consider

events such as the development of a cure for cancer. By building a causal mortality model that includes cancer as a cause-of-death, we quantify the effect that the development of a cure would have on aggregate mortality. We do this using residual life expectancy allowing us to estimate the increase of number of years in residual life expectancy for a given age and gender that a cure for cancer results in. This is a major strength of the causal models developed in the project. This project will continue in 2013 and will produce a paper suitable for submission to a leading international journal early in 2013.

This model framework allows us to investigate the effects of improvements in, or the elimination of, cause-specific mortality in a sound probabilistic way



DR DANIEL ALAI

BMath Waterloo, PhD ETH Zurich
ASSOCIATE INVESTIGATOR

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

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 Sun Life (Waterloo) and Manulife (Waterloo) as well as 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.

RESEARCHERS

DANIEL ALAI
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SEVERINE GAILLE
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Research continued in 2012 on models for mortality, including the analysis of mortality cause of death and investigation of risk factors using longitudinal models of mortality. The five main causes of death across ten major countries were analysed using modern econometric techniques. The analysis reveals how long-run equilibrium relationships exist between the five main causes of death with changes in one cause having implications for mortality rates from other causes. The models provide an improved understanding of the dependence between the competing risks faced by humans from differing causes of death. Countries have quite different past experience with respect to cause-of-death mortality trends and this impacts the long-run trends expected for aggregate mortality rates across countries.

US HRS data was used to investigate the main factors determining older age mortality using a survival data approach and a panel data approach. Proportional hazards and marginal models were estimated.

The resulting estimated hazard and odds ratios are comparable. This equivalence of model approaches is not well known in the actuarial and insurance literature and allows the extension of survival data models to take into account the benefits of the panel data marginal model by including external, systematic, explanatory variables in the analysis.

These projects have produced working papers that were presented at major international conferences:

Séverine Gaille and Michael Sherris (2012), 'Forecasting Mortality Trends Allowing for Cause-of-Death Mortality Dependence', Eighth International Longevity Risk and Capital Markets Solutions Conference, Waterloo, Canada, 7–8 September, 2012

Séverine Gaille and Michael Sherris (2012), 'Causes-of-Death Mortality: What Can Be Learned from Cointegration', IALLS Colloquium, Mexico City, 1–4 October, 2012

Daniel Alai and Michael Sherris (2012), 'Longitudinal Analysis of Mortality Risk Factors', North American Actuarial Research Conference, University of Manitoba, Canada, 3 August 2012.

RESEARCHERS

ERIK HERNAES
JOHN PIGGOTT

External Collaborators

SIMEN MARKUSSEN
(RAGNAR FRISCH CENTRE FOR
ECONOMIC RESEARCH)
OLA VESTAD
(STATISTICS NORWAY)

Is there a causal link from retirement age to mortality? Leaving employment may involve reduced stress and greater enjoyment of life, suggesting that early retirement enhances longevity. However, it may also lead to reduced mental and physical activity, loss of social networks, and health-adverse habits, suggesting that later retirement may extend expected lifespan.

Increasing life expectancy, especially at older ages, is imparting a new urgency to this question. While many papers address the relationship between retirement and mortality, the existing literature has thus far not succeeded in providing definitive guidance on its nature. This is primarily because health status influences both the timing of retirement and mortality. While early retirement may influence longevity, poor health may both induce a worker to retire and lead to an earlier death. Controlling for the ensuing selection bias is difficult, and until recently, attempts to do so have been unconvincing.

Recently, however, a number of studies have adopted approaches which take seriously the endogeneity

of health status and retirement. Typically, policy changes such as differential retirement ages by cohort, region or industry, have been enlisted as instruments. However, since involuntary retirement may also occur in early retirement programs, it is important to separate the potential effect of an early retirement program as such – which should be related to the voluminous literature on the effects of job-loss – from the potential effect of a change in the retirement age. In order to isolate the effect of the retirement age on mortality we require exogenous variation in the (entitled) retirement age *conditional on participation in an early retirement program*, compared with a group facing no such change, to capture time

trends. These can be thought of as a treatment group and a control group.

This paper combines such a research design with a unique administrative data set covering the entire population of Norway from 1992 to 2008. The data include highly reliable information on earnings, pension and labour market status as well as demographic information, such as birth and mortality dates, gender, education, and marital status.

Our current results indicate no significant impact of retirement age on mortality. Further analysis is being undertaken to test robustness before resubmission. We expect the final paper to appear in a good international journal.

While many papers address the relationship between retirement and mortality, the existing literature has thus far not succeeded in providing definitive guidance on its nature. This is primarily because health status influences both the timing of retirement and mortality



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* and in volumes published by the NBER, Kluwer, Edward Elgar and Routledge.

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 USA 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 increase the mandatory retirement age and investigate their effects on the actual retirement age, expected remaining lifetime at retirement and pension liabilities. The full retirement age will be dependent on the evolution of the survival probabilities and the future full retirement age itself will be a random variable. In order for the policies to be sustainable the uncertainty in retirement age should not be too large, the remaining lifetime at retirement should increase over time and the pension contributions should stay, more or less, constant over time.

In this project we investigate the effect of policy reforms to make the retirement age dependent on the evolution of survival probabilities. We investigate the effect on the distribution of the full retirement age, and on longevity risk in the discounted future payments of both individuals and a fund as a whole. We find that the policies lead to substantial uncertainty in retirement age and number of years spent in retirement, but do effectively hedge longevity risk. Moreover, the project also evaluates the effect of the method to model future improvements in life expectancy.

A disadvantage of the policies which adjust the retirement age to changes in life expectancy is that for the short and medium term there is a substantial probability that future cohorts will be faced with lower realised expected remaining lifetime at retirement than the current cohort. We find that longevity risk at a societal level can be reduced substantially by implementing policies that adjust the retirement age to changes in life expectancy.

For policies which adjust the retirement age substantially, due to intergenerational risk sharing between retirees and employees, longevity risk is reduced substantially.

We find that the policies lead to substantial uncertainty in retirement age and number of years spent in retirement, but do effectively hedge longevity risk

RESEARCHER

CHUNG TRAN

External collaborator

JUERGEN JUNG
(TOWSON UNIVERSITY)

Health is a key component of an individual's wellbeing for a number of reasons. First, it is an important determinant of economic status, directly influencing the ability and time available to work, which in turn determines income and consumption levels. On the other hand, income may directly affect health since it determines the ability to pay for health care services. Knowledge of the dynamics between health and income over the course of the life-cycle is important to understanding individual behaviour with respect to retirement, saving, health

insurance and the utilisation of health care. It is also important to the formation of public policy concerning pensions, health financing, and health and social care.

This paper documents the joint distribution of health and income over the life-cycle in Australia and the US, using household survey data. Our results are summarised as follows. First, we find that average health status depreciates, but 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 US. Fourth, we find the correlation between health and income is much smaller in Australia.

We also constructed the age profiles of health and income using an advanced semi-nonparametric partial linear estimation method. We assessed the quantitative importance of the time and cohort effects on the evolution of health over the life-cycle. Completion of this part of the study is awaiting a new wave of data release early in 2013.

We expect to submit the resulting paper to an international health economics journal.

...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, MA Hague Inst of Social Studies & Hanoi National University, PhD Indiana University
ASSOCIATE INVESTIGATOR
AND RESEARCH FELLOW

Chung Tran is a Lecturer in the Research School of Economics at the Australian National University and a CEPAR Research Fellow. Prior to his appointment at ANU, he worked as a

postdoctoral fellow at the University of Sydney and 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 dynamic effects of social security systems and

health insurance systems; analysing growth and welfare implications of fiscal policy; and understanding the dynamics of debt financing and fiscal austerity. His work appears in leading academic journals, including *European Economic Review*, *Journal of Development Economics* and *Journal of Economic Dynamics and Control*.

Chung's research is funded by an ARC award to support Early Career Researchers in the Centre.

'The ECR grant will provide me with a great opportunity to really focus on my research over the next two years.'

RESEARCHERS

RAFAL CHOMIK
JOHN PIGGOTT

The Charter of Budget Honesty Act (1998) tasked the Australian Government with the preparation of a five-yearly intergenerational report (IGR) to assess the long-term sustainability of Government policies in the following 40 years. The first IGR was published in 2002, followed by reports in 2007 and 2010. A primary motivation behind publishing an analysis of long-term public finances is to provide insight into the impacts of demographic shift. As suggested in IGR 2010, if left unchecked, ageing pressures would push Government spending up from 22.4 per cent of GDP in 2015–16 to 27.1 per cent of GDP by 2049–50.

Age-related pensions are expected to make up a significant proportion of these additional costs. The Intergenerational Report celebrated its tenth anniversary in 2012. This paper takes this milestone as a point of departure to study developments in the fiscal, demographic, and policy landscape affecting the Australian retirement income system over the last decade and into the future. It also examines the methodology of the IGRs themselves.

While commendable on many counts, we find that the IGRs suffer from some assumption myopia (e.g., migration, participation) and a lack of clarity about certain assumptions and methodology (e.g., superannuation

accumulation and decumulation). The approach could be improved by making more realistic assumptions about future trends, for example, changes in mature labour force participation. Also, the IGR methodology is seldom used to demonstrate specific policy impacts.

With regard to retirement policy, we find successive governments have implemented numerous reforms over the past decade, addressing the various objectives of a well-designed retirement income system to different degrees. The basic design has remained intact, allowing an enviable combination of adequacy and sustainability.

At times, however, the reforms were piecemeal and lacking clear rationale. Important issues remain unresolved, especially those relating to superannuation decumulation, tax, age of retirement, and choice.

While commendable on many counts, we find that the IGRs suffer from some assumption myopia and a lack of clarity about certain assumptions and methodology



RAFAL CHOMIK
BECFin UWA, MEc London
Metropolitan
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 micro-simulation 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.

EDITORS

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.

The Handbook aims to cover the mainstream topics in the economics of ageing, with a focus on emerging areas of research and policy. We intend to make it relevant to economists, professionals and policy analysts throughout the world.

Over the past 12 months we have assembled an outstanding team of contributors, drawn from the US, the UK, continental Europe, and Australia. Authors' chapter outlines are now being accumulated. In the second half of 2013, a contributors' conference is scheduled at Harvard University to present draft chapters, discuss gaps, and iron out overlaps. Final delivery is scheduled for 2014.

The Handbook will begin with a paper by David Bloom (Harvard) on "Demographics Globally and through Time". 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.

Five of the papers in the volume are being written by CEPAR-affiliated researchers. These include chapters on taxation (Piggott and Woodland); decision making (Keane); insurance markets (Fang); workplace pensions (Mitchell and Piggott); and longevity and morbidity (Sherris):

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.



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.

DECISION MAKING:

This chapter embraces an emerging area of research focusing on the relationship between choice, markets, and functional capacity. It concerns the ageing process and decision making for life choices among older cohorts of the population. 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.

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, morbidity, 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 pre-funded private workplace or occupational pension plans. This chapter explores recent developments in pension plan structure and function. 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 forecasted 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

EDITORS

KATE O'LOUGHLIN
HAL KENDIG
COLETTE BROWNING

In 2011 we were commissioned by Springer to produce an edited book titled *Ageing in Australia: Challenges and Opportunities*. The book will focus 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.

The challenges and opportunities associated with population ageing require new and innovative perspectives to meet the needs of the increasing numbers of older people and those who will interact with

them. We believe that Australia is ready for a new basic statement on ageing to inform both policies and constructive action by individuals and institutions to respond more positively to ageing. 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 policy-making 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 are being written by CEPAR-affiliated researchers. These include chapters on population ageing and demographic change (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); ageing and 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.



DR KATE O'LOUGHLIN
BA Macq., PhD Syd.
ASSOCIATE INVESTIGATOR

Dr Kate O'Loughlin is a Senior Lecturer in Health Sociology in the Faculty of Health Sciences and is a member of the Ageing, Work and Health Research Unit at the University of Sydney.

Her primary research interest is in ageing, and is currently focused in three key areas: behaviours and exposures across the life course and the effect of these on health outcomes in later life; the psycho-social and financial aspects of the transition to, and planning for retirement; and individual and community attitudes to ageing, with a specific focus on age discrimination in the workplace.

She is currently involved in projects analysing data related to life transitions and social pathways and the effect of these on health, as well as ageing and disability (hearing loss). These projects are based on data from the Melbourne Longitudinal Surveys of Healthy Ageing (MELSHA) and the ABS Disability and Carers Survey respectively. She is also a Chief Investigator on the

ARC-funded Ageing Baby Boomers in Australia research project being conducted in collaboration with National Seniors Australia, the US AARP, and La Trobe University.

ATTITUDES TO AGEING:

addresses 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; provides an overview of new directions, including regionalisation, enabling independence and consumer directed care.

The book will focus 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

STRAND 2

DECISION MAKING BY INDIVIDUALS, HOUSEHOLDS AND FIRMS

UNDERSTANDING CHOICES AND DECISIONS IN A LIFE-CYCLE CONTEXT IS CHALLENGING, BUT IS REQUIRED TO GENERATE AND INTERPRET EVIDENCE FOR MEANINGFUL POLICY FORMULATION. RESEARCH IN 2012 CENTRED ON HUMAN CAPITAL AND HEALTH INVESTMENT, THE RETIREMENT DECISION, AND FINANCIAL CHOICES IN A RETIREMENT SAVING CONTEXT. RISK MANAGEMENT STRATEGIES BY INSURANCE FIRMS WERE ALSO ANALYSED. AMONG THE HIGHLIGHTS ARE ADVANCES IN UNDERSTANDING IN THE FOLLOWING AREAS:

- **CHOICES AND DECISIONS ON HUMAN CAPITAL AND HEALTH INVESTMENT.**
These decisions are made sequentially throughout the life course. Planned behaviour will be modified in light of new information about policy, and about health events. An especially important breakthrough combined health and human capital investment in a single optimising model, thus allowing their interdependence to be analysed.
- **THE RETIREMENT DECISION.**
Among the advances in 2012 was a new insight that explained why most people withdraw from the labour force quite suddenly, rather than transition to retirement, which seems at first sight more sensible. Progress was also made that combined labour supply, human capital investment, saving and the retirement decision into a single optimising framework. This latter project will continue through 2013.
- **FINANCIAL CHOICES AND PLANNING IN A RETIREMENT CONTEXT.**
One of the large studies undertaken by CEPAR personnel in conjunction with CenSoc is carrying out experiments to understand the kinds of errors people make in financial choices, and why. Findings will point the way to the best kinds of information, and the best presentation of that information, to improve decision making.
- **LONGEVITY RISK MANAGEMENT FOR INSURERS.** This set of projects focuses on devising and assessing strategies for firms to manage their longevity risk exposure.

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

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PREDICTORS OF DRIVING OUTCOMES AND DRIVING CESSATION IN OLDER DRIVERS: A FIVE YEAR VALIDATION STUDY

RESEARCHERS

KAARIN ANSTEY
KERRY SARGENT-COX

Adults over the age of 65 years represent a growing sector of the driving population. However age-related changes in cognitive, visual and sensorimotor functioning mean that this sector also experiences unique factors that affect their capacity to drive. Current practice only mandates regular visual testing to ascertain older adults' capacity to continue driving. But research has shown a wide range of factors impact on older drivers' capacity to drive safely, indicating that vision testing alone does not adequately assess capacity to drive, and that other relevant cognitive and sensorimotor factors need

to be taken into account. There is a clear need for a reliable, valid and easily administered screening tool that can be used to assess older adults' capacity to drive.

In the present study conducted in 2011–2012, we investigated the predictive validity of the ACT Hazard Perception Test by following up individuals who participated in our 2006 study with regard to their driving history since their participation. Validation of screening measures for older drivers provides the evidence base on which to decide how to assess the safety of ACT older drivers. At present there is very little evidence relating to the long-term predictive value of screening tests for older drivers.

Results indicated that age and reported traffic crashes both influenced readiness to cease driving. Of note is that participants demonstrated poor insight into their own driving, with self-rated driving ability and crash risk collected in 2006 unrelated to reported crash rates in 2012. The main measures of capacity to drive safely that were sensitive to crash likelihood over the five year follow-up period were the Useful Field of View (UFOV), and also self-reported crash rate in 2006. The Hazard Perception Test and other cognitive measures were not significantly predictive of crashes at follow-up. Similarly health, vision and mental health measures were not predictive of crashes at follow-up.

The findings demonstrate a need for future research to include a closer examination of the time course of the sensitivity of the measures, to determine how long they remain predictive of driving outcomes. This could be achieved through an annual follow up and should also include other sampling techniques to access different subpopulations, such as those drivers who have been referred for testing due to health issues or concerns over driving.

...participants demonstrated poor insight into their own driving, with self-rated driving ability and crash risk collected in 2006 unrelated to reported crash rates in 2012



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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. 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 currently the Chair of the Medical and Scientific Panel of the Alzheimer's Australia Research Foundation, and a member of the Transport Research Board of the United States National Academies which provides advice to the US

Congress. She is a member of the editorial boards for *Gerontology*, *Ageing International*, and *Ageing, Neuropsychology, and Cognition*.

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

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RESEARCHERS

MICHAEL KEANE
ALAN WOODLAND
FEDOR ISKHAKOV

This project studies how consumption and saving 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 timing of retirement due to the computational complexity of dynamic life-cycle models. Many of the existing papers on retirement abstract from consumption choice and take the consumption-

saving process as exogenously given.

In this project we build a comprehensive life-cycle model that comprises labour supply decisions, consumption-saving 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 micro-econometric models.

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. In 2013, the Household, Income and Labour Dynamics in Australia (HILDA) Survey will be used to estimate the labour supply elasticity for Australia and form the basis for studying the induced effects of the Australian pension system on labour supply and human capital accumulation.

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

We investigate how inclusion of human capital in the model affects optimal behaviour under different institutional settings



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 currently Visiting 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 US 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*.

RESEARCHER

ELENA CAPATINA

Current statistics suggest that health risk is a major component of overall risk and a big determinant of welfare with potential large macroeconomic implications. Concerns regarding financing medical care in the face of ageing populations and rising health care costs have led to a large debate on health care system reform. However, despite a rapidly growing literature, we have yet to understand how exactly health affects individuals and their economic decisions. In order to predict the effects of upcoming changes to the US health care system on the type and degree of health risk faced by individuals, it is important to understand the different channels through which health affects individuals and their economic consequences.

The paper studies four channels through which health affects individuals: (1) productivity, (2) medical expenditures, (3) available time and (4) survival probabilities, and assesses their roles in determining labour supply, asset accumulation and welfare. Using a life-cycle model calibrated to the US for different education groups, I evaluate the relative importance of each channel and quantify the interactions between them. First, all four channels are important for the macroeconomic variables studied, but the productivity and time endowment channels are the most dominant. I also show that due to significant interactions between channels, they need to be studied within a unified framework over the entire life-cycle. Second, health has larger effects for the non-college than college educated, explaining 35% and 31% of the differences in labour supply and degree of reliance on government transfers across groups, respectively.

Non-college educated individuals face higher probabilities of bad health at any age, experience larger productivity drops due to adverse health shocks, and have lower abilities to self-insure against future health shocks due to lower incomes. Health risk accounts for 9% of disposable income inequality for the non-college educated, leading to larger fractions of precautionary savings for this group despite the presence of a consumption floor.

This research has been written up as a CEPAR Working Paper, and is currently under revision in a peer-reviewed economics journal.

This project has studied health risk in a framework where health transitions probabilities over the life-cycle are exogenously determined. In reality, individuals can invest in their health and seek preventive medical care to improve their probabilities of good health as they age. This important consideration is studied in the project "Investment in Health over the Life-Cycle" by Michael Keane, Shiko Maruyama and Elena Capatina (see page 50).

Non-college educated individuals face higher probabilities of bad health at any age, experience larger productivity drops due to adverse health shocks, and have lower abilities to self-insure against future health shocks due to lower incomes

RESEARCHERS

MICHAEL KEANE
SHIKO MARUYAMA
ELENA CAPATINA

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 simplifying assumptions, for example assuming that health evolves exogenously over the life-cycle and modelling human capital accumulation independently 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. 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 medical expenditures and effort. The incentives to invest in health and human capital are analysed in relationship to one another. A key feature of the paper 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.



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Shiko Maruyama is a Research Fellow located in the Australian School of Business at the University of New South Wales. He joined CEPAR in October 2012.

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.

He is currently a Visiting Fellow at UTS. 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.

This modelling is important since it enables us to accurately capture how people form expectations regarding the evolution of health and the degree of health risk they face throughout their lives, allowing us to estimate how health impacts individuals' economic decisions such as the allocation of resources 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 individuals' incentives to invest in health and human capital

are affected by changes in the efficiency of the health production process (e.g., improvements in medical technology), changes in the prices of medical goods and services faced by individuals, and changes in the returns to human capital.

We anticipate having a working paper finished by the end of 2013. The paper will be presented at international conferences and sent for publication in a peer-reviewed top rated journal in economics.

We study how individuals' incentives to invest in health and human capital are affected by changes in the efficiency of the health production process (e.g., improvements in medical technology), changes in the prices of medical goods and services faced by individuals, and changes in the returns to human capital



DR ELENA CAPATINA

BA Econ. UBC, MA PhD Toronto
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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.'

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 health 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 policy 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 develop our research in the next year and aim to have a completed working paper by the end of 2013.

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' by Michael Keane, Shiko Maruyama and Elena Capatina which studies the relationship between health and human capital accumulation.

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".

This project studies one particular channel through which health affects life-cycle employment and earnings profiles, focusing on skills and occupational requirements

RESEARCHERS

MICHAEL KEANE
OLENA STAVRUNOVA

In some industrialised countries seniors' health care is partially subsidised by the government, but still involves significant out of pocket expenditure. For example, in the US Medicare (the primary social insurance program providing health insurance coverage to senior citizens) on average covers only 45% of health care costs. Supplementary private health insurance can potentially offer great benefits to seniors reducing their exposure to these uncovered expenditure risks. Therefore it is important to understand if markets for this type of insurance function efficiently.

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 ex-post realisation of 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 US Medigap health insurance market. Medigap is a collection of supplementary private insurance plans which cover gaps in Medicare. We develop

an econometric model of insurance demand and health care expenditure, where adverse selection is measured by sensitivity of insurance demand to expected expenditure, and moral hazard is measured by the difference in expenditures between identical individuals with and without Medigap. The model allows for correlation between unobserved determinants of expenditure and insurance demand, and for heterogeneity in the size of moral hazard effects. We use two data sources, the US Health and Retirement Study (HRS) and the Medicare Current Beneficiary Survey (MCBS), and conduct inference via an MCMC algorithm with data augmentation.

We 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 supplementary insurance.

We also find a large moral hazard effect of Medigap insurance. On average, an individual with Medigap spends about 32% more on health care than a person without Medigap. We simulate the effect of a universal Medigap coverage on health care expenditure

and find that it would significantly increase per capita health care expenditure of seniors.

A research paper derived from this project is currently under review in a top international journal in Economics.

We 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



DR OLENA STAVRUNOVA
PhD Iowa
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.

Her current research at CEPAR in collaboration with Professor Michael Keane investigate the determinants of health insurance choices of senior individuals in the US and Australia.

RESEARCHER

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Under this project, a portfolio of four sub-projects was developed to address the issues related to the declining savings patterns and their determinants at the national and individual level. The first three of these were substantively undertaken in 2011, with journal submission, resubmissions, acceptance and publications taking place this year.

The final sub-project, 'Staying home or dining out? Social interactions and old-age consumption profiles,' was largely undertaken through 2012, and is documented here:

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 being in good health on individuals' consumption patterns. Results show 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 model has been completed with several new elements to make it increasingly realistic.

NEXT STAGE

Many behavioural elements, such as cognitive and functional abilities, social interactions, happiness, longevity and loneliness are intrinsic to maintaining health and quality of life. Moreover, all these elements play a critical role in shaping the economic choices of the elderly. Understanding the drivers of savings decisions, their dynamics and their effects on health and socio-economic status is

essential to maintaining and enhancing quality of life throughout old age. The work developed in 2012 revealed some important factors that need to be considered when one tries to explain or shape in any way the dissaving patterns of the elderly. In continuation of this line of research and directly connected to the last study, Dobrescu and Cristelis study this issue from yet another angle, namely analysing the impact of social engagement on cognitive abilities, especially at advanced ages.

Understanding the drivers of savings decisions, their dynamics and their effects on health and socio-economic status is essential to maintaining and enhancing life quality throughout old age



DR. LORETTI I. DOBRESCU

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She is an established researcher with expertise in mathematical modelling and in estimating economic

models using simulations. She has published significantly in international journals of economics and mathematical modelling and is active in the research fields of microeconometrics, with particular emphasis on the economics of ageing, health economics and mathematics. She was part of the backbone team that developed the first comprehensive dataset of ageing in Europe—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 CHILDREN'S INTERACTION

RESEARCHERS

LORETTI I. DOBRESCU
FEDOR ISKHA KOV

This project investigates the role of transfers between children and their elderly parents in shaping bequest motives in old age. We are particularly interested in how savings and bequest decisions, which are made by the parents in the presence of health and medical spending shocks, interact with the labour supply and consumption decisions made by their adult children. We will consider that parents can benefit from two types of transfers from their children, namely time assistance (i.e., children may choose to allocate fractions of their time to providing informal care for their parents) and financial assistance (i.e., children can cover directly a share of the health care costs incurred by their sick parents).

We plan to estimate the developed microeconomic model on the Survey of Health, Ageing and Retirement in Europe (SHARE) data using simulation-based estimation.

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 the savings patterns in old age and the process of intergenerational transfer of wealth. Most importantly, the aim is to shed light on the bequest motive of the elderly and explain the extent of heterogeneity observed in the data.

NEXT STAGE

This is a long-term project that is expected to take place over the next two years, aimed at publication in a peer-reviewed top rated journal in Economics.

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

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

56

RESEARCHER

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Chinese labour markets have undergone dramatic changes since the late 1980s. The scale of this transformation is unprecedented. New economic incentives, vast labour migration and draconian retrenchment of state workers are all characteristics of a unique transition that Chinese labour markets have experienced in the past few decades (Knight and Song, 2006).

China's move from "relying on the state" to "relying on oneself" reflects at once a restructuring of the economy and a restructuring of the social welfare system. It changes the role of the family in providing care to young and old and for investment in human capital. Not surprisingly, the link between education and social mobility has an important resonance, particularly among the growing Chinese middle-class (Crabb, 2010).

Of primary importance for the context in which human capital accumulation takes place are the educational reforms that China has implemented since the mid 1980s, which have involved the introduction of nine years of compulsory formal education, and initiatives to lessen the financial burden of schooling for poor rural and minority families, together with decentralisation, differentiation and diversification of educational provision and funding. These reforms mean that families must make important decisions about human capital investment for their children. Smaller families, and the associated demographic change, make these decisions even more critical. In this context, education is a primary site where the reshaping of the relationship between state and family can be investigated.

Specifically, we contribute to the literature by addressing the following questions:

- (i) Does educational persistence differ across Chinese provinces and region?
- (ii) Does it increase at times when the return to education is higher?
- (iii) What is the role of the nurture/nature effect in explaining the evolution of educational persistence in time and its spatial differences in China?

Furthermore, we investigate the way Chinese households configure their technology of human capital (*rencai*) transmission in the face of competing demands for educational quality and care towards elders, and ask:

- (iv) Does educational persistence differ across households that differ by household specific characteristics such as elderly co-living and wealth?

We use data from the 1980, 1990 and 2000 Chinese Population Census; these data help us understand how human capital transmission differs between rural and urban areas and within these areas between male and female children.

The first component of the project addresses three dimensions of the intergenerational intra-household transmission of human capital, namely dispersion, evolution and determinants. Firstly, we provide a systematic investigation of individual-level heterogeneity in education transmission in China. Secondly, we study the gender dimension of intergenerational transmission of human capital to highlight the different roles of fathers' and mothers' education on children's education. Lastly, we provide a direct evaluation of the determination of transmission coefficients (mean and variance) for specific percentiles of the transmission coefficients' distributions, thus contributing to the literature in a novel way.

The second component relies on the traditional distinction between two channels of human capital transmission, the nature effect and the nurture effect. The nature effect refers to the role of parents' unobserved heterogeneity, such as innate ability, in determining their children's ability via genetic transmission. The nurture effect is present to the extent that educated parents can more efficiently bring up their children to acquire knowledge. The OLS estimates of the coefficient of intergenerational education transmission are a mixture of nature and nurture effects and so they don't allow an identification of the causal component of intergenerational transmission. To estimate the effect of parental education on children's educational outcomes we follow Klein and Vella (2010) and exploit the error dependence on exogenous variables to identify the parameters of interest. More explicitly, as in Farre et al., (2011) the assumption that the nature effect does not substantially vary with the economic environment combined with the error heteroskedasticity identifies the causal effect of the nurture effect on children's education.

We aim to establish which parental characteristics are more likely to favourably impact on children's educational attainment. Furthermore, we aim to establish whether a large nurture effect is more likely to emerge in those regions/ labour markets where the returns to education are high. A focus on family transmission of human capital that involves higher education promises to shed further light on the role that families play in the face of rapidly changing labour markets in China.

Preliminary results using OLS and non-parametric estimates suggest a strong decline in intergenerational educational persistence. Our regression results show that the correlations primarily run along gender lines (father-son and mother-daughter). When we employ stochastic dominance tests to rank time-specific coefficient distributions, we find evidence of a decreasing transmission in China, consistent with the continuing expansion of public education. Furthermore, we explore the determinants of mean and variances of the schooling transmission coefficients and pay special attention to the male-female difference, minority-majority difference, rural-urban difference.

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Preliminary results... suggest a strong decline in intergenerational educational persistence. ...correlations primarily run along gender lines (father-son and mother-daughter)



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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*.

RESEARCHERS

CAGRI KUMRU
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Means-testing is an important but relatively neglected dimension in the academic debate regarding the huge financial burden that a social security system entails. On the one hand, for policymakers, population ageing raises challenges and concerns about the adequacy of existing insurance programs to deal with the consumption needs of a growing number of elderly dependents. Although age pension programs vary in terms of their benefit, financing and coverage structures, they all provide longevity insurance and can be welfare improving when private annuities markets are missing or when

individuals do not save enough for retirement because of myopia. On the other hand, amidst the economic crisis, markets are concerned about long-term fiscal sustainability and the ability of policymakers to address these challenges, especially in debt laden countries.

Resource-testing is controversial. Policy proposals must be carefully evaluated, and such assessment has been undertaken using conventional economic modelling. This project brings a new element to the debate by modelling heterogeneous agents in an economic model to separately identify households which are prone to temptation and self-control problems, and to study the economic impact

of this behaviour on an economy. There is mounting experimental and empirical evidence that temptation, commitment, altruism, and other behavioural traits affect individuals' economic decisions. It follows that implications of various fiscal and monetary policies would differ if one incorporates those behavioural aspects.

In this project, we aim to explore the consequences of means-testing incorporating recent developments in Behavioural Economics into our models. This allows us to analyse the implications of means-testing not only in an environment in which individuals are immune to self-control issues but also in environments where individuals suffer from temptation and self-control problems.

The project was initiated in 2012. We have completed a literature review, and begun coding the model. Through 2013, we will complete the model implantation, write up a preliminary paper, and present our findings at international conferences. By the end of 2013, we expect to have a paper ready for submission to a high quality economics journal.

There is mounting experimental and empirical evidence that temptation, commitment, altruism, and other behavioural traits affect individuals' economic decisions. It follows that implications of various fiscal and monetary policies would differ if one incorporates those behavioural aspects



DR CAGRI KUMRU

BA Dokuz Eylul, PhD Pittsburgh
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Cagri Kumru is a lecturer in the Research School of Economics at the Australian National University and a CEPAR Research fellow. 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.

Kumru is one of six Early Career Researchers in the Centre funded by the ARC to work on two year research projects.

'The infrastructure and networks that CEPAR provides are very beneficial to my research. I receive enormous support from the Centre that 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.'

RESEARCHER

XIAODONG FAN

Understanding how individuals retire is as important as understanding why they retire. It is critical for questions ranging from assessing the impacts of tax policies to evaluating Social Security policies. In this paper, I first document how individuals in the US retire from the labour market using three widely used data sets: the Current Population Survey (CPS), the Panel Study of Income Dynamics (PSID), and the US Health and Retirement Study (HRS). As is widely acknowledged, most retirements are accompanied by an abrupt and discontinuous decline in hours worked. That is, most individuals 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. In order to rationalise why individuals do not smooth labour supply in the transition to retirement, some level of non-concavity either in production or preference is required.

Models with discrete labour choices or fixed costs share the same spirit - a non-concave production function.

This paper proposes and estimates a different approach, which essentially assumes a non-concave preference with habit persistence. I argue this is a reasonable assumption and well-supported by previous literature and various data. Using HRS data, I estimate a life-cycle labour supply model with working habits in which sharp retirement can be explained by workers quitting cold turkey. The model produces reasonable parameter estimates with good model fits.

This model provides an alternative explanation to rationalise sharp retirement, which is supported better by data than existing models. 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 paper.

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 a 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% 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.

The model enables me to estimate how individual labour supply and retirement behaviour respond to changes in Social Security rules

RESEARCHERS

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Recent developments in retirement incomes arrangements around the world mean more complex financial choices for retirement savers and pension plan members. Individuals under the increasingly prevalent defined contributions retirement income arrangements must consider: Whether to participate? Which pension fund? How much to contribute? Which investment options? Whether and from whom to seek financial advice? And whether to draw out savings as a lump sum and/or purchase an income stream product (or products)?

In 2012 CEPAR researchers, in conjunction with their external collaborators, continued to investigate aspects of these retirement saving choices in research funded primarily by the five year ARC Discovery Grant 'The paradox of choice: unravelling complex superannuation decisions'.

The 'investment choice' component of this work is motivated by international efforts in developing a simplified and effective standard for disclosing investment risk to ordinary people. A discrete choice experiment (DCE) was designed and implemented as an online experimental survey to a representative sample of 1,200 superannuation fund members. Survey participants were asked to rank three retirement investment options under nine different presentations of investment risk (drawn from product disclosure practices in Australia, the US and the UK) and four underlying levels of risk. Bateman, Eckert, Geweke, Louviere, Satchell and Thorp (2011) assessed the investment decisions elicited from this DCE in the

context of the core expected utility model of portfolio allocation and found significant violations of that model (varying from 14% to 37% depending on how the risk is presented). Inconsistency rates were lower when risk was presented as graphical ranges and probability tails than when risk was presented as the frequency of a negative or positive return. As well, the young and those with low numeracy were more likely to be inconsistent.

Bateman, Lai and Stevens (2012) extended this work with an analysis of the observed investment choices using Prospect Theory utility specifications and developed a structural model to estimate individual-specific parameters for risk preferences in gains and losses and loss aversion (see page 62 for further details). Together both studies inform international regulatory efforts to disclose risk information to the mass market.

Financial literacy and numeracy skills, found to be important to rational decision making in both risk presentation studies, were investigated more extensively in two studies completed in 2012. Bateman, Eckert, Geweke, Louviere, Satchell and Thorp (2012) analysed the relationship between financial competence, demographics and stock market expectations using responses to questions to the numeracy, and basic and sophisticated financial literacy fielded as part of risk presentation study. Results indicate an increase in financial competency with age, post-school education and income, and to be greater for males than females, while numeracy scores were flat across gender, ages, several education measures and personal income. However, a key finding is that individuals with a higher understanding of risk, diversification and financial assets are more likely to assign a probability to future financial crises rather than expressing uncertainty.

This work is complemented by Agnew, Bateman and Thorp (2012), who implemented a customised survey to a representative sample of 1,024 Australians to examine the relationship between financial literacy and retirement planning as a contribution to the FLaT (Financial Literacy around the World) study. In aggregate, levels of financial literacy in Australia were found to be similar to comparable countries with the young, least educated, unemployed and those not in the labour force most at risk. However, unlike the international norm, financial skills were found to increase with age. The role played by Australia's mandatory private retirement arrangements, the system of defaults, and interactions with the means-tested safety net pension at older ages remain open questions.

In 2012 investigation also turned to retirement benefit decisions. Motivated by the weak global demand for voluntary life annuities as well as the complexity of the annuity product Bateman, Eckert, Geweke, Iskhakov, Louviere, Satchell and Thorp (2012) analyse observed choices from a discrete choice experiment of allocations of retirement wealth implemented to a representative sample of 854 near-to-retirement superannuation fund members. Participants were asked to make allocations between two pairs of income stream products with different liquidity and longevity insurance features (i.e., a phased withdrawal account vs. a life annuity with and without a guarantee period) where the risk of exhausting

phased withdrawal income before the end of life (the risk of ruin) was varied over four levels. A post-task quiz provides a measure of 'engagement'. Results indicate that the innumerate and disengaged fail to recognise the increasing risk of exhausting income before the end of life, while individuals with higher financial capability and with knowledge of retirement income products are more likely to engage with the retirement benefit decision.

The results have been written up in CEPAR Working Papers 2012/20 and 25 as well as the following journal article:

Bateman H, C Eckert, J Geweke, J Louviere, S Satchell, S Thorp (2012), Financial Competence and Expectations Formation: Evidence from Australia, *Economic Record*. Volume 88, Issue 280: 39–63.

...a key finding is that individuals with a higher understanding of risk, diversification and financial assets are more likely to assign a probability to future financial crises rather than expressing uncertainty



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Hazel Bateman is Associate Head of the School of Risk and Actuarial in the Australian School of Business at the University of New South Wales.

She has more than 60 research publications 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 the increasing risk and responsibility faced by retirement savers under defined contributions retirement income 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 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), APEC, CEDA and the CPA. She serves on the editorial board of the *Journal of Pension Economics and Finance*.

RESEARCHERS

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Sound investment decisions are becoming increasingly important under the prevalent Defined Contributions (DC) approach to retirement saving. However, many retirement savers find these decisions difficult. This highlights the need for a simplified and standardised format for presenting investment information to the mass market.

In this project we assess alternative presentations of investment risk using a discrete choice experiment administered to a representative sample of nearly 2,000 members of Australia's mandatory retirement savings system.

In the experiment, subjects were asked to rank three investment portfolios for their entire superannuation account across four underlying risk levels and nine risk presentation formats. We assess the propensity of individuals to violate the implications of Prospect Theory utility specifications when making these choices, and derive

maximum likelihood estimates of individual-specific parameters: utility curvatures over gains and losses, loss aversion, and error propensity.

We find that the variance of error propensities is lower in presentations that describe investment risk using probabilities than in presentations that use frequencies, and that variances are lower in presentations which emphasise downside risk. Graphical risk presentations better serve those socio-demographic groups more at risk of accumulating insufficient retirement savings, whilst more financially sophisticated individuals benefit from the additional information provided in presentations that describe investment risk using probabilities. These results have strong implications for retirement income policies which require ordinary people to make complex

financial decisions.

Our main finding is that at a population level, presentations that describe investment risk using the probability of returns below or above thresholds, have lower variability in error propensity than presentations based on frequency of returns below or above thresholds. We also show that the variability of error propensities are lower in presentations that describe the downside of investment risk, possibly as a result of increased cognitive effort due to loss aversion. The risk presentation that minimises this variability shows investment risk as a 1 in 20 chance of a return above a threshold. Importantly, our findings show that the risk presentation format recommended by Australia's financial regulator may not be as effective as some other presentation formats.

The results of this research have been written up in CEPAR Working Paper 2012/25.

...our findings
show that the risk
presentation format
recommended by
Australia's financial
regulator may not
be as effective
as some other
presentation
formats

THE IMPACT OF FAMILY STRUCTURE ON RISK ATTITUDES AND FINANCIAL PLANNING

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Similar demographic trends are observed in most developed countries: substantial declines in fertility rates below replacement level, falling marriage rates, increased divorce rates and an increasing fraction of the population remaining childless or having only one child. These demographic trends have significant economic implications. Households are expected to rely more and more on private savings and individual financial planning to cover increasing consumption and aged care costs incurred during longer retirement phases. Households that have fewer children have on average a higher disposable income than previous generations. At the same time, the decreased stability of partnerships implies higher economic uncertainty and shorter investment horizons. These trends and interactions motivate this study on the links between family formation and household saving and investment decisions.

An important determinant of individuals' saving and investment decisions is attitude towards risk taking. Previous empirical research has documented links between risk aversion and investment and savings decisions and between risk aversion and family planning. Our study contributes new findings to this complex research area. We assess the extent to which individual risk preferences determine family planning decisions or are driven by changes in family formation, and quantify the resulting impact on saving and investment decisions.

Our study is based on data on risk attitudes, investment decisions, and demographic and socio-economic characteristics elicited from 12,000 respondents in the Socio-Economic Panel Study (SOEP). The sample period is 2004–2009, which allows us to assess the impact of the financial crisis on individual risk preferences and financial planning. Panel data analysis and modelling techniques are employed to model individuals' risk preferences and portfolio choices over time and over the cross-section and to identify the impact of exogenous variables.

Demographic change is fundamentally altering family structures and living arrangements. Our study contributes towards a deeper understanding of the inter-linkages between family formation and financial planning decisions.

In 2012 the research methodology was developed and key empirical results obtained. The project will be further developed in 2013. A CEPAR working paper will be produced and submitted for publication to a top ranking economic journal.

We assess the extent to which individual risk preferences determine family planning decisions or are driven by changes in family formation and quantify the resulting impact on saving and investment decisions

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

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RESEARCHER

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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, resulting in 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's⁴ endogenous grid method for models with simultaneous discrete and continuous choices. We propose a solution algorithm which both avoids costly root-finding operations with respect to continuous decision variables and replaces optimisation across discrete decisions with more efficient

calculations 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.

In 2012 the algorithm was fully developed and implemented as a generic computer program that can be easily adjusted for various model specifications. The method was applied and tested in several applications. The latest version of the code is available in the public domain. The remaining work on the project will include more detailed study of the accuracy of solutions

produced by the method. This project is expected to produce a paper aimed at publication in a peer-reviewed top rated international economics journal, along with a software package for solving sequential discrete-continuous choice models.

The software produced by this project will facilitate faster and easier model development in related CEPAR projects.

⁴ Carroll, C. (2006) 'The method of endogenous grid- points for solving dynamic stochastic optimisation problems', *Economics Letters* 91(3):312-320



DR FEDOR ISKHAKOV

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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.'

RESEARCHERS

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Longevity risk is a major risk faced by providers of products that guarantee a retirement income. Capital is held by these insurers for solvency and regulatory requirements. Shareholders expect to earn a return on capital by generating a profit on the insurance business, as well as from investment returns on the assets in excess of those needed to meet policyholder obligations. Costs are incurred when varying the level of capitalisation of the insurer. These include the frictional costs of raising capital, the agency costs of holding high levels of capital

and the wealth transfer from policyholders through the limited liability put option when holding lower levels of capital. Higher levels of solvency allow the insurer to charge higher premium loadings when policyholders purchasing life annuities have preferences for more highly capitalised insurers.

This project assesses the impact of longevity risk strategies involving reinsurance and securitisation on the value of a life insurance company issuing life annuities. A stochastic multi-period model for an annuity provider with systematic and idiosyncratic longevity risk, market frictions such as taxes, agency costs, and financial distress costs and policyholders' price-default-demand elasticities is developed. Capital

management and Solvency II capital requirements allowing for both systematic and idiosyncratic longevity risk are considered. Risk management strategies of the annuity provider include holding capital to meet regulatory requirements, a reinsurance contract and a longevity bond. Shareholder value is assessed using an economic balance sheet and a Market-Consistent Embedded Value (MCEV) approach.

This project extends the research of the CEPAR project "Solvency Capital, Pricing and Capitalisation Strategies of Life Annuity Providers." A new mortality model developed by Blackburn and Sherris is used to project survival rates and a broader range of longevity risk management strategies is considered.

The results of this project were presented at several international academic conferences in 2012 including the 39th Seminar of the European Group of Risk and Insurance Economists (EGRIE), Palma de Mallorca, Spain, 17–19 September 2012 and the IAA International AFIR/ERM Colloquium, Mexico City, 1–4 October, 2012. A research working paper will be finalised and submitted to a leading international journal in early 2013.

Risk management strategies of the annuity provider include holding capital to meet regulatory requirements, a reinsurance contract and a longevity bond



PROFESSOR ANNAMARIA OLIVIERI

Degree in Business Economics, University of Parma, Degree in Actuarial Science and Statistics, University of Florence, PhD, University of Brescia

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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 Altling 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 programmes (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.

RESEARCHERS

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For many retirees, home ownership is an important source of financial security to fund retirement. A reverse mortgage is a financial innovation designed to unlock some of the equity value of real estate assets, providing retirees with additional funding. Providers of reverse mortgages must consider the design of these products in order to ensure solvency and mitigation of potential losses arising from the risk of negative equity at contract termination.

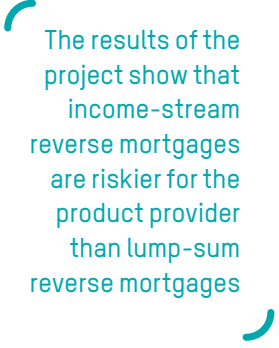
The aim of this project is to quantify and compare risk profiles and profitability for different designs of reverse mortgages. We consider different payout structures such as lump-sum payments, a constant lifetime income, or an inflation-indexed lifetime income, and assess the impact of different loan settings and borrower characteristics. The project extends CEPAR's research on equity release products and is related to the projects "Developing Equity Release Markets: Risk Analysis for

Reverse Mortgage and Home Reversion Products" and "Home Equity Release Products Allowing for Idiosyncratic House Price Risk" (see page 33).

We develop a multi-period stochastic model for pricing reverse mortgages allowing for house price risk, interest rate risk and uncertain contract termination linked to the individual's health status. The model is used to simulate the cash flows for different reverse mortgage designs and to derive the fair premium of the No negative equity guarantee (NNEG) typically embedded in reverse mortgage contracts. The level of the NNEG premium indicates the sensitivity of the different product designs to house price risk, interest rate risk and uncertain loan termination. Risk measures such as the Value-at-Risk (VaR) and the conditional VaR are used in conjunction with sensitivity analyses to assess the solvency capital to be set aside for the reverse mortgages types and different contract setting.

The results of the project show that income-stream reverse mortgages are riskier for the product provider than lump-sum reverse mortgages. In particular, income-stream reverse mortgages are exposed to longevity risk resulting in delayed contract termination and a higher risk of negative equity for the product provider. The analysis provides a basis for determining cost effective designs of reverse mortgages from an issuer's perspective and thus contributes to a better understanding of how these products should be designed to meet individual retirees' financial needs.

This research project was completed in 2012 and the results were presented to the Australian Actuarial Education and Research Symposium at Monash University on 7 December 2012. The results will be written up in a working paper for journal submission in early 2013.



The results of the project show that income-stream reverse mortgages are riskier for the product provider than lump-sum reverse mortgages

RESEARCHERS

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In 2012 research considered aspects of risk modelling of annuity portfolios and financing of longevity risk using reverse mortgages. The cash flow risk profiles of the two most popular equity release products, the traditional reverse mortgage and the home reversion contract, were assessed from the provider's perspective. The risk faced by the product provider was quantified along with the risk-adequate pricing of these contracts and the capital requirements to support the product. Economic scenarios were generated using a vector-autoregressive model for house prices, rental yields and interest rates in real terms. A multi-state Markov model was used to model contract termination probabilities arising from death, entry into long-term care, and refinancing.

Research also investigated a modelling approach to include dependence amongst insured lives as a result of systematic improvements in mortality. The model explicitly captures both idiosyncratic and systematic longevity risk. These two components of longevity risk were considered for individual lifetimes within a group. The survival of an individual is modelled with an individual specific or idiosyncratic component and an aggregate or systematic component. The gamma distribution was used to model these components. Because individual lifetimes in a group are assumed to follow a multivariate gamma distribution, parameter estimation techniques were developed using a variation on the method of moments, which allows for truncation. The systematic component of longevity risk included in the model is contrasted with traditional models that assume independent lives by considering the valuation and risk based capital for annuity portfolios.

The projects were presented at a leading international conference:

Alai, D., Landsman, Z. and Sherris, M.
'Lifetime Dependence Modelling using the Truncated Multivariate Gamma Distribution', Eighth International Longevity Risk and Capital Markets Solutions Conference, Waterloo, Canada. 7–8 September, 2012

Alai, D. Chen, H., Cho, D., Hanewald, K., and Sherris, M.
'Developing Equity Release Markets: Risk Analysis for Reverse Mortgage and Home Reversion', Eighth International Longevity Risk and Capital Markets Solutions Conference, Waterloo, Canada. 7–8 September, 2012.

The risk faced by the product provider was quantified along with the risk-adequate pricing of these contracts and the capital requirements to support the product.

STRAND 3

INTEGRATING PUBLIC AND PRIVATE PROVISION OF PRODUCTS AND SERVICES

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RESEARCH WITHIN THIS STRAND FOCUSES ON MAJOR AREAS OF ECONOMIC AND SOCIAL ACTIVITY IN WHICH BOTH PUBLIC AND PRIVATE SECTORS PLAY A SIGNIFICANT ROLE, AND WHICH ARE IMPACTED BY POPULATION AGEING. EXAMPLES INCLUDE RETIREMENT INCOME, HEALTH AND AGED CARE.

Coordination of these activities can make the difference between a successful response and one which is dogged by ongoing difficulty and conflict. Through 2012, CEPAR research within this strand has focused on:

- **RETIREMENT INCOME**
Research includes pension taxation analysis in an overlapping generations model; analysis of public sector pensions in both Australia and the UK; and a detailed plan to provide public pensions to rural migrant workers in China who work for private companies, but have no access to the urban pension.

- **HEALTH AND AGED CARE**
The focus here, in contrast to related work on health and aged care in strands one and two, is on developing models to predict morbidity in an economy with an ageing population. The range of parameters varying through time, and the uncertainty surrounding their evolution, makes this a challenging task. This work has special relevance to estimates of future aged care demand, as well as providing essential information about risk to long-term care insurance providers.

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.

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

RESEARCH PROJECTS

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RESEARCHERS

GEORGE KUDRNA
ALAN WOODLAND

Private pension pillars around the world benefit from concessional tax treatments that aim to increase private retirement incomes and household savings. Most countries tax their private pensions under the “Exempt-Exempt-Taxed” [EET] regime where contributions and fund income are exempt from any taxation but benefits are treated as ordinary income and taxed progressively. 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, the existing tax treatment applied to Australia’s

superannuation features a flat tax rate on contributions and investment earnings, with benefits being generally tax-free.

This research provides a quantitative analysis of hypothetical replacements of the existing superannuation tax regime with the traditional EET and TEE tax regimes. Under both reforms, the existing flat tax rates on contributions and fund earnings that are currently paid by superannuation funds are abolished and either the withdrawals or the contributions are taxed at marginal rates. In 2012, we extended the analysis to capture the TEE variant recommended by AFTS (2010). This includes a flat-rate tax offset so that most taxpayers pay 15 percent tax on their contributions.

We developed a small open-economy overlapping generations (OLG) model that disaggregates households into income quintiles and that allows for important interactions between household behaviour and superannuation, public pension and tax policy settings. We have recently extended the model to allow for gradual withdrawals of superannuation savings. The simulation results indicate that the three examined reforms to superannuation taxation improve the vertical equity, as shown by larger relative gains in welfare and net incomes experienced by lower income households. We also show that the reforms have positive long run effects on aggregate total assets and household saving, which are significantly larger

especially under the shift towards the EET tax regime.

This research is reported in CEPAR Working paper 2012/09 and was presented at the 18th International Conference on Computing in Economics and Finance (ICEF 2012), Prague, June 2012. In response to feedback on the paper, aggregate efficiency implications and sensitivity analysis will be undertaken. It is anticipated that the paper will be submitted for publication by July 2013.

This research provides a quantitative analysis of hypothetical replacements of the existing superannuation tax regime 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 CEPAR in 2011 after working as a postdoctoral researcher 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 ageing. He has written articles published in the

Journal of Macroeconomics and *Economic Record*. He is currently involved in research projects on the taxation of private pensions, the economic and fiscal effects of population ageing in Australia and the interaction between pension means-testing and housing.

‘Since joining CEPAR I have benefited greatly 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.’

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In common with many other countries, Australian public sector employees have traditionally enjoyed Defined Benefit pension entitlements, often unfunded, thereby creating liabilities for future generations of taxpayers. A major source of uncertainty related to these unfunded pension liabilities is the future life expectancy and mortality outcomes of civil servants, which may be distinguished as a group from the general population.

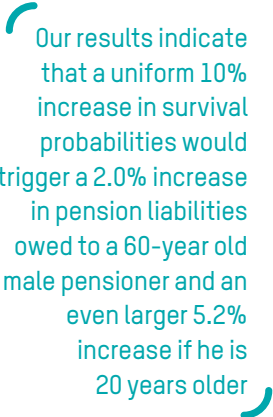
This project leverages on micro-level data on a complete set of closed Australian public sector schemes (made available generously by Mercer) to assess and quantify the impact of increasing longevity and differential public pensioner longevity on unfunded pension liabilities. Four main aspects of longevity risk are considered, including longevity selection, computational omission of mortality improvements, and unexpected systematic

longevity shocks. To determine the extent of aggregate longevity selection, we construct the pensioner mortality experience and compare that to general population mortality. We also apply a proportional hazards model to test for the presence of scheme-specific longevity selection.

We find evidence of aggregate longevity selection at younger ages but not at ages beyond 85, possibly because higher proportions of pensioners' deaths are concentrated at older ages compared to the population-at-large. The longevity selection effect at scheme level is also quantitatively important: male pensioners in one of the occupational schemes, for example, have almost 30% lower mortality than the average public sector pensioner. This translates into a 6.4% increase in pension obligations for the employer, or A\$23,464 more per pensioner based on our present value estimates. Our results indicate that a uniform 10% increase in survival probabilities would trigger a 2.0% increase in pension liabilities owed to a 60-year old male pensioner

and an even larger 5.2% increase if he is 20 years older. In contrast to this, the resultant understatement of liabilities arising from omission of future mortality improvements from liabilities valuation is inversely related to age. Consequently, as the age-membership structure in a pension scheme matures, scheme-specific longevity selection risk and systematic shocks become quantitatively more important and have larger consequences for plan liabilities than aggregate selection risk or the omission of mortality improvements.

During 2012, the project was completed. The findings were presented at the American Risk and Insurance Association 2012 Annual Meeting and the 20th Annual Colloquium of Superannuation Researchers UNSW, and the paper has been submitted to an insurance journal. The paper can be accessed online as part of the CEPAR Working Paper Series (2012/17).



Our results indicate that a uniform 10% increase in survival probabilities would trigger a 2.0% increase in pension liabilities owed to a 60-year old male pensioner and an even larger 5.2% increase if he is 20 years older

REFORM OF ILL-HEALTH RETIREMENT BENEFITS FOR POLICE IN ENGLAND AND WALES: THE ROLES OF NATIONAL POLICY AND LOCAL FINANCE

RESEARCHER

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External collaborator

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Around the world, public sector pension schemes have been attracting increasing attention because of their generosity, and their implications for government budgets. Generosity is not confined to the value of the pension when it is paid. Other provisions, related to specific circumstances, such as health status or years of service, can add considerably to the present value of the pension fund liability.

This study examines the specific case of the treatment of ill-health related retirement in the national Police Pension Scheme in Britain.

This allows police officers to retire on a full pension at a relatively young age – often before age 50. Recent reforms will see this normal pension age increase significantly. Nevertheless, despite this relatively early age of normal retirement, the rate of retirement from the police force on grounds of ill-health even before normal pension age has also been high, reaching a peak of over half of all police office retirements in the late 1990s. There is little evidence that police officers have lower rates of life expectancy pre-normal retirement, nor indeed after normal retirement, and the presumption of HM Treasury and Home Office was that such ill-health retirement rates stemmed in large part from lax monitoring of

ill-health claims by some police forces and by an emphasis on complete deployability as a requirement for continued service in the police force. Accordingly a series of reforms to the ill-health retirement provisions were introduced in the mid-2000s to reduce the extent of ill-health retirement among police officers.

This project examines the ill-health retirement rates of police officers in the forces of England and Wales between 2002–03 and 2009–10. Differences in ill-health retirement rates across police forces are statistically related to area-specific stresses of policing and to force-specific differences in human resource policies. Reforms to police ill-health

retirement provisions and to pension arrangements that occurred in the mid-2000s – and in particular a shift in the incidence of financing ill-health retirement from central government towards cost-sharing with local police authorities – are described. We show that these measures significantly impacted on the level of ill-health retirement, especially in forces with statistically higher rates of ill-health retirement pre-reform, once we control for stress factors. However a degree of ‘regression to the mean’ cannot be fully rejected by placebo tests. We also show that residual differences in ill-health retirement rates across forces after these reforms were enacted are

statistically correlated with the differential capacities of police authorities to raise revenues from local property taxes, thereby alleviating constraints on central funding of ill-health retirement.

The research was published as NBER working paper #18479 in October 2012.



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Richard Disney is a Research Fellow at the Institute for Fiscal Studies in London. He is also a visiting Professor in Economics at University College London.

He has been a Professor of Economics at the University of Nottingham, at Queen Mary College University of London and at the University of Kent at Canterbury. He has held visiting positions at both the International Monetary Fund and the World Bank, and has been a consultant for the World Bank, the ILO, the OECD and a number of UK government departments.

He is a member of the Senior Salary Review Body, having previously been a member of the NHS Pay Review Body and an advisor to Tom Winsor’s investigation of police remuneration. His research interests lie largely in the field of applied microeconomics, notably labour market issues, pensions and public spending. He has published widely in top academic journals.

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CEPAR supports a major research project on China's pension system. Partly supported by an ARC Linkage grant with Chinese partners, research over the past two years has focused on rural and rural migrant pensions. China's new Rural Pension scheme, announced in October 2009, is destined to be the world's largest, at least in terms of membership. By the time it is fully implemented, it will cover some 600 million members, with about 105 million receiving benefits at that time. The new scheme is partly motivated by concern about the widening income gap between the urban and the rural sectors, the rich and the poor in China.

CEPAR research in 2012 has examined two behavioural and three design issues:

Lu (2012) uses the China Health and Retirement Longitudinal Study (CHARLS) data to investigate the net impact on the old age household income inequality when the new rural pension plan is in place, taking account of estimated changes in private intergenerational transfers. 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. Based on these findings, Gini index simulations are employed to compare income inequality with and without the rural public pension. We find this significantly improves rural income inequality in Gansu (a low-income province) but makes little difference in Zhejiang (a rich province). Transfers to low income regions from migrants are found to improve income inequality for rural elders as well. This paper was presented at the First Ageing & Social Security International Conference in Hangzhou, China in May 2012, and is currently under review.

Related to rural pensioner support are pension arrangements for migrants. China is currently undergoing the largest regional migration in the world's history. Young rural workers are moving to urban areas, often in a different province, for substantial periods of their working lives.

Lu and Piggott (2012) propose using the unusually flexible mobility features of a Notional Defined Contribution (NDC) mechanism to ensure pension entitlements for migrating workers, in both the accumulation and drawdown phases. An appropriately structured NDC plan of this type is shown to be viable by reference to a previously developed model of Zhejiang Province's social security systems. The proposed plan would remove mobility barriers to migrating workers, increase the retirement benefit for mobile workers, and reduce the future government liability for payouts in other pension systems in which migrants currently hold membership. This research was presented at the CESifo Summer meetings in Venice in July, and is currently under review.

More than half China's population has little cash benefit entitlement in later life. Lu, He and Piggott (2012) calculate the revenue costs of a universal social pension scheme for China, using the poverty line as the standard for pension benefit. Baseline access age is 62. We take account of systematic longevity improvements by providing new estimates of longevity into the future using the Lee-Carter approach. Alternative fertility scenarios are used to assess the burden of the plan on younger generations. Our central estimates lie in the range of 0.5% - 1.5% of GDP annually, over a 40 year horizon, assuming that those with urban pension entitlement are excluded. This paper has been accepted for presentation at the Harvard-Stanford conference, "Economic Aspects of Population Aging in China and India", March 7-8, 2013.

Bateman and Liu (2012) critically assess the current operation of, and future plans for, the overall pension system in China, covering rural, migrant, urban and public sector workers. A quick review of China's pension arrangements could suggest a comprehensive retirement income system comprising safety nets, and earning-related and voluntary components. However, a more careful examination identifies issues with coverage, adequacy, benefit security and governance. Using both individual and economy-wide criteria for reform, Bateman and Liu advocate unification of the separate pension systems, greater pre-funding, and the introduction of policies and practices to facilitate higher returns from pension assets. They emphasise that 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.

The final project, still in progress, uses Chinese survey data on which CEPAR was able to advise, to assess the accuracy of individuals' life expectancies. Lu, Yang, Piggott and Mi (2012) statistically analyse the relationship between subjective life expectancy and various demographic, social and economic factors. Current analysis focuses on two provinces, one rich and one poor. Our preliminary results indicate that demographics and family relationships are more important than economic status in people's perceptions of their life expectancy. Both men and women over the age of 60 are found to underestimate their life expectancy relative to national data. But while

younger women also underestimate life expectancy, younger men overestimate time to death relative to national estimates.

Outputs arising from the project include:

Bateman H., and Liu K. (2012), Pension Reform in China: Racing against the Demographic Clock, presented at the Mariazell Dialogue 2012, "How many people? How much consumption can our planet sustain? How many do we need to sustain our social systems", Mariazell, Austria on 25–27 January 2012.

Lu B., He W. and Piggott J. (2012), Should China Introduce a Basic Social Pension, accepted by the Harvard-Stanford conference on "Economic Aspects of Population Aging in China and India" to be held 7–8 March, 2013 at Stanford University.

Lu B. and Piggott J. (2012), Meeting the Migrant Pension Challenge in China, presented at the CESifo Venice Summer Institute Workshop "Portability of Social Benefits: The Economics of a Critical Topic in Globalisation" on 16–17 July, 2012.

Lu B. (2012), Rural Pension, Income Inequality and Family Transfer in China, presented at the First Aging & Social Security International Conference in Hangzhou, PRC, 21–23 May, 2012.

Lu B., Yang Z., Mi H. and Piggott J. (2012), How do People Predict their Life Expectancy? – A Survey in Rural China: Implications of Pension Policy and Insurance Products, submitted to the 27th International Population Conference, Busan, Korea, 26–31 August 2013



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Bei Lu 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, Bei 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 on-going 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. During 2011–2012, she presented at CESifo Seminar in Venice, the China Pension Reform Forum in Beijing and the First Aging and Social Security International Conference in Hangzhou, PRC.

MULTI-STATE MARKOV MODELS FOR INDIVIDUAL AGEING PATHWAYS (MORBIDITY AND MORTALITY TRAJECTORIES) USING LONGITUDINAL DATA

RESEARCHERS

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DANIEL ALAI
MICHAEL SHERRIS

In order to design effective long-term care products, it is necessary to predict an individual's morbidity experience over the period from retirement to death. This is particularly important for financial products, such as long-term care insurance, where contract payments depend on ill-health events as well as mortality.

Longitudinal data on health and longevity describe individual morbidity experience trajectories, or pathways of changes in health from retirement to death. Pathways significantly vary across individuals; however, dynamic characteristics of certain health measurements are associated with morbidity and mortality risks. For example, dynamic characteristics of blood glucose, body mass index, pulse pressure, pulse rate and total cholesterol at middle and old ages are related to risks of death and onset of cancer, cardiovascular diseases and diabetes at later ages.

This means that it should be possible to predict the likelihood that an individual follows a particular morbidity and mortality pathway given sufficient information about their historical experience and current health.

We develop methodologies for extending longevity risk models to include morbidity, and for modelling pathways of changes in health from retirement to death. A multi-state Markov model is employed to capture (possibly repeated) ill-health events along the pathway to death. The models are fitted using longitudinal data and therefore capture variation across individuals' pathways to death. We quantify how individual ageing pathways (in particular the transitions over time from healthy states to ill-health, and from all states to death) vary across the population by estimating individual-level transition probabilities using generalised linear mixed models.

The research will increase understanding of the range of ageing pathways at an individual level and will be useful for targeting long-term care solutions and products to individuals. Key outputs will include individual-level transition probabilities between health states, measures of expected total life expectancy, healthy life expectancy and time spent in different health states, and expected present value of payments streams linked to ill-health events, such as disability and long-term care insurance.

In 2012, the modelling framework was established and preliminary results were obtained using data from the US Health and Retirement Survey. An Australian longitudinal dataset suitable for modelling transition rates along individual ageing pathways was obtained from the DYNOPTA research group based at the ANU node of CEPAR.

We develop methodologies for extending longevity risk models to include morbidity, and for modelling pathways of changes in health from retirement to death

MULTI-STATE ACTUARIAL MODELS FOR HEALTH STATUS WITH APPLICATIONS TO LONG-TERM CARE

RESEARCHERS

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As individuals age, they suffer from a reduced degree of functional capacity and need support in many facets of living over a prolonged period of time. At some point, some individuals may become physically or cognitively disabled. Health status transition models mapping the migration of the elderly between health statuses provide important input to the pricing and valuation of long-term care (LTC) insurance covers. With individuals today living much longer, an understanding of functional impairments in late life is also germane to

policymakers concerned about forecasting future health care utilisation and costs.

This project examines multi-state actuarial models for health status and the application of such models to LTC insurance pricing and product development. We adopt a standard time-continuous Markov process setup and explore two different techniques to modelling transitions across health states. We feature mainly an approach to graduation based on generalised linear models (GLM) which has been proposed for analysing sickness inception in the literature. Models are fitted to longitudinal data from the US Health and Retirement Study to derive four sets of age-specific and sex-specific transition

intensities: disability onset, mortality among healthy lives, mortality among disabled lives, and recovery. We then re-compute transition intensities using graduation methods adapted from the Society of Actuaries LTC Valuation Methods Task Force. Parameters are estimated by maximum likelihood under both approaches. Fitted transition probabilities are compared and contrasted, and also evaluated against population sources where available.

This approach provides answers to several types of questions. First, within the versatile GLM framework, which modelling predictor structure provides the best fit to morbidity and mortality transitions for the given sample?

Second, what is the probability that an able 60-year old or 70-year old will ever become functionally disabled and need care? Third, how do recoveries from functional disabilities differ by age and sex? For example, do younger individuals tend to exhibit higher rates of recovery? Information on benefit triggers, premiums, benefits, and elimination periods from LTC insurance policies in the US were collated to enable extensions of these models to LTC policy pricing. The project will also be expanded to allow for more than one state of disability, as well as incorporate uncertainty in transition rates.

This project will continue in 2013 and is expected to produce a number of working papers for submission to leading international journals.

Health status transition models mapping the migration of the elderly between health statuses provide important input to the pricing and valuation of long-term care (LTC) insurance covers



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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*.

MODELLING SYSTEMATIC LONGEVITY AND HEALTH RISK: A SUBORDINATED MARKOV MODEL

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RESEARCHERS

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Health and mortality differentials in the population are significant factors to be included when quantifying the impact of mortality especially for life annuity markets, where pricing needs to reflect the expected survival probabilities of the individuals purchasing the annuity. Evidence of these differentials is found in studies of socioeconomic groups. For example the Australian Institute of Health and Welfare (AIHW) has undertaken a burden of disease study to measure mortality, disability, impairment, illness and injury as lost years of healthy life. (The fifth socioeconomic quintile lost 35% more years of life than the first quintile). Population heterogeneity and stochastic aggregate mortality rates are important issues that mortality modelling needs to take into account. Most mortality models are based on aggregate population data and use only age and gender, and in the case of life insurance, smoking status, to reflect heterogeneity.

This project develops a stochastic model for quantifying mortality differentials in the population using population health and mortality data. It incorporates a stochastic factor into transition probabilities of a subordinated Markov ageing model where the states in the model are linked to identifiable health conditions. The model is estimated using available Australian data. Sensitivity to parameter and model assumptions is evaluated. The implications of the model are assessed in an application to annuity pricing. A method is presented for extending the model if more detailed data becomes available.

This research project was completed in 2012 and the results were presented to the Australian Actuarial Education and Research Symposium at Monash University on 7 December 2012. The results will be written up in a working paper for journal submission in early 2013.

This project develops a stochastic model for quantifying mortality differentials in the population using population health and mortality data

RESEARCHERS

RAMONA MEYRICKE
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This research provides a better understanding of the risk of underwritten annuities from a provider's perspective, to assist in adequate reserving and pricing that enhances secure annuity markets.

Heterogeneity in mortality rates is known to exist in populations, as mortality risk varies across individuals. Heterogeneity undermines the use of age and sex as the only rating factors for life annuity products. Insurers are exposed to anti-selection if only the healthiest people buy life annuities, so they price annuities assuming above-average longevity.

The resulting high prices lead to annuities being unattractive to individuals in average or poor health. Underwriting addresses this issue by providing lower annuity prices for high risk lives, characterised by underwriting factors such as smoking status and medical history. While much research has addressed which underwriting factors to use for life-contingent products, an open question is whether heterogeneity is still significant after allowing for underwriting factors. If so, then it is important to assess the financial implications of heterogeneity and to allow for it when pricing underwritten annuities.

This project quantifies heterogeneity in US population mortality, before and after controlling for commonly used underwriting factors. We find that heterogeneity declines when underwriting factors are used; however even after allowing for underwriting factors, there is still significant heterogeneity in the residual mortality risk. This residual risk has financial implications for annuity providers. We show that heterogeneity due to unobservable factors (or frailty) has a significant impact on actuarial present value of underwritten annuities, particularly for high risk lives. The annuity price for the 'healthiest' lives in high risk categories is higher than the population average price for these categories.

Frailty has a lesser impact on underwritten annuity prices for low risk and average risk lives because of the longer expected lifetime (and therefore discounting period) for low risk lives relative to high risk lives.

These results have important implications for the pricing and risk management of life-contingent insurance products and annuities. In 2012 this research was presented at the 16th International Congress on Insurance Mathematics and Economics. A working paper is being prepared for the CEPAR working paper series and for submission to an academic journal in early 2013.

This research provides a better understanding of the risk of underwritten annuities from a provider's perspective, to assist in adequate reserving and pricing that enhances secure annuity markets



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Ramona Meyricke is a Research Fellow at the UNSW node of CEPAR.

Ramona joined CEPAR in March 2012 following completion of her PhD in Financial Economics from the University of Cambridge. Her research focuses on

financial risk management for pension plans and life insurers, including managing solvency, capital and regulatory requirements, 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, systemic risk and the asset pricing implications of ageing.

She is a Fellow of the Institute of Actuaries Australia. Prior to commencing her PhD, Ramona worked for PwC Australia for five years as a Pensions Actuary.

RESEARCHERS

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There is increasing demand for products that transfer longevity risk from annuity providers to financial markets. Securitisation of longevity risk is one solution. A significant amount of research has explored the design and pricing of longevity derivatives. Far less is known about how annuity providers are likely to use longevity derivatives or the costs and benefits of their use.

A major incentive for annuity providers to use longevity derivatives is to reduce their regulatory capital requirements. Most Solvency Capital Requirements (SCRs) are calculated as a percentage of regulatory measures of risk. An insurer can decrease regulatory measures of longevity risk by either hedging or reinsurance. In this way, SCRs affect life insurers' willingness to pay for hedging of insurance risk (such as longevity risk). Solvency II represents a significant change in the SCRs for EU insurers. It is unclear, at present, which hedging strategies are

cost-effective under the Solvency II framework and also how cost-effective hedging strategies differ from risk-reducing hedging strategies.


We investigate the cost of different hedging strategies using longevity bonds. The major contribution is a framework to quantify the trade-off between the cost of buying a longevity bond and the benefit from holding it in terms of reduced SCR. We model the cash flows and capital reserves of an annuity provider, with and without hedging using longevity bonds. We find the hedging strategy that minimises the provider's cost of capital plus cost of hedging. Finally, we quantify the impact of different hedging strategies on the provider's probability of default.

We perform a cost benefit analysis of the cost of hedging longevity risk versus the capital relief from hedging under Solvency II. We define a cost-effective hedge as a hedge that costs less than the value of the capital relief it generates. We show that in many cases it is not cost-effective for an insurer to purchase longevity bonds with a


term of over 20 years because the cost of hedging exceeds the benefit in terms of capital relief. Finally, we examine the corresponding reduction in the economic risk of the insurer. We show that cost-effective hedging strategies are not the same as those that minimise economic risk. Economic risk decreases monotonically as the term of the hedge (longevity bond or swap) increases.

The results suggest that longevity bonds or other market based risk transfer mechanisms are not cost-effective beyond a term of 20 years. The intuition is that market based pricing depends on volatility while SCRs are set as a percentage of best estimate liabilities; and that the high volatility of mortality at long time horizons means that market based prices exceed the benefits they offer in terms of solvency capital relief. Therefore insurers should consider in-house risk management, for example diversifying across cohorts.

In 2012 this research was presented at the Eighth International Longevity Risk and Capital Markets Solutions Conference. A working paper is being prepared for the CEPAR working paper series and for submission to an academic journal in early 2013.



The results suggest that longevity bonds or other market based risk transfer mechanisms are not cost-effective beyond a term of 20 years



RESEARCHER

RALPH STEVENS

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IAN TONKS
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Annuity markets around the world are playing an increasing role in pension provision as defined-contribution pension systems are introduced and mature. Even though annuities are believed to be utility enhancing, it is well known that where annuities are purchased voluntarily the market tends to be small. In this project we provide the first empirical analysis of the Dutch annuity market, one of the few markets other than the UK to be characterised by compulsory annuitisation. The Dutch framework is

therefore ideal for examining annuity markets in which adverse selection is relatively unimportant.

In this project, we provide the first analysis of annuity rates in the Netherlands for the period 2001-2010. 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. We show that annuitants could have increased their annuity income by about 5% by shopping around and purchasing their annuities from alternative providers. Money's worth calculations show that the market is efficient by international standards, with a money's worth above 0.9 for the whole period and close to unity by the end of the period.

Our money's worth calculations suggest that Dutch annuities are fairly priced. By the end of the period the money's worth appears to be greater than one, suggesting either that Dutch insurance companies feel confident that they can earn higher rates of return than on government bonds or that they are selling annuities at a loss. According to the theory of adverse selection, money's worth should be lower at advanced ages, yet we find the money's worth for a 65 year old to be typically less than half a per cent lower than for a 60 year old. Larger annuity purchases are likely to be made by richer and healthier individuals who will live longer, suggesting annuity rates should be lower for purchases of higher value, but we find the opposite to be true.

The project fits within the broader thrust of research on benefit design being undertaken with CEPAR, and is a building block for a planned research collaboration between CEPAR and Netspar.

Larger annuity purchases are likely to be made by richer and healthier individuals who will live longer, suggesting annuity rates should be lower for purchases of higher value, but we find the opposite to be true



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Ralph Stevens joined the UNSW CEPAR node in July 2012 as a Senior Research Fellow. Previously he held the position of Lecturer at the School of Risk and Actuarial Studies, Australian School of Business 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.

STRAND 4 AGEING WELL AND PRODUCTIVELY

AMONG THE ISSUES ANALYSED IN THIS STRAND THROUGH 2012 ARE HEALTH FACTORS SUCH AS OBESITY AND OTHER PREDICTORS OF CHRONIC DISEASE; COGNITIVE HEALTH; THE ROLE OF SOCIAL NETWORKS IN MAINTAINING SOCIAL ENGAGEMENT AND A SENSE OF CONNECTION AMONG OLDER PEOPLE; AND MATURE LABOUR FORCE ATTACHMENT. LONGITUDINAL RESEARCH CAN HELP IDENTIFY THE RANGE OF INTER-RELATED FACTORS IMPACTING ON HEALTH, PRODUCTIVITY, SERVICE USE, AND WELLBEING OUTCOMES.

Projects are grouped around the following issues:

- The relationship between chronic disease, obesity, and health-adverse lifestyles and socioeconomic measures – for example, to what extent is socioeconomic status related to adverse health behaviours?
- The impact of social attitudes on perceptions of healthy ageing – do community attitudes inhibit healthy ageing?
- The role of social networks in cognitive evolution, and the role of community care. Is cognitive decline slowed by social interaction, and if so, what social policies should be fashioned to capture this potential?
- The role of later employment. Does extending labour force attachment encourage healthier ageing? While health and labour force attachment tend to go together, the relationship may not be causative, but merely selective.
- The causes and consequences of changes in labour force participation rates at older ages in Australia. Understanding clearly why mature labour force participation rates have been rising in recent years may help devise policies to encourage further participation, with implications for individual retirement savings and the government's fiscal position.

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

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SOCIOECONOMIC DETERMINANTS OF HEALTH AND WELLBEING ACROSS THE LIFE COURSE: AUSTRALIAN AND ENGLISH COMPARISONS

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This project is comparing the influence of national differences in post war societal and policy developments on the baby boom cohorts born between 1946 and 1950 in Australia and England. It aims to identify the influence of disparities in opportunities and disadvantage over the life course for people making transitions from middle to later life. Key outcomes being examined include health, productivity, wellbeing, and pension and service use. Comparisons will be made between native born and migrant

populations in both countries including those who have migrated from England to Australia.

OUTCOMES ACHIEVED

The comparisons are based on the English Longitudinal Survey on Ageing (ELSA) and the Australian Life History and Health (LHH) Survey. The LHH data collection was funded by a now completed ARC Discovery Project. During 2012 detailed work was completed on planning the comparative data files. Other outcomes include:

- 1 Presentation to the Australian Academy of Social Sciences: Social Determinants of Health Research Roundtable of the conceptual framework and related policy work (Kendig)

- 2 Completed paper 'Building Age Friendly Cities, *Health Inequalities Report*' for the British Academy publication designed to guide local UK action on new policies on social determinants of health. (Kendig and Professor Chris Phillipson - CEPAR visitor 2013)
- 3 Submission to the Senate Inquiry now underway on social determinants of health (Kendig and Browning)
- 4 Presentation to The Australian Sociological Association National Conference, University of Queensland, November 2012: 'Life Course Influences on Disadvantage among Australian Baby Boomers' (O'Loughlin).

NEXT STAGE

During 2013 we will be constructing the comparative survey data file, a time series data bank on socio-economic conditions, and policy histories in the two countries. Preliminary findings will be presented in an invited address and plenary symposia at the 2013 International Congress on Gerontology and Gerontology in Seoul.

A new direction is research on Age Friendly Communities (AFCs) as part of a global network supported by the World Health Organisation. Professors Kendig and Anstey and collaborating policy partners have been invited to write an article on Australian developments for a special issue of the *Journal of Ageing and Health*.

Building on 2012 co-authored publications with Dr. McNamara and Dr. Gong from NATSEM, we will be analysing spatial variations in our LHH data set to examine the influence of local exposures over the life course and exploring further research on implementation of AFCs in Australia.

This project ... aims to identify the influence of disparities in opportunities and disadvantage over the life course for people making transitions from middle to later life



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 the 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 and Associate Investigators Byles and O'Loughlin.

LIFESTYLE INFLUENCES ON HEALTHY AGEING AND CHRONIC DISEASE: LONGITUDINAL PREDICTORS

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RESEARCHERS

HAL KENDIG
COLETTE BROWNING
LINDY CLEMSON

Contrary to prevailing negative attitudes towards ageing, a new generation of research is demonstrating that the processes of ageing are amenable to a range of bio-psycho-social influences, with many of them being changeable and hence improvable. Ageing well approaches recognise the potential for older people to manage the negative correlates of ageing, such as chronic illnesses, disability and dependence, in order to optimise outcomes in later life. Healthy lifestyles, including physical and social activity, and healthy eating are central to positive outcomes for older people.

However, in order to better understand the predictors and consequences of ageing well, we need to examine longitudinal data. The Melbourne Longitudinal Studies on Healthy Ageing program (MELSHA) has gathered data since 1994 on the health of older people living in the community. 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; and
- health and disability transition points for targeted interventions.

This research will inform the development of new healthy ageing initiatives to enhance positive health actions and self care, and improve service models for older people.

OUTCOMES ACHIEVED

During 2012 CEPAR contributed to updating the MELSHA data file to include the latest data interview round in 2011 and death records through 2012.

Related publications appearing in 2012 include:

Clemson, L., Fiatarone Singh, M., Bundy, A., Cumming, R. G., Manollaras, K., O'Loughlin, P., & Black, D. (2012), Integration of balance and strength training into daily life activity to reduce rate of falls in older people (the LiFE study): Randomised parallel trial, *British Medical Journal*, 345, e4547.

Wales, K., Clemson, L., Lannin, N., Cameron, I. D., Salkeld, G., Gitlin, L. and Davies, C. (2012), Occupational therapy discharge planning for older adults: A protocol for a randomised trial and economic evaluation, *BMC Geriatrics*, 12, 34.

Gillespie L.D., Robertson M.C., Gillespie W.J., Sherrington C., Gates S., Clemson L.M. and Lamb S.E. (2012), Interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, Issue 9. Art. No: CD007146.

A further paper and a co-edited book are in press.



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. She is on the editorial board of the *Journal of Aging and Health* and the *Australian Occupational Therapy Journal*.

The team presented its findings at a number of conferences and symposia, full details of which are provided in Section 4. Symposia where a number of CEPAR investigators presented research related to this project included:

- *Ageing Well: Evidence for a Healthy Future*, a symposium organised by the Australian Association of Gerontology in collaboration with CEPAR.
- Australian Approaches to National Issues on Local Action: *Improving the Quality of Life of Older People* at the IFA in Prague in May 2012.
- The CEPAR symposium, *Promoting Active Ageing: The Role of Health, Behavioural and Psychosocial Resources*, at the 45th Australasian Association of Gerontology National Conference, 20–23 November 2012.

Browning and Kendig made a submission to the National Preventive Health Agency on the evidence-based opportunities for interventions on behalf of older people.

Browning, Kendig and Anstey have also contributed to CEPAR consultations with Medibank about available data and possible collaboration with research and program development.

NEXT STAGE

In 2013, Clemson, Kendig, Mackenzie and Browning will be investigating “Predictors of medicalised falls and fear of falling differ: an 11 year longitudinal study of incident events in older people”. Further analyses on the now extended MELSHA data set will continue on predictors of health and wellbeing trajectories including improvements and stability as well as deterioration. The roles of physical activity, chronic illness and social connectedness will be emphasised given their importance for health promotion as will changes in caregivers’ capacities and wellbeing. Analyses of social isolation will aim to strengthen understanding of older people as part of the national social inclusion agenda.

Further MELSHA analyses are underway to inform implementation of the national Living Longer, Living Better reforms examined in the CEPAR – Crawford Aged Care Policy Dialogue. We have begun to assess service use and wellbeing in late life, particularly in the years preceding death. Browning is leading a qualitative component on older people’s meanings and strategies; Burns (who joins CEPAR in 2013) will lead research on predictors of wellbeing, flourishing, and mental health, and Kendig on capacities to remain independent and service use. We will pilot research on clients in new forms of Consumer Directed Care.

This research will inform the development of new healthy ageing initiatives to enhance positive health actions and self care and improve service models for older people

EDUCATIONAL DIFFERENCES IN THE OVERWEIGHT AND OBESE IN AUSTRALIA AND THE UNITED STATES

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RESEARCHERS

YAN YU
PETER MCDONALD

Excess body mass has reached epidemic proportions in both developed and developing countries with long-term social and health implications. In the United States, 68% of the adult population currently has a body mass index (BMI) of 25 and greater and is therefore considered as overweight; and the figure for having a BMI of 30 and greater (considered as obese) is 34%. Another dramatic change in recent decades is the increase in educational attainment. The proportion of the American adult population with at least some college education has increased from 12% to 56%.

In industrialised populations, less educated people are more likely to be overweight or obese. In a widely cited previous study, the negative education-obesity association was found to have weakened in the United States. In my recent paper published in *Obesity*,⁵ I analysed data from the National Health and Nutrition Examination Surveys (NHANES) and found that the negative association is mostly stable between 1971 and 2006; however, the greater tendency to be obese among those with some college education, as compared with college graduates, has increased among women (but not among men). Recognising the distinction between the two college groups corrected the spurious trends claimed in prior research.

My ongoing work extends the study period through 2010 and compares the period versus cohort trends in the association between education and BMI. Previous studies found that the obesity epidemic in industrialised populations is mostly driven by period factors, but there is some evidence that cohorts born after the 1950s or 1960s are subject to an elevated risk. Analysing period and cohort patterns of the education-BMI association would help to better understand the link between education and body weight. During 2012 the analysis comparing the period and cohort trends was completed and a paper will be prepared in 2013 to be submitted for journal publication.

Previous studies found that the obesity epidemic in industrialised populations is mostly driven by period factors, but there is some evidence that cohorts born after the 1950s or 1960s are subject to an elevated risk

⁵ Yu, Y. (2012). Educational differences in obesity in the United States: A closer look at the trends. *Obesity*, 20(4):904-908 [available online Oct 13 2011].



DR YAN YU

BS Shanghai JiaoTong, MA
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PhD Sociology Wisconsin-Madison
RESEARCH FELLOW

Yan Yu has been a Research Fellow at the Australian Demographic and Social Research Institute (ADSR) at the Australian National University since 2009.

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.

THE BODY MASS-MORTALITY ASSOCIATION IN THE UNITED STATES: THE TEMPORAL PATTERNS

RESEARCHER

YAN YU

Widespread weight gain has led to epidemic proportions of excess body mass in the US and elsewhere. Being overweight or obese is associated with a host of fatal and non-fatal diseases such as cardiovascular diseases, cancer, diabetes, gallbladder diseases, osteoarthritis and pulmonary diseases. Controversy remains whether excess fat mass, at the moderate level in particular, elevates mortality. The much-publicised studies using the National Health and Nutrition Examination Surveys (NHANES) found that compared with normal weight (BMI between 18.5 and 25), mortality is lower for the overweight (BMI between 25 and 30), not higher for the moderately obese (BMI between 30 and 35), but highest for the underweight (BMI less than 18.5). These findings largely agree with the existing literature. On the other hand, significant excess mortality for the moderately overweight or obese was reported in the Framingham Heart Study (FHS) and Nurses' Health Study.

Latest research based on the FHS also found that a longer exposure aggravates excess obese mortality.

The number of studies on trends in the BMI-mortality association is limited. In fact, it is common practice for mortality projections to assume no change in BMI-related mortality differences, while entertaining various scenarios of change in the prevalence of overweight and obesity. Despite being small in number, empirical findings are no less conflicting. A recent paper declared "secular declines in the association between obesity and mortality in the United States."⁶

This conclusion, based on the NHANES, differs from two other recent NHANES-based studies. In this project, I use the NHANES data to examine mortality differences across BMI categories in the United States, focusing on variations across time periods and birth cohorts as well as variations across socio-demographic subpopulations.

I have completed and submitted one paper that explores sex differences in how mortality varies by BMI. The finding that men and women differ in the changing BMI-mortality association cautions against sweeping statements about secular trends. My further work aims to better understand the sources of change and population heterogeneity in the BMI-mortality association.

The finding that men and women differ in the changing BMI-mortality association cautions against sweeping statements about secular trends

⁶ Mehta, N. K. and V. W. Chang, 2011. "Secular declines in the association between obesity and mortality in the United States," *Population and Development Review* 37(3): 435-451.

ACTWELL – THE INFLUENCE OF AGEING ATTITUDES AND EXPECTATIONS ON HEALTH BEHAVIOURS AND MEDICAL HELP-SEEKING

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RESEARCHERS

KERRY SARGENT-COX
KAARIN ANSTEY

The major aim of the ACTWell project was to develop and administer a questionnaire that measured current health behaviours, attitudes to ageing, health and medical help-seeking, and to examine how behaviours are affected by stereotypes and expectations of ageing.

In September 2011 a letter was posted to 3000 randomly selected people residing in the ACT region. A good return rate of 26% saw 783 completed questionnaires. The age of participants ranged from 20-97 years with a mean age of 57.5 (SD = 13.89) with the majority of participants (41.6%) being in the 50-64

year old category. The majority of the sample were male (57.2%), lived in a house (93.7%) with others rather than alone (80.9%), and were not fully retired (67.2%).

A paper from the ACTWell data is currently under revision. This paper examines the indirect relationship between age-stereotypes and physical activity through expectations of ageing across different ages. An indirect relationship between age-stereotypes and sedentary behaviours via expectations of ageing was shown to be moderated by both age and gender. For males a consistent relationship across age indicated that negative stereotypes led to poor expectations of ageing,

which in turn increased the likelihood of sedentary behaviours. In contrast, this relationship was dependent on age for females. Our findings demonstrate gender differences in the influence of age-attitudes and expectations for performing physical activity across ages. Findings have implications suggesting health and social policy interventions and education may need to be targeted differently for males and females, particularly in the context of ageing well across the lifespan.

The overarching aim of this project was to provide a basis on which to extend to a larger research program. This will primarily be focused on identifying an effective intervention to

promote and encourage positive health behaviours through addressing common misconceptions and poor age-attitudes that will reduce risk, and increase the effective management of chronic diseases common in late life. In pursuit of that goal, a pilot study was conducted in 2012 that examined an online intervention aimed at reducing age-stereotypes and increasing positive age-expectations. Results show that the intervention significantly increased age-attitudes (compared to a control group) in a young (18 to 25 years) sample. Furthermore, follow up after four weeks showed that the intervention group's

attitudes remained significantly more positive than the control group. This study is currently being written up into a paper for submission early in 2013.

Findings have implications suggesting health and social policy interventions and education may need to be targeted differently for males and females, particularly in the context of ageing well across the lifespan



DR KERRY SARGENT-COX
BAppPsych (Hons) UC, PhD ANU
POSTDOCTORAL FELLOW

Kerry Sargent-Cox is a CEPAR Postdoctoral Fellow located at the Centre for Research in 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 in 2012 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 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.'

RESEARCHERS

KAARIN ANSTEY
KERRY SARGENT-COX
JACQUI BREWER

Through our National Survey project at the ANU, 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.

The project is a national telephone survey of beliefs about cognitive health spanning a number of different age groups (20s to 80s). It aims to collect data from each of seven age groups (e.g., 20 - 29 years old to 80 - 89 years old); compare these age groups in terms of their behaviours regarding, and beliefs about, cognitive health; and investigate what roles stereotypes and fears play at different ages. A national sample of n=1,400 will be achieved through random digit dialling (RDD). Loose quotas by gender and geographic location will be applied to achieve a broadly representative sample.

A pilot survey is currently being conducted nationally. It is largely exploratory, as the issue of protective behaviours and beliefs about cognitive health has not previously been explored across such a wide age range. It is anticipated that people in their 40s may start thinking about cognition, but that it is not acted upon until the 50s or 60s. Further, it may be expected that younger people do not consider this issue, and therefore do not engage in any protective behaviours. We expect that stereotypes and expectations/fears about ageing will affect this variance. Further, in the exploration of ageing fears, we may expect that younger people may be more afraid of ageing globally; and older people may be more fearful of developing Alzheimer's disease/dementia specifically.

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 ... , what younger people think about these behaviours, and the age at which people start engaging in behaviours to protect their cognitive health

RESEARCHERS

HEATHER BOOTH
TIM WINDSOR

External collaborator
ROBERT ACKLAND (ANU)

The aims of SNAP are to understand the role of social networks in successful ageing. Survey data collected in 2010/11 were supplemented by a second wave in March 2012. These surveys have produced a wealth of data on patterns of face-to-face and other forms of communication between participants and their family members, and between participants and their friends, as well as indicators of social connectedness and wellbeing including self-rated health. Additionally the data include family structures and detailed patterns of social

activity with specific family members. These data are being analysed to understand social activity between participants and their family members and friends in relation to indicators of social connectedness and wellbeing. Demographic differences by age, sex and partnership status in the relationship between social connectedness and wellbeing show that policy initiatives to improve connectedness and wellbeing need to be targeted at specific demographic groups. Current analysis focuses on self-rated health as the wellbeing outcome. The data also include specific variables on the use of the internet and online social networking websites. Patterns of online communication with family

members and friends and their relationship to wellbeing are being investigated.

Additional analyses have been undertaken to examine different profiles of social networks among participants in the first SNAP survey. Using variables that represent both positive aspects of social networks (i.e., availability of social support) and experiences of negative social exchanges, results to date have revealed a number of different network profiles. These range from network types characterised by high levels of support and infrequent negative exchanges, to married individuals with restricted networks, to individuals living alone who experience high levels of negative exchanges, and those

living alone who experience infrequent negative exchanges. Examining associations with external variables indicates that both the availability of supportive social networks and the absence of interpersonal tensions are related to greater satisfaction with life, and better mental health. The various profiles identified also highlight the heterogeneity of social networks among older adults.

In addition to the two SNAP survey waves, a third data collection instrument has been developed to capture online social networking. A specially-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 real life social networks and its impact on individual social capital and wellbeing. The initial sample comprises Facebook-users from the SNAP sample. We employ snowball sampling to increase sample size and maximise links between participants.

... both the availability of supportive social networks and the absence of interpersonal tensions are related to greater satisfaction with life, and better mental health



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 Aging 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).

RESEARCHER

LORETTI I DOBRESCU

External collaborator

DIMITRIS CHRISTELIS
(UNIVERSITY OF NAPLES
FEDERICO II)

The extent to which older individuals preserve their cognitive skills has a significant impact on how well they age. One of the many benefits that higher cognition brings is the increased likelihood to achieve better economic outcomes, even in older age. In fact, there is now a well-documented positive association between cognition and economic performance. For instance, cognitive abilities are found to be strongly positively correlated with financial literacy and with wealth and risky portfolio holdings,

as well as enhanced consumption smoothing and life-satisfaction in retirement.

Given the importance of cognitive abilities in old age, many researchers have investigated their determinants. One of the main findings documented in the literature is the positive association between engaging in social activities and cognitive ability. But is this relationship causal? In other words, is this positive association due to the fact that an active social life actually results in the preservation of cognitive skills? Using panel data from eleven European countries, we address this issue and document the considerable positive causal impact of social activities on cognition.

Specifically, we use micro data from the Survey of Health, Ageing and Retirement in Europe (SHARE) to investigate the impact of being socially active on cognition in older age. Cognitive abilities are measured through scores on numeracy, fluency and recall tests. We address the endogeneity of social activities through panel data and instrumental variable methods. We find that social activities have an important positive effect on cognition, with the results varying by gender. Fluency is positively affected only in females, while numeracy only in males. Finally, recall is affected in both sexes. We also show that social activities, through their effect on cognition, influence positively households' economic welfare.

This project was finalised in 2012 and the findings were written up in CEPAR Working Paper 2012/07. The work is expected to result in a journal publication.

Ageing well is strongly associated with the preservation of cognitive skills. We find social engagement to be one of the main drivers of cognition in old age, with results varying by gender



DR DIMITRIS CHRISTELIS

PhD Pennsylvania
ASSOCIATE INVESTIGATOR

Dimitris Christelis is a Senior Economist at the Directorate General Research of the European Central Bank, and 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 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 consulted on micro survey issues with the World Bank, the Hebrew University in Jerusalem, and the Bank of Greece.

RESEARCHERS

ROBERT CUMMING
VASANT HIRANI

External collaborators

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DAVID HANDELSMAN
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THOMAS TRAVISON
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The Concord Health and Ageing in Men Project (CHAMP) is designed to fill the gap in knowledge about the health of older men. The study is chiefly concerned with frailty, longevity and the major geriatric medical syndromes of dementia, falls, incontinence and mobility impairment.

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 were recruited. Eighty per cent of these men were seen again two years later and five year follow-up visits will be completed in early 2013.

Twenty nine CHAMP papers have been published or are in press. Three papers published in 2012 are highlighted here.

CHAMP data was used to identify factors associated with moving into a residential aged care facility.⁷ During an average of 3.4 years of follow-up, 125 men were admitted to a nursing home or hostel. Dementia was the strongest risk factor for admission; men with dementia were six times

more likely to be admitted than men without dementia. Mild cognitive impairment (MCI) was also strongly associated with admission to a nursing home or hostel. Other factors associated with admission were older age, physical disability, muscle weakness and lack of social interaction. Being a non-English speaking immigrant was associated with reduced risk of admission.

Prostate cancer is an important cause of death in older men. Unfortunately, the commonly used screening test for this cancer, blood level of prostate specific antigen (PSA), cannot distinguish between aggressive prostate cancers that will be fatal and very slow growing cancers that will cause no harm.

PSA testing is not recommended for older men. Despite this, 48% of CHAMP men had had a PSA test in the previous two years, including 39% of men aged 90 and older.⁸

Older people tend to take multiple medications. This polypharmacy can have adverse effects because of interactions between medications. However, there is no generally accepted definition of polypharmacy. In CHAMP men, the risk of adverse outcomes started to increase once they were taking five or more medications, suggesting that polypharmacy be defined as this number of medications or more.⁹

CHAMP is supported by the NHMRC, CEPAR and the Ageing and Alzheimer's Research Foundation.

CHAMP data was used to identify factors associated with moving into a residential aged care facility

⁷ Gnjdijic D et al. [2012] Mild cognitive impairment predicts institutionalisation among older men: A population-based cohort study. *PLoS ONE*; 7(9): e46061.

⁸ Litchfield MJ et al. [2012] Prostate-specific antigen levels in men aged 70 years and over, findings from the CHAMP study, *Medical Journal of Australia*; 196: 395-398.

⁹ Gnjdijic D et al. [2012] Polypharmacy cutoff and outcomes: Five or more medications were used to identify older men at risk of different adverse outcomes, *Journal of Clinical Epidemiology*; 65: 989-995.



PROFESSOR ROBERT CUMMING
MBBS UNSW, MPH PhD Syd.
CHIEF INVESTIGATOR

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

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This research program consists of three studies investigating the impact of vitamin D status on the healthy ageing of older men participating in the Concord Health and Ageing in Men Project (CHAMP).

The first study examined associations between vitamin D status and socioeconomic, lifestyle and health factors. Covariates included age, socioeconomic measures, season of blood

sample, physical activity, sun exposure, vitamin D supplement use, cigarette smoking status, alcohol consumption, obesity and measures of health. The study found the prevalence of vitamin D insufficiency (25(OH)D < 50 nmol/L) was 43.0%; highest in winter (55.5%) and spring (53.9%). It was also associated with specific lifestyle factors including low physical activity, avoidance of sun exposure, current smoking and obesity, even after adjustment for confounding factors. These findings emphasise the need to screen and monitor 25(OH)D levels in this group. The resulting manuscript was accepted for publication in the *Journal of Nutrition, Health and Ageing*.

A second study investigated the associations between frailty and components of frailty with serum 25-hydroxyvitamin D (25D) and 1,25-dihydroxyvitamin (1,25D). It found that frailty was present in 9.2% of the sample. Low serum 25D and 1,25D levels were independently associated with frailty and with four of the five components of frailty (reduced muscular strength/weakness, slow walking speed, exhaustion and low activity level but not weight loss). This suggests there might be a number of different biological mechanisms for how low vitamin D status might contribute to the frailty syndrome. The results were written up and submitted to *Journal of Gerontology: Medical Sciences*.

Identifying and exploring the optimal vitamin D levels for positive health outcomes was the focus of the third study. Findings show that even after adjusting for confounding factors, low 25(OH)D levels were associated with fair, poor and very poor self-rated health; depression; reporting not being able to do activities of daily living (ADL); muscle weakness; difficulties with balance and Type 2 diabetes (self-reported and fasting blood measurements). Work is under way to identify optimal 25(OH)D levels for positive health and functional outcomes.

The results of the research will also be presented at the International Association of Gerontology and Geriatrics (IAGG) 2013 conference in

Seoul. Two papers, one examining the nutritional profile of older men living in Sydney and the other associations between frailty and serum vitamin D levels in Australian men aged ≥70 years, have recently been accepted for oral presentation.

In the next two years, the research programme will investigate long-term health outcomes related to vitamin D deficiency such as morbidity and mortality. It will also explore the interrelationships between nutritional factors, health and chronic diseases. Longitudinal research will be conducted to investigate health and longevity, examining conditions such as frailty and associated health outcomes including mortality.



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) in a national role which included the development of modules, liaison with other organisations, training field staff, as well as primary and secondary analysis of data. She was a co-editor of the

recent HSE reports as well as author on the adult obesity chapter and NDNS 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 Hirani previously worked as a Senior Research Fellow at University College London focusing on the health of older people.

RESEARCHERS

HAL KENDIG
KATE O'LOUGHLIN
VANESSA LOH

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. Productive activities may be paid or unpaid, and include volunteering, caregiving, 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 caregiving, 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 involves a cross-sectional analysis of Wave 10 (2010) HILDA data for both younger and older age groups to provide a snapshot view of recent engagement in productive activities such as paid work, volunteering, caregiving, childcare, and domestic work, across the life course. The results indicate that the kinds of productivity vary 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 highlight the potential for competition between paid work and other productive activities, as well as the importance of modifiable factors such as health and education for productivity across all ages. These results were presented at a symposium on promoting active ageing at the 45th Australian Association of Gerontology National Conference in November 2012. The next phase of this research will

extend these findings by examining transitions over time using several waves of the HILDA Survey.

Given the increasing pressure on ageing individuals to continue working for longer whilst undertaking other activities that have typically had a negative relationship with engagement in paid work, this study also plans to extend research on the factors influencing retirement and continued engagement in paid work by examining factors associated with concurrent engagement in paid work and other activities. Initial analysis using two waves (2002 and 2010) of data for 1,372 individuals in the early baby boomer cohort (aged 55–64 in 2010), suggest that being female, having a health condition, higher education, being partnered, and being engaged in paid work and other activities in 2002 all increase the odds of engagement in concurrent activities in 2010 relative to engagement in paid work only. Interestingly, whilst total engagement in paid work was lower in 2010, concurrent engagement in paid work and other activities remained relatively stable over time.

Overall, the most consistent predictor of engagement in 2010 was engagement in the same activity or activities in 2002, highlighting the value of examining productive engagement over longer periods of time.

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

RESEARCHERS

PETER MCDONALD
ARIANE UTOMO

An analysis has been completed of changes in employment at older ages between the 2006 and the 2011 Censuses. As the cohort aged 50 and over aged to 55 and over between the 2006 and 2011 Censuses, the numbers employed fell by around 550,000 despite increases in employment participation rates. The analysis examines employment rates by age and sex in 2006 and 2011 and whether employment is full-time or part-time. Employment rates increased between 2006 and 2011 for every sex-age group category (55-59 years and above). Increases were quite substantial below the age of 70 years especially for

women. There was little change for men in the proportions at each age working full-time, but increases in the full-time fraction for women, again below the age of 70.

The analysis then examines employment changes between the two censuses by various characteristics including capital city/rest of state, education, English language capacity, country of birth, partnership status, disability status, and housing tenure. Increases in employment participation were almost universal across all characteristics observed. It also examines changes in the composition of the population at older ages in relation to the observed trends with the conclusion that changes in composition of the Australian population are

moving in directions that favour higher employment participation in the future.

Finally, the analysis examines employment at older ages at the time of the 2011 Census according to occupational status (self-employed versus employed), sector of employment (government, private), occupation and industry. This analysis confirms previous observations made in relation to the 2006 Census that employment percentages drop off rapidly at older ages for blue collar workers and public sector workers but increase for the self-employed, farmers and professionals. We are now considering publication of these results and presentation in appropriate fora.

...changes in composition of the Australian population are moving in directions that favour higher employment participation in the future



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. I am currently working on two research projects related to workforce and population ageing with Professor Peter

McDonald and Dr Jeromey Temple. In addition to the project described above, I am also involved in a project which applies population projection methods to forecast the impact of population ageing in the future labour productivity across OECD countries.

'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.'

INVESTIGATING PATHWAYS OF HEALTH AND COMMUNITY CARE SERVICE USE

RESEARCHERS

JULIE BYLES
HAL KENDIG
LYNN FRANCIS
KARLA HEESE
(RESEARCH ASSISTANT)
CATHERINE CHOJENTA
(RESEARCH MANAGER)

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:
 - Linkage of longitudinal health survey and hospital separations data
 - Basic descriptive outputs
 - 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.

The project is currently focussing on a number of drivers of health service use including the impacts of chronic disease such as arthritis and stroke, health care needs of single older men, and health and hospital service use by people aged 85 and in the two years prior to death. These areas of work are using data from two large longitudinal studies, the Australian Longitudinal Study on Women's Health (ALSWH) and the NSW 45 and Up Study, and linking survey data from these studies to hospital, Medicare and Pharmaceutical data on health care use.

OUTCOMES ACHIEVED

Five papers related to this project were published in 2012, and a further four were accepted for publication. Details can be found in the Research Outputs section of this report.

Professor Byles was invited to present the research at two national/state conferences:

- Access to health care for older women in rural and remote areas. Australian Association of Gerontology and Aged and Community Services Association of NSW and ACT Incorporated NSW Rural Conference. Dubbo. 19–20th March 2012.
 - Inspired by Ageing. South Australia Gerontology Conference, Adelaide. 14 September 2012.
- Professor Kendig was an invited speaker at the IFA in Prague on Australian universal and equal access to health care services. Other milestones:
- Research Manager (Catherine Chojenta) has been employed to help prepare applications to 45 and Up and CheReL for access to linked data
 - A statistician (Dr Lynn Francis) has been employed as a CEPAR Research Fellow to commence analyses using baseline 45 and Up data and linked data (when available)
 - Working parties have been established for all projects
 - Applications for access to further data from the ALSWH and 45 and Up are underway.



PROFESSOR JULIE BYLES

B Med PhD Newcastle
ASSOCIATE INVESTIGATOR

Julie Byles is Professor and Director of the Research Centre for Gender, Health and Ageing at the University of Newcastle.

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 recent work has focussed on health assessment, medications used by older people, sleep disturbance, health effects of alcohol for older women, nutrition screening and interventions, health and retirement, and

prevention of falls in residential care.

Julie is the National President of the Australian Association of Gerontology. She is co-Director of the Australian Longitudinal Study on Women's Health, and is also closely involved with the NSW 45 and Up Study, a longitudinal study involving over 250,000 men and women across New South Wales. She is also a lead investigator on

two large collaborative NHMRC grants to combine data from several Australian longitudinal studies of ageing. She contributes to government and non-government programs relating to ageing research and health care for older persons.

RESEARCH TRAINING & MENTORING

THIS YEAR WE EXPANDED OUR RESEARCH CAPACITY BUILDING PROGRAM TO PROVIDE A BROADER RANGE OF OPPORTUNITIES FOR OUR EARLY CAREER RESEARCHERS (ECRS). THESE NEW INITIATIVES SIGNIFICANTLY STRENGTHENED CEPAR'S PORTFOLIO OF MENTORING PROGRAMS FOR YOUNG RESEARCHERS.

Two workshops, one focusing on continuous time modelling and optimal decisions, and the other on applied longitudinal data analysis, provided specialised training for ECRs and higher degree research (HDR) students from both CEPAR and the broader research community.

These workshops form part of a suite of mentoring programs offered by the Centre aimed at providing students with opportunities to develop their networks and benefit from a cross-disciplinary perspective. Fourth year honours students were invited to present their research-in-progress at the CEPAR Honours Workshop and the 11th National Emerging Researchers in Ageing Conference, sponsored by CEPAR, provided a forum

for PhD students around the nation to meet and exchange ideas.

The Centre also provided a range of opportunities for young researchers to develop their networks, both nationally and internationally. We hosted a number of international visitors this year, many of whom were ECRs invited by CEPAR research fellows to work in the Centre. In addition, the Centre launched two new schemes to assist CEPAR affiliated students and fellows with the costs of travel associated with presenting a paper at an international conference or to visit an affiliated overseas research institute for an extended period of time. Sponsoring events targeted exclusively at ECRs is another way in which CEPAR

supports the career development of emerging researchers. In September 2012, we sponsored an early career researcher breakfast as part of the National Dementia Research Forum. This event, held in Canberra, provided an opportunity for these researchers to hear from two eminent speakers, as well as connect with their peers.

I am pleased with the growth in the number of students and ECRs affiliated with the Centre, and look forward to further growth as CEPAR continues to build 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.

Peter McDonald
Deputy Director



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

Peter McDonald is Professor of Demography and Director of the Australian Demographic and Social Research Institute at the Australian National University. He is President of the International Union

for the Scientific Study of Population for the years, 2010–2013 and is a Member of the Council of Advisers of Population Europe.

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. Recently, he has been appointed as an inaugural ANU Public Policy Fellow. He is 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.

EARLY CAREER RESEARCHER MENTORING AND TRAINING

In 2012 we continued to build our research capability by recruiting a number of high calibre research fellows to the Centre as well as expanding our team of Associate Investigators. Twenty research fellows are now funded directly by the Centre; four of these are 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 another two are funded by the NSW Science Leveraging Fund. ECRs collaborating with Centre personnel but not directly funded by the Centre are encouraged to become involved in the Centre as Associate Investigators. In 2012, four of our Associate Investigators were ECRs.

ECRs are mentored by CEPAR senior researchers and have opportunities to interact with experts within the three collaborating universities, our industry and government partners and Centre visitors, many of whom are international leaders in their field. They 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 outside the standard academic experience.

EARLY CAREER RESEARCHER WORKSHOPS

2012 saw the successful launch of CEPAR's Early Career Researcher Workshop program featuring two specialised workshops designed to provide advanced training to emerging researchers in population ageing research. Both workshops were offered free of charge to young researchers affiliated with the Centre as well as those not directly involved with the CEPAR research program.

In June, the Centre for Research in Ageing, Health and Wellbeing at ANU hosted a five day introduction to applied longitudinal data analysis. CEPAR supported Dr Nilam Ram, an expert in longitudinal research methodology from Pennsylvania State University, to lead the workshop designed to help participants develop a number of skills useful in the study of developmental or other change-based processes including research conceptualisation, research design, data analysis, results interpretation, and the presentation and critique of empirical research.

The workshop attracted 30 ECR and HDR student participants from across the nation, many of whom were supported by CEPAR travel bursaries.

CEPAR Chief Investigator Michael Sherris delivered a six session Primer on Continuous Time Modelling and Optimal Decisions at the UNSW campus commencing in April 2012. The workshop included both lectures and exercises and was designed to enhance the skills of ECRs as well as PhD students and industry practitioners.

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.



DR RAMONA MEYRICKE
CEPAR Research Fellow
LONGITUDINAL DATA ANALYSIS
WORKSHOP PARTICIPANT

'This was a great introduction to longitudinal modelling, and I came away with ideas for modelling and analysis that I used in my research during 2012 to model heterogeneity in mortality risk across individuals. It was also a great chance to meet other ECRs and understand their research interests and applied work.'

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 in which the Centre has invested significant resources.

An ECR and HDR student exchange scheme was initiated in 2012 to provide career development opportunities for our young researchers as well as build collaborative links with participating organisations. CEPAR also provides funding to PhD students to present their research at international conferences.

Our ECRs were also encouraged to invite collaborators to the Centre over the year. In 2012 CEPAR hosted ten visiting ECRs from a range of European and Asian countries (see page 117 for full details) in 2012. As well as enabling the development of collaborative research projects with Centre personnel, these visitors also contributed to Centre life, participated in a range of Centre activities and expanded the international networks of our young researchers.

RESEARCH TRAINING & MENTORING



DR SEVERINE GAILLE

Assistant Professor in
Actuarial Science
University of Lausanne, Switzerland

CEPAR VISITOR
16 APRIL - 15 JUNE 2012

‘Thanks to the great team working at CEPAR, I could start many projects. The diversity of backgrounds of the people working at CEPAR provides an excellent environment to develop new ideas and innovative solutions. My visit led to new collaborations that will definitely have an important impact on my future career development.’



DR RENUKA SANE

Research Economist
Indira Gandhi Institute of
Development Research

CEPAR VISITOR
31 JULY - 6 AUGUST 2012

‘CEPAR provided me with an excellent work environment while at UNSW, where I could interact with other researchers working on issues on ageing in Australia, and update my knowledge about the field. CEPAR’s support enabled me to present my work on voluntary pension participation by low-income households in India at the Workshop on Emerging Economies organised by the Australian School of Business (ASB) in 2012. The feedback I received at the conference greatly improved the paper and the connections I made at the conference will lay the foundation for further collaborations with faculty at the ASB.’

HIGHER DEGREE RESEARCH TRAINING

Thirty one HDR students are currently enrolled 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 100 – 106. These students have the opportunity to participate in a range of Centre activities, including conferences and workshops and meetings with international visitors.

CEPAR students are supervised and mentored by CEPAR Chief and Associate Investigators. In 2012 Associate Investigator Heather Booth was joint winner of ANU’s College of Arts and Social Sciences Award for Excellence in Supervision for her ‘outstanding leadership in building an integrated approach and environment that is inclusive of research, teaching methods, professional expectations and opportunities.’ Heather is on the supervisory panel of six of CEPAR’s current doctoral students.

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.

For the first time, nominations for student representatives to serve on the ERA Steering Group were called for in 2012 with the aim of providing research students with the opportunity to increase their input into the activities of ERA. An online election is currently underway and is expected to result in the appointment of three representatives drawn from different sectors of the ageing field.

EMERGING RESEARCHERS IN AGEING CONFERENCE

The 11th National ERA conference, hosted by the UQ/ Blue Care Research and Practice Development Centre, attracted participants from a wide range of disciplines. The conference involved over 100 participants and showcased the work of almost 50 higher degree research students, covering a wide range of issues, including the attraction and retention of residential aged care workers; barriers to diagnosing dementia in rural general practice; social determinants of older men’s health; falls prevention in residential aged care; home equity release products; and retirement and asset allocation in Australian households.

The conference title this year was “Making an Impact”. Professor Wendy Moyle, Director of the Research Centre for Clinical and Community Practice Innovation at Griffith University, delivered the keynote address: “Mapping and advancing your career from ECR to experienced researcher”.

The career development theme was continued in one of the two pre-conference workshops offered: Building a career in ageing: Beyond the PhD. The other workshop focused on issues in mixed methods research.



ADAM WENQIANG SHAO

CEPAR PhD student, UNSW School of Risk and Actuarial Studies

2012 ERA CONFERENCE PARTICIPANT

‘The ERA conference provided me with a great opportunity to communicate my research with people from a wide range of disciplines. I also gained helpful advice from the workshop after the conference, where discussions focused on building an academic career for young researchers.’

EMERGING RESEARCHERS IN AGEING VIRTUAL SEMINAR SERIES

The ERA Virtual Seminar Series continues to provide an exceptional opportunity for emerging researchers in the field of ageing to come together virtually to hear from leading experts in the field and participate in the discussion session. The topics for 2012 were as follows:

- *Part time, away from your supervisor or out in the sticks: Some strategies for completing your PhD* – Professor Jeni Warburton (La Trobe University)
- *The Ageing research agenda: Where are we now?* – Rosemary Huxtable (Department of Health and Ageing) and Professor Helen Bartlett (Monash University)
- *Data linkage: Opportunities for Ageing researchers* – Professor Louisa Jorm (University of Western Sydney)

The standout session for 2012 was the joint session presented by Rosemary Huxtable (Deputy Secretary of the Australian Government Department of Health and Ageing) and ERA Founder Helen Bartlett. The session focused on the ageing research agenda with both speakers sharing their insights on the key successes over the last decade and considering the challenges for the future – from the viewpoint of a policymaker and

a researcher.

The session broke all previous records with over 70 participants from more than 20 nodes across Australia and New Zealand.

HONOURS STUDENT ENGAGEMENT

CEPAR HONOURS WORKSHOP

The 2012 CEPAR Honours Workshop provided an opportunity for fourth year honours students to present their research-in-progress in a stimulating and supportive environment. CEPAR Research Fellows were on hand to provide feedback on a range of topics including modelling survival probabilities and mortality; longevity risk; reverse mortgages; and post-retirement portfolios.



CEPAR STUDENTS JUN FENG AND ADAM WENQIANG SHAO AT ERA 2012.

RESEARCH TRAINING & MENTORING

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SHANG WU

BBus (Hons) student, UTS Business School

2012 CEPAR HONOURS WORKSHOP PARTICIPANT

‘The workshop helped me refine my research thesis. I gained new insights from the face-to-face discussions and received feedback similar to a referee report. Given my relative inexperience, the workshop was an invaluable source of advice and information.’

STUDENT THESES

CEPAR affiliated students work under the supervision of CEPAR Investigators on topics aligned with the Centre’s research agenda.

In addition to the 31 HDR students and three honours students enrolled in 2012, two CEPAR affiliated students graduated in 2012: Henry Hongbo Jin in the Australian Business School at UNSW and Martin Snoke in the Faculty of Health Sciences at the University of Sydney.

PHD STUDENTS LOCATED AT THE AUSTRALIAN SCHOOL OF BUSINESS, UNSW

NATALIA ARANCO

MEd Universidad de Montevideo

SUPERVISORS

Professor John Piggott
Professor Michael Sherris

Assessing the evolution of the educational-mortality gap among 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

BCom (Hons) UNSW, MAct (Hons) UNSW, MEng(R), JCU, BEng (Hons) QUT

SUPERVISOR

Professor Michael Sherris

CO-SUPERVISOR

A/Professor John Evans

Longevity risk management and securitisation in an affine mortality modelling framework

Longevity risk for an insurer affects their 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 calibrated and will forecast multiple cohorts from population mortality rates. 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.

JUN (JIMMY) FENG

MPhil UNSW

SUPERVISOR

A/Professor Hazel Bateman

CO-SUPERVISOR

Dr Shiko Maruyama

Saving for retirement: An investigation on contributions to superannuation in Australia

Financial security is of critical importance to the 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.

SIMON MAN CHUNG FUNG

BSc (Hons) ANU

SUPERVISOR

Professor Michael Sherris

CO-SUPERVISOR

Dr Katja Ignatieva

Pricing and risk management of long-term contracts in finance and insurance

Superannuation 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. An example is the variable annuity which is popular in the US, Europe and Japan. A major component of the thesis deals with the pricing and risk management of so-called guaranteed lifetime withdrawal benefits embedded in variable annuities. Due to the complex options-like payout structure, financial theory is required to adequately analyse the guarantee. The thesis studies the risks underlying the guarantee, with an emphasis on longevity risk.

NATALIA GARABATO

BA Economics (Hons), University of the Republic, Montevideo

SUPERVISORS

Professor John Piggott
Professor Denzil Fiebig

Financial literacy and pension valuation in Chile

Our research studies financial literacy and retirement planning in Chile; a country where the relevance of retirement planning and financial education is possibly greater than in other economies considering its combination of a rapidly ageing population with a reliance on a mature DC pension system whose outcomes rest heavily on individual choice.

We find that very few Chileans are planning for their retirement and that the levels of financial literacy are remarkably low as only 18 percent of the population understand compound interest and only 47 percent the concept of inflation. Our research also contributes to the growing literature on the relationship between financial literacy and retirement planning and suggests that investments in financial education could have a substantial impact on the way people think about retirement and therefore in their ability to reach retirement with adequate resources.

ADAM WENQIANG SHAO

BEC (Hons) Beijing International Studies University

SUPERVISOR

Professor Michael Sherris

CO-SUPERVISOR

Dr Katja Hanewald

Pricing models and risk management of reverse mortgages

This thesis focuses on pricing and risk management issues in reverse mortgages allowing for individual house price risk and demographic changes. It first develops models to quantify idiosyncratic house price risk. The thesis then applies multi-state models to incorporate repayment triggers and explores risk-based capital issues taking into account house price risk, longevity risk, and interest rate risk. A paper comparing alternative house price models is currently being finalised. Another paper on applications of individual house price models to reverse mortgages was presented at the 2012 ERA conference.

MPHIL STUDENT LOCATED AT THE AUSTRALIAN SCHOOL OF BUSINESS, UNSW

AISHWARYA 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, by quantifying such deviations using Policy Ranking and Context Awareness. Policy Ranking lets the system recognise the significance of given policies under a given context, while context awareness allows the system to recognise situations and detect possible deviations from policies.

The last 12 months involved narrowing down the research topic and conducting a systematic literature review on policy deviations which showed the relevance of the problem. The next six months will involve developing the solution and evaluating it through simulations.

HONOURS STUDENTS LOCATED AT THE AUSTRALIAN SCHOOL OF BUSINESS, UNSW

DANIEL WANHEE CHO

BSc Actuarial Science, London School of Economics

SUPERVISOR

Professor Michael Sherris

CO-SUPERVISOR

Dr Katja Hanewald

Modelling cross-over risk of equity release products and its implications for risk management

The thesis consists of two projects designed to deliver insights on risks embedded in equity release products and provide benchmarks on how risk management practice should be approached.

The working paper "Developing equity release markets: Risk analysis for reverse mortgage and home reversion", presented at the Longevity 8 conference, compares relative risks of different equity release offerings in the market. The second project "Risk management and payout design of reverse mortgages" takes a closer look at the impact of different loan payout structures on the financial position of the reverse mortgage provider.

ANDY WONG**SUPERVISOR**

Professor Michael Sherris

Natural hedging of mortality risk using annuities and life insurance

Natural hedging involves managing longevity risk exposure of a life insurer through portfolio composition. Life insurers are able to diversify longevity risk through selling a combination of annuities and life insurance. This research examines the various factors which affect natural hedging for a life insurer and guides a life insurer in terms of the policies it should sell and the resulting risk exposure. Factors found to affect natural hedging are the relative pricing of policies and the policy types the life insurer sells. This research will be written up as a paper in 2013.

QIMING ZHOU**SUPERVISOR**

Professor Michael Sherris

A subordinated Markov Model for Australian health and mortality

The project involves the development of a stochastic mortality model that incorporates heterogeneity. It aims to improve mortality

RESEARCH TRAINING & MENTORING

modelling using existing aggregate health and mortality data. The model has been constructed and calibrated with Australian data. The research findings are being written up as a CEPAR Working Paper.

PHD STUDENTS LOCATED AT THE CENTRE FOR RESEARCH ON AGEING, HEALTH AND WELLBEING, ANU

CAROLINE BRODRICK

BSc Psychology (Hons) ANU
SUPERVISOR
Professor Kaarin Anstey

Exploring the relationship between affect and cognitive impairment/decline

Previous research indicates depression is a predictor of cognitive impairment and cognitive disorders. However minimal research has investigated specific depressive symptoms, particularly negative and positive affect. This study aims to investigate first, whether positive and negative affect predict conversion to Mild Cognitive Impairment (MCI) and Cognitive Disorders and second, whether affect changes with decline in cognition. The study will utilise data collected from The Personality and Total Health Through Life Study.

DIMITY CRISP

MSc Research UC
SUPERVISOR
Professor Kaarin Anstey

Transitions in later life: The impact of residential relocation on wellbeing

This thesis is investigating the experience of relocating to a retirement village. The study employs a prospective longitudinal design to examine the adaptation of 83 older Australians (aged 57 to 90 years) to independent living units within a retirement village over a 12 month period. The study has obtained self-reported data from participants prior to relocating and 1-, 6- and 12-months post-relocation. Changes in social networks, loneliness, subjective wellbeing and life engagement are compared to a sample of community-dwelling (n=549) residents.

The thesis was submitted for examination in 2012. Results obtained from the study found that 12-months post-relocation, those who relocated to the village rated the environment more positively than their pre-move residence. A reduction in perceived loneliness and an increase in neighbour social networks were then found to be the most significant benefits to relocation.

Characteristics of those older adults likely to adapt best to living in a retirement village included contextual factors associated with the move, physical health, personality characteristics and perceived control. Each contributed to adjustment. In addition, findings from an investigation of the characteristics of those individuals who would consider relocation to a retirement village in the future and the factors that encourage and discourage people from considering relocation to a retirement village have been published in two papers for the *Australasian Journal on Ageing*.

NATASHA GINNIVAN

BSc (Psych) UNSW,
PGDip (Psych) Macq
SUPERVISOR
Professor Kaarin 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 in Australia and in the Philippines. Preliminary results from focus group data in both countries shows 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. The later phases of the project will be testing for whether there is a buffering effect of this more socially cohesive ageing self in memory performance.

PUSHPANI HERATH

MBBS University of Sri Jayawardenepura,
MSc UTexas, Arlington
SUPERVISOR
Professor Kaarin Anstey

Understand the relationship between treatment of common chronic diseases and structural and functional changes in brain

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 and structural changes in the brain. 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 diabetic medication with cognition and structural brain changes," is already completed for both the PATH through Life Project and the AusDiab Study. A manuscript is being prepared for publication.

KIM KIELY

BLibStudies (Hons) Syd
SUPERVISOR
Professor Kaarin Anstey
CO-SUPERVISORS
Professor Mary Luszcz
Dr Lesley Ross
Dr Denis Gerstorff

The interplay of cognition and sensory function in late life

Age-related sensory loss and neurocognitive impairment are two of the leading drivers 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 thesis reports population estimates of sensory impairment in Australia, explores long-term inter-associations between hearing-loss and cognitive function, and investigates the role of hearing aids in protecting against hearing-related cognitive decline. Considerable progress has been made over the past year, aspects of this research have been published, presented to scientific conferences and interest groups, and a final draft of the thesis is ready for submission.

SARANG KIM

BA Melb, PGDip MA Bond
SUPERVISOR
Professor Kaarin Anstey
CO-SUPERVISORS
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.

LARA MORRIS

BSc (Psych) (Hons), MCLinPsych
SUPERVISOR
Professor Kaarin Anstey
CO-SUPERVISORS
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.

CHWEE CHWEE VON SANDEN

BSc (Hons) ANU
SUPERVISOR
A/Professor Peter Butterworth
CO-SUPERVISOR
Professor Kaarin 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.

SARAH WALKER

BA (Hons) Psychology, ANU
SUPERVISOR
Professor Kaarin 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 lived experiences of volunteers aged 65 and above, and the relationship between driving cessation and subjective wellbeing are explored. No longer driving is associated with increased depressive symptoms. Little is known about the underlying mechanism for this relationship. One's pre- and post-cessation experiences, including adopting cognitive coping strategies, the focus of this research, may lessen the impact of cessation. Data were collected via focus group discussion, interviews, and

questionnaire completion. Results do not indicate a relationship between driving cessation and subjective wellbeing. However, ex-drivers who tend to persistently pursue challenging goals likely experience poorer subjective wellbeing.

Progress to date includes the collection of all data. Study Three quantitative data collection and analysis was conducted and completed this year. The first drafts of Chapter One: Literature Review and Chapter Two: Study One – Focus Group were completed and sent to the supervisory panel chair for review. Chapter Three: Study Two and Chapter Four: Study Three were partially written. Writing has not yet begun on the final chapter of the thesis.

RESEARCH TRAINING & MENTORING

PHD STUDENTS LOCATED AT THE AUSTRALIAN DEMOGRAPHIC AND SOCIAL RESEARCH INSTITUTE, ANU

BRIDGET BROWNE

BEd (Macq), FIAA, FIA

SUPERVISOR

A/Professor Heather Booth

CO-SUPERVISORS

Dr Tim Higgins

Professor Michel Sherris

Long-term Care in Australia: What place for insurance?

The Australian Government's intention documented in the "Living Longer, Living Better: Aged Care Reform Package" of April 2012 is to increase user payments for Aged Care and introduce caps on care costs for all individuals.

The aim of this research is to understand if there is a place in Australia for a private, voluntary insurance product covering Long-term Care. If this is not the case, is it because there is only a place for a public and/or compulsory product, or is there no place for an insurance product of any type? The first component of the research is a survey of financial service providers to gain their views on the issue, including assessment of barriers on both the supply- and demand-sides.

ALICE FALKNER

BA (Hons) MSocRes ANU

SUPERVISOR

Professor Peter McDonald

CO-SUPERVISOR

Dr Anne Evans

Changing caring responsibilities in Australia: the rise of the sandwich generation

As the Australian population ages, and as Australian women delay childbearing until later in life, more and more Australians are likely to join the 'sandwich generation'; those faced with caring for children and caring for elderly relatives at the same time. This research examines the many different ways in which Australians are experiencing increased caring responsibilities, including those in the sandwich generation. Primarily focused on data from the Australian Census and the Household, Income and Labour Dynamics in Australia (HILDA) survey, this research uses a quantitative approach to help close the gap in Australian knowledge about people who provide informal child and elder care at the same time.

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

Vietnam is experiencing an increase in the proportion of the population aged 60 and over at the same time as profound social and economic changes. Co-residence with children is the traditional means of support for the elderly. Given the minimal coverage of state support, families and the elderly are finding ways to adapt their traditional mode of care to maintain intergenerational support, but this is not well understood.

During 2012, the secondary data of Vietnam (Housing) Living Standard Survey (VHLSS 1992-2010) have been analysed to examine living arrangement patterns of the elderly over the years and its determinants. Five months of fieldwork in Vietnam was conducted. This involved interviewing the elderly living with their families in rural and urban areas; living in private nursing homes; and living in state-run homes for the aged.

NERIDA HUNTER

BA BCom Melb.,

MGovt & Comm Law ANU

SUPERVISOR

Professor Peter McDonald

CO-SUPERVISOR

Dr Anthony Hogan

Looking down and building up: Examining population ageing in Australia at the subnational level

This study uses census data to examine population ageing and the settlement patterns of older people in Australia. It utilises small area demographic methods to examine variation in the pace and magnitude of population ageing across Australia and the stability of these patterns over time. In 2012 the design of the study was approved through the thesis proposal confirmation process and presented in a public seminar at the Australian National University.

M. PILAR LOPEZ

Licentiate in Psychology Pontificia Universidad Catolica de Chile, MSocRes ANU

SUPERVISORS

A/Professor Heather Booth

Dr 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. The first stage of the analysis of SNAP data identified differences between retirees and non-retirees in patterns of social connectedness. Regression methods were used to investigate the association between indicators of social connectedness and expected time to retirement. These results were presented in the PhD mid-term seminar in July 2012. Longitudinal analysis using the HILDA dataset is currently being undertaken.

MAHIN RAISSI

BS MA Tehran

SUPERVISORS

Dr Robert Ackland

A/Professor Heather Booth

CO-SUPERVISOR

Dr Lexing Xie

Influences in online social networks and successful ageing in Australia

The research project involves a PhD thesis with the aim of understanding the relationship between online and off-line social networks and the wellbeing of older 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, their social capital and wellbeing. Many Facebook users who are mainly Australian seniors (50+) or others who are friends with them have used AuSON.

This information about Australian seniors' social networks combined with the information about their social capital and wellbeing will be used to better understand the role of online and off-line social networks in successful ageing in Australia.

SAFRINA THRISTIAWATI

BA Econ Indonesia, MA Demography ANU, MA Social Policy Syd.

SUPERVISOR

Professor Terence Hull

CO-SUPERVISORS

A/Professor Heather Booth

Dr Iwu Utomo

Socio-cultural dimensions of the gendered wellbeing of older persons in Lampung, Indonesia

Women's experiences of ageing are markedly different from men's. The sex-difference in later life is predominantly a result of enduring inequalities across the life course, apparent in many areas, including education, employment, public programs for health and income security as well as the national legal system. This study of two ethnic groups, Lampungese and Javan-migrants in Lampung supports the broad findings of the gender and ageing literature. The thesis is based on the intersection of gender, ageing and wellbeing studies and analyses three key dimensions of the lives of older men and women in Lampung, i.e. physical wellbeing, economic wellbeing and vulnerability. The thesis is expected to be submitted in 2013.

JIAYING ZHAO

BMed Fudan, MA ANU

SUPERVISORS

Professor Zhongwei Zhao

A/Professor Heather Booth

Transitions in mortality from cardiovascular disease in Chinese societies: Trends, patterns, and socioeconomic determinants

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 decline in mortality from cardiovascular disease in Hong Kong, Shanghai and Taipei, all of which experienced rapid economic development under similar cultural but different social and political institutions. Their mortality patterns are compared with those in other East Asian and Western populations. This thesis argues that not only economic development but also institutional factors played key roles in the mortality decline in the three cities.

PHD STUDENT LOCATED AT THE COLLEGE OF BUSINESS AND ECONOMICS, ANU**SARAN SARNTISART**

BEcon (Hons) Chulalongkorn, MSc MgtEcon Essex, CFP

SUPERVISOR

Dr Cagri Kumru

The economic implications of non-standard preferences towards redistribution, financial intermediation and taxation

Economists have been studying factors such as religious or in particular afterlife preferences, and time-inconsistent and self-control preferences which affect economic decisions. We study these preferences in three topics; 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 programs in ageing economies. The first two papers are mostly completed and have been presented at international conferences. A third paper is now underway.

PHD STUDENTS LOCATED IN THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF SYDNEY**JOHANNE ELIZABETH BRADY**

BA (Hons), UNSW

SUPERVISOR

Professor Hal Kendig

CO-SUPERVISORS

Dr Kate O'Loughlin

Dr Jennifer Smith-Merry

Understanding the meaning of living with Parkinson's disease in an Australian community setting; from the perspective of the person diagnosed and the perspective of their partner/carer

This sociological study on people living with idiopathic Parkinson's disease (Pd) in Australia will examine how identity is transformed by biological, social, cultural and historical factors over time. Grounded Theory methodology, focus groups and interviews will be used to collect qualitative data from people over 55 who are diagnosed with idiopathic Pd as well as their partner/carer. The objective is to capture the meaning of living with Pd from these perspectives. The aim is to add to knowledge on the support that those with Pd need to live independently and maintain their quality of life in an Australian community.

RESEARCH TRAINING & MENTORING

KYLIE WALES

BAppSc (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

Best practice guidelines for occupational therapy discharge planning for older adults has not been identified or evaluated for its clinical or cost effectiveness. In addition, a lack of information exists as to how function should be assessed by occupational therapists when working with older adults.

To date, information is being collected on the cost effectiveness of the NHMRC funded Occupational Therapy discharge planning HOME trial. A systematic review of literature has also been conducted to determine functional assessment tools are used by occupational therapists. 28 assessments tools have been identified. These assessment tools will be evaluated for measurement properties using the Consensus-based standards for the selection of health measurement Instruments (COSMIN).

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, there is a lack of objective measurement tools. 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

BSc (Biotech) (Hons) BPhysio N'cle

SUPERVISOR

Professor Lindy Clemson

Exploring the perceptions and experiences of older people in the "Stepping on after hip fracture" program

Falls are a major health issue in Australia's older population. There are a myriad of injuries that can occur due to a fall, one of the most serious being a hip fracture. This PhD candidature proposes to contribute to the current management of falls prevention in order to enhance the lives of older people. Using qualitative research methods, it aims to determine whether older men and women who have had a fall-related lower limb fracture have differing perceptions and experiences regarding falling and an exercise self-management falls prevention program. In-depth interviews are currently underway.

PHD STUDENT LOCATED AT THE CENTRE FOR EDUCATION AND RESEARCH ON AGEING

ROSILENE WAERN

MND Syd.

SUPERVISOR

Professor Robert Cumming

CO-SUPERVISOR

Professor Margaret

Allman-Farinelli

Geometric Framework and nutrition in old age

The interrelationship between ageing, obesity and nutrition is not fully understood. This research will facilitate the development of nutritional guidelines of macronutrients for older persons by determining the differences between obesity, sarcopenic obesity and metabolic syndrome. The work is based in the Geometric Framework – a generation state-space model that deals with eating behaviour and nutritional regulation. We have collected nutritional and clinical data from 700 men participating in CHAMP (Concord Health and Ageing in Men Project). Data collection will continue into 2013. An abstract has been submitted to the International Association of Geriatrics and Gerontology Conference to be held in Seoul in June 2013.

PHD STUDENT LOCATED AT THE FLINDERS CENTRE FOR AGEING STUDIES, FLINDERS UNIVERSITY

MYDAIR HUNTER

Bch Psych (Hons) DipApp Sc (Nsg),
Flinders University

SUPERVISOR

Dr Tim Windsor

Prospective memory in the fourth age: Evidence from the ADuLTS Study

This project examines the predictors of prospective memory performance in a sample of positively ageing oldest-old adults, that is those over the age of 85 years, pairing a week long measurement burst study (ADuLTS: ALSA Daily Life Time Sampling Study) of daily stress hormone levels (cortisol) with daily-life outcomes. Intra-individual variation and inter-individual differences in prospective memory in this very old cohort are being analysed. Specific areas of my research are firstly, the coupling of daily stress processes and prospective memory performance which is nearing completion, and secondly, examining the relationship between prospective memory and executive functioning.



SECTION

3

EXTERNAL LINKAGES

INDUSTRY & GOVERNMENT LINKS

THROUGH ENGAGEMENT WITH THE PUBLIC AND PRIVATE SECTORS CEPAR SEEKS TO HAVE A FOCUSED IMPACT ON POLICY AND BUSINESS PRACTICE. IN 2012, CEPAR HOSTED A NUMBER OF EVENTS WHICH PROVIDED PLATFORMS FOR DISCUSSION BETWEEN RESEARCHERS, POLICYMAKERS AND INDUSTRY PRACTITIONERS.

In addition, many of our investigators served on government panels and working groups where they brought their expertise and knowledge of the ageing demographic to bear on the issues at hand. We also engaged with our industry partner organisations, communicating the findings from our research and seeking guidance in the development of our research program.

In December 2012, a special one day forum on Aged Care aimed to light the road ahead towards policy reform in Australian aged care.

The Aged Care Policy Dialogue brought together leading Australian and international experts, policymakers, researchers and commentators to consider current and future challenges for this important policy area. The Dialogue was the first in a planned series of events to be hosted in conjunction with the Crawford School of Public Policy at The Australian National University (ANU). Our ties with Crawford are strong, with two of our Chief Investigators among the nine inaugural Public Policy Fellows of the newly established Institute of Public Policy, and CEPAR Leaders' Forum member,

Dr Ken Henry, appointed as the Institute's Executive Chairman.

In addition to the Aged Care Policy Dialogue, two roundtables initiated by CEPAR advanced the dialogue between our researchers and policymakers. Our meeting with the Hon Susan Ryan AO and her team enhanced our understanding of the Age Discrimination Commissioner's priorities within her portfolio. And our discussions with a wide range of policymakers at a one day roundtable in Canberra hosted by FaHCSIA provided an opportunity to share our research with and receive valuable feedback from our end users.

As part of ACE2012, CEPAR mounted a forum on the Implications for Population Ageing on Australian Fiscal Policy, with international academic and Treasury speakers. We also joined forces this year with the CPS Research Group at UNSW to host the 20th Annual Colloquium of Superannuation Researchers, an event which brings together academic researchers, industry experts and senior public servants to explore a range of topics in this important area.

Discussions with our industry partners focused on a number of key issues. With PwC, we explored longevity risk in a one day workshop; the influence of presentation arrangements on choices of retirement products was one of a number of areas of interest for AMP; and much of our discussion with Medibank revolved around aged care. In a workshop hosted by the Institute of Actuaries Australia, CEPAR Associate Investigator, Ermanno Pitacco, spoke on Risk Rated Health and Sickness Insurance.

Throughout the year our researchers contributed to the policy debate through their participation in a range of working groups, advisory panels and roundtables. Highlights included John Piggott's appointment to the Advisory Committee for the Review into Commonwealth legal barriers to older persons participating in the workforce or other productive work, conducted by the Australian Law Reform Commission; Peter McDonald's appointment to the Ministerial Advisory Council on Skilled Migration; Hal Kendig's ongoing membership of the Older Australians Working Group; Kaarin Anstey's membership

of the ACT Ministerial Advisory Council on Ageing; and Hazel Bateman's appointment to the Government's Superannuation Roundtable. With Aged Care under the spotlight in 2012, Hal Kendig briefed Senators, Members and their staff on the issue of Aged Care Reform at the invitation of the Parliamentary Library as part of its Vital Issues Program. (See pages 135-136 for comprehensive details of our contributions in this area.)

This year we launched our Research Brief series which we see as an important vehicle for communicating to the wider community not only CEPAR research but also the vast accumulation of knowledge held by our investigators. We plan to follow our first brief, which focused on Mature Labour Force Participation, with others through 2013.

Professor Michael Sherris
Chair, Outreach Subcommittee

EVENTS

AGED CARE POLICY DIALOGUE

With aged care policy on the brink of reform, CEPAR in collaboration with the Crawford School of Public Policy at ANU gathered together Australia's foremost experts on aged care reform. Joining them on 4 December were the Federal Minister for Mental Health and Ageing, Mark Butler, and two international experts: Dr Joshua Weiner from RTI International and Dr Jose-Luis Fernandez from the London School of Economics and Political Science, both CEPAR visitors. Also in attendance were 160 academics, policymakers and representatives from across the aged care sector.

The dialogue came in the wake of the Government's recently announced 10 year plan to reshape aged care following the Productivity Commission's Report into the sector. The report highlighted some of the challenges facing aged care, including

an ageing demographic and an increasing desire for independent living. Taking part in the dialogue were Peter Shergold, Chair of the Aged Care Reform Implementation Council; Mike Woods, Deputy Chairman of the Productivity Commission, who headed up the Productivity Commission report; and Carolyn Smith, First Assistant Secretary from the Department of Health and Ageing's Ageing and Aged Care Division. They were joined by CEPAR Chief Investigators Michael Sherris, Hal Kendig, Kaarin Anstey and Peter McDonald.

CEPAR also arranged for the two international speakers to meet with Commonwealth Treasury officials to discuss a range of issues including alternative funding models and ways to deal with the long-term fiscal pressures associated with aged care; the international experience with long-term care insurance; and finding the right balance between government and private funding.

CEPAR FORUM, 41ST AUSTRALIAN CONFERENCE OF ECONOMISTS, ACE2012

As part of ACE2012, CEPAR hosted a special forum on the Implications for Population Ageing on Australian Fiscal Policy. The session brought together Australian and international experts to provide a multifaceted perspective on the fiscal implications of demographic change, both in Australia and globally. The National Academy of Sciences Committee's work on fiscal implications of ageing in the US was discussed by CEPAR Partner

Investigator Olivia S. Mitchell from the Wharton School. Phil Gallagher from the Commonwealth Treasury provided expert commentary on the 2010 Intergenerational Report. Alternative policy responses were canvassed, as well as the implications for the multiple generations whose lives will be lived out through the transition. John Piggott explored issues such as incentives for older workforce participation, pension design and longevity insurance, and life-cycle investment planning.



AGED CARE POLICY DIALOGUE

Our capacity as governments and policymakers to be able to manage the impacts of a very significant demographic shift will always be made easier when there is evidence based research. In this context, the work of CEPAR is incredibly important.

THE HON MARK BUTLER MP, MINISTER FOR MENTAL HEALTH AND AGEING

INDUSTRY & GOVERNMENT LINKS

ROUNDTABLE WITH THE AGE DISCRIMINATION COMMISSIONER

The Hon Susan Ryan AO, Australia's Age Discrimination Commissioner, and senior members of her team, spent a morning at a Roundtable with researchers at the UNSW node of CEPAR in August. A three hour conversation with several CEPAR researchers covered a wide range of topics - mature labour force participation and the barriers to working longer, the age pension and superannuation, age discrimination in aged care, discrimination implications of cognitive decline, the coordination of driver's licence provisions for older people, and the impacts of exclusion on older men.

On the Commission's side of the table were Susan Ryan, and her advisors Dimity Hodge and Fabienne Balsamo. CEPAR Director John Piggott was joined by Bob Cumming, Hal Kendig, and Peter McDonald, along with Associate Investigator Kate O'Loughlin and Research Fellow Kerry Sargent-Cox.

Various areas of common interest were identified, including productive ageing and attitudes to older cohorts, and analysis of the participation of older workers.

CEPAR is developing an on-going relationship with the Age Discrimination Commissioner's Office. We are in dialogue about financial competence and information concerning retirement products, as

well as attitudes and age discrimination. Early in September John Piggott presented at the Commission conference focused on mature labour force participation and business growth.

In addition, Hal Kendig and colleagues from the Ageing Work and Health Research Unit co-hosted a Sydney Ideas lecture by Susan Ryan in September. The event was well attended by a diverse group of researchers, community organisations, aged care providers, healthcare practitioners, and students and alumni of the University of Sydney.

I am greatly encouraged to see at CEPAR the range and depth of research highly relevant to older Australians and my work as Age Discrimination Commissioner. The ageing demographic is a top issue for the 21st century, in Australia and globally. New, quality research is needed to inform good policy. CEPAR's work will establish Australia's leading position in this crucial area

THE HON SUSAN RYAN AO, AGE DISCRIMINATION COMMISSIONER



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 US 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.

ROUNDTABLE WITH CEPAR'S GOVERNMENT PARTNERS

On October 24 we held our first partnership roundtable discussion with Federal Government partners FaHCSIA, Treasury and the Department of Health and Ageing. Other departments - Veterans Affairs, Human Services, Finance and Deregulation and Education, Employment and Workplace Relations - were also represented. Hosted by FaHCSIA, the event provided a forum for CEPAR researchers to present their latest findings and receive valuable feedback from policymakers from a range of portfolios.

Serena Wilson, Deputy Secretary, FaHCSIA, opened the roundtable, speaking about the importance of collaborative work between government and academia to grow the evidence base upon which good public policy is built, in order to improve people's wellbeing throughout their lives.

The major themes of the day were seniors' workforce

participation, and also health and care. Discussion on seniors' workforce participation included factors that can influence workforce participation and retirement decisions. Also discussed were the implications of the demographic shift that is occurring, with 'baby boomers' starting to reach age pension age. The health and care discussion focussed on social policy implications of the demand for residential and care services in an ageing society.

It was a fruitful day of discussions and signified an important step in building a relationship between our research and public policy. There was strong support for a similar event in 2013 with the proposed model being a mix of presentations from CEPAR and government personnel. In addition, CEPAR researchers have been invited to submit papers for inclusion in FaHCSIA's upcoming Social Policy Research Workshop program in 2013.

20TH ANNUAL COLLOQUIUM OF SUPERANNUATION RESEARCHERS

The CPS Research Group at the University of New South Wales in collaboration with CEPAR hosted the 20th Annual Colloquium of Superannuation Researchers in July. The annual Colloquium is an opportunity for superannuation and pension experts from around the world to share their research.

In his keynote address, Australia's first Minister for Superannuation, former Senator Nick Sherry,

discussed the major challenges facing Australia's defined contribution superannuation system: volatility, risk and long-term performance. Jeremy Cooper of Challenger spoke on attitudes to retirement, articulating a vision for lifetime income streams to be an integral part of retirement policy.

The two day annual conference hosted international presenters from the United Kingdom, Italy, the United States, Japan, China, and New Zealand as well as industry experts and senior public

servants from Treasury and FaHCSIA. They were joined by nine CEPAR presenters, including CEPAR Partner Investigator Olivia S. Mitchell, from the Wharton School at the University of Pennsylvania. CEPAR personnel presented research on topics as varied as rural migration in China, the impact of the Government's superannuation rate increase, and optimising home equity release product designs.

The roundtable discussions were very successful and identified priorities and directions for future research that would be useful to the government

SERENA WILSON, DEPUTY SECRETARY, DEPARTMENT OF FAMILIES, HOUSING, COMMUNITY SERVICES & INDIGENOUS AFFAIRS



ASSOCIATE INVESTIGATOR KATJA HANEVALD PRESENTS AT THE LONGEVITY RISK WORKSHOP

INDUSTRY & GOVERNMENT LINKS

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INDUSTRY WORKSHOPS

LONGEVITY RISK WORKSHOP

Following the success of last year's workshop, PwC again collaborated with CEPAR to host a workshop for industry professionals and early career researchers. The Longevity Risk Workshop in Modelling Longevity Dynamics for Superannuation, Pensions and Annuity Business was presented jointly by two CEPAR Associate Investigators, Ermanno Pitacco and Annamaria Olivieri. Both international presenters brought considerable expertise to the workshop having previously presented a range of continuous professional development courses to both actuaries and non-actuaries around the world and published extensively

on life and health insurance modelling and longevity risk management. As well as CEPAR and PwC personnel, the workshop also attracted participants from APRA, AMP, Challenger, Chantwest, Dimensional, Ernst and Young, the Financial Services Council, Industry Super and State Super.

RISK RATED HEALTH AND SICKNESS INSURANCE WORKSHOP

This workshop, hosted by the Institute of Actuaries Australia, featured a presentation by Professor Ermanno Pitacco. The workshop covered technical aspects of medical expense insurance including sickness, disability and long-term care, ranging from the basic actuarial structure of the insurance products to more advanced actuarial modelling issues.



PROFESSOR PITACCO PRESENTS A PUBLIC LECTURE.



PROFESSOR ERMANNO PITACCO
ASSOCIATE INVESTIGATOR

Ermanno Pitacco is Professor of Actuarial Mathematics in the Faculty of Economics, University of Trieste and academic director of the Master in Insurance and Risk Management at the MIB School of Management of Trieste.

He is an actuary and full member of the *Istituto Italiano*

degli Attuari (Italy), an affiliate member of the Institute of Actuaries (UK), and a member of *Groupe Consultatif Actuariel Europeen*. He is Editor of the *European Actuarial Academy* series (Springer) as well as Co-editor of the *European Actuarial Journal*. He is Associate Editor of the international journals, *Insurance: Mathematics & Economics*, *Decisions*

in Economics and Finance, and *Insurance Markets and Companies: Analyses and Actuarial Computations*. He serves on a number of committees of the International Actuarial Association (IAA).

He has taught in continuous professional development courses and master programmes for both actuaries and non-actuaries.

Awards include the 1996 INA Prize for Actuarial Mathematics, from *Accademia Nazionale dei Lincei* and the 2011 Bob Altling von Geusau Memorial Prize, together with Annamaria Olivieri, for the best paper published in the *ASTIN Bulletin* on an AFIR related topic. He has published extensively in life and health insurance modelling and longevity risk management.

INTERNATIONAL LINKS

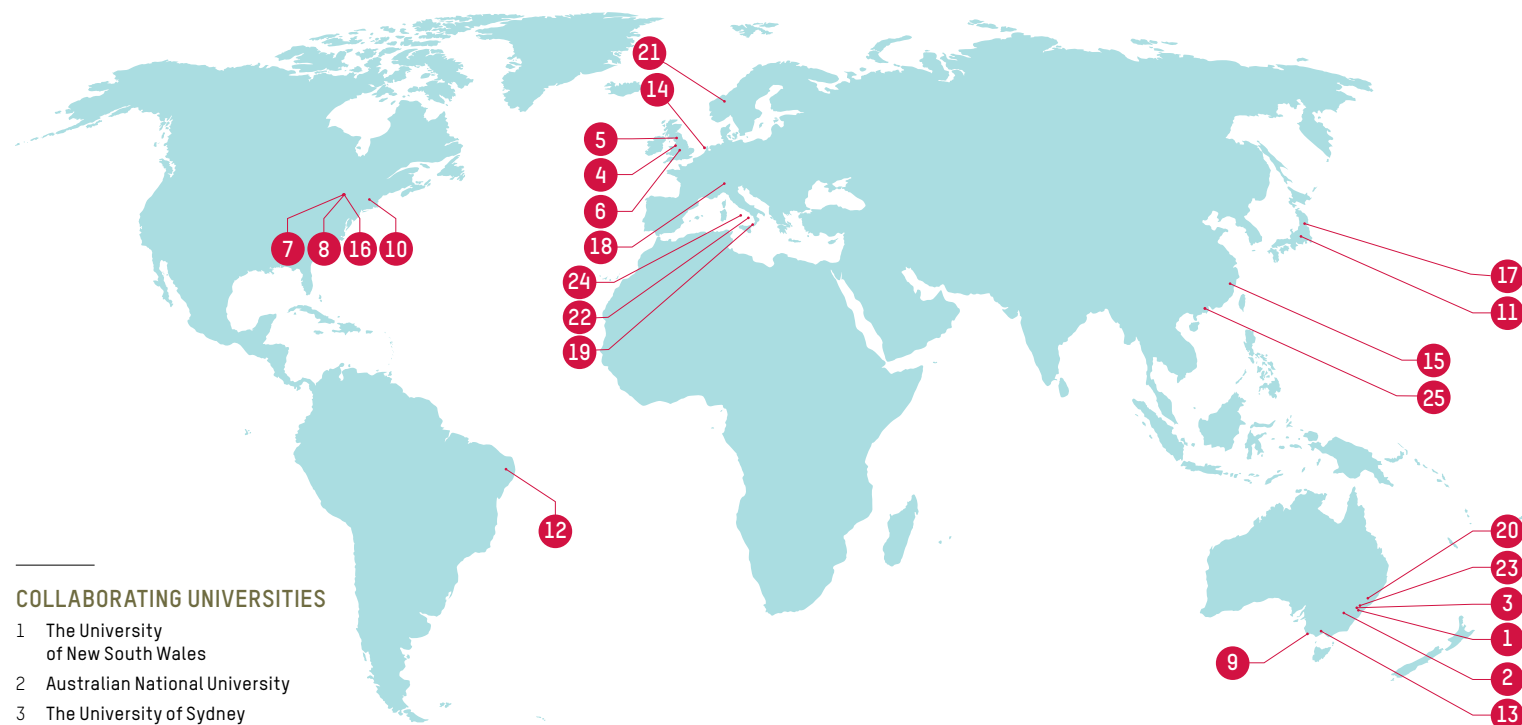
In 2012, CEPAR focused on strengthening established collaborative partnerships with a number of international organisations as well

as developing new relationships with researchers in key institutions. We hosted a number of international visitors ranging from experts with

distinguished reputations in their fields to early career researchers interested in developing research programs in the area of population ageing. Our visitors contributed to Centre life and the wider

community in a number of ways. They gave distinguished lectures, presented at workshops and seminars, met with our industry partners and provided expert advice on the research program.

By organising special CEPAR sponsored sessions at international conferences we provided fora for the discussion of particular aspects of population ageing as well as increased the visibility of the Centre.



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

- 9 School of Psychology Flinders University
- 10 Department of Global Health and Population (GHP) Harvard University
- 11 Institute for Economic Research Hitotsubashi University
- 12 Instituto de Estudos de Saúde Suplementar (IESS)

- 13 School of Primary Health Care and Emerging Researchers in Ageing Initiative Monash University
- 14 Netspar
- 15 Research Centre for Ageing and Health Services Peking University
- 16 Gerontology Centre Pennsylvania State University

- 17 Research Institute for Policies on Pension and Ageing
- 18 Department of Economics St Gallen University
- 19 Centre for Studies in Economics and Finance University of Naples Federico II
- 20 Research Centre for Gender, Health and Ageing The University of Newcastle (Australia)

- 21 Ragnar Frisch Centre for Economic Research University of Oslo
- 22 Department of Economics University of Parma
- 23 Centre for the Study of Choice University of Technology, Sydney
- 24 Faculty of Economics University of Trieste
- 25 College of Public Administration Zhejiang University

RESEARCH INSTITUTE FOR POLICIES ON PENSION AND AGING, JAPAN

A visit from Professor Noriyuki Takayama in September, funded by the Australian Prime Minister's Education Assistance Program for Japan, laid a firm foundation for stronger collaboration between CEPAR and the Project on Intergenerational Equity (PIE) based at the Research Institute for Policies on Pension and Aging (RIPPA) in Japan. PIE, sponsored by the Ministry of Education, Japan, was launched in October 2000, and is now in its third stage. Focusing on intergenerational issues, the research addresses pensions, health care, employment, fertility, child poverty, fiscal deficit, and technological innovation challenges in the context of population ageing.

During Professor Takayama's visit, a proposal for a jointly funded conference focusing on pre-funded national pension plans was developed. The aim of the conference is to bring country specialists together with economics, finance and insurance experts in the latter part of 2013 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.

ZHEJIANG UNIVERSITY, CHINA

Our collaborative links with Zhejiang University deepened this year with the development of a proposed research project on intergenerational solidarity, which will involve the Centre of International Social Security Studies at the Chinese Academy of Social Sciences (CASS). The research will focus on time and money transfers between generations, implemented through government policy and within the family. Led by a number of international experts, the project will also provide opportunities for early career researchers. Joint workshops and a conference are also planned. The project will be jointly funded by CEPAR and the Australia-China Science and Research Fund.

Considerable progress in 2012 was also made in our established research program on social security and pension reform in Zhejiang Province (see pages 72-73 for details), and we hosted a PhD student, Yang Zhenzhen, from Zhejiang University's College of Public Administration to facilitate her research on pensions and insurance. This arrangement is expected to continue in 2013.

PEKING UNIVERSITY, CHINA

CEPAR Associate Investigator, Professor Colette Browning, was appointed Co-director of Peking University's new Research Centre for Ageing and Health Services as well as an Honorary Professor in April 2012. The new Centre, which will conduct research that will inform healthy ageing, aged care practice and policy in China, includes scholars from a number of Chinese universities, including Tsinghua University, Renmin University, and Peking Union Medical College, as well as researchers from Korea, Japan and the US. In recognition of her research contribution and collaboration with Chinese universities and institutions, Professor Browning was awarded an honorary doctorate at an official ceremony in Beijing attended by senior Chinese government and university officials. She is one of only nine Australians in Health Sciences in the past 28 years to receive this honour.

THE RAGNAR FRISCH CENTRE FOR ECONOMIC RESEARCH, NORWAY

Since its inception, CEPAR has had a connection with the Frisch Centre. Home to some outstanding applied economists, Frisch has traditionally had a strong focus on labour force participation and labour markets, but in recent years has focused more heavily on pension and retirement issues (with its natural analogue of mature labour force participation). Frisch has also spent years building detailed data sets from Norwegian administrative data, and this allows detailed studies of economic behaviour to be undertaken.

Erik Hernaes, who until earlier this year was the Director of Frisch, has been an Associate Investigator with CEPAR since its establishment. He and a colleague from Frisch, Simen Markussen, visited CEPAR for two months at the beginning of 2012. A project initiated during their visit, on the relationship between retirement age and mortality, produced a paper which is currently being revised for the *Journal of Health Economics*. John Piggott visited Frisch in November to discuss the

revision strategy. He also serves as one of two international members of the Reference Group on a major pension reform project being undertaken at Frisch, and the visit was timed to allow participation in its annual meeting.

Frisch is also involved in other mortality-based research with Michael Sherris. We anticipate the relationship will expand as CEPAR evolves. Dr Markussen is planning a return visit in 2014.

NETSPAR, THE NETHERLANDS

The most influential group studying pensions and retirement in Europe is Netspar. Based in the Netherlands, this network brings together researchers in pension economics and finance from across Europe and beyond. CEPAR and Netspar are planning a joint project which will be structured around a comparison of the efficacy, and economic impacts of, their respective retirement income systems. The 2011 Melbourne Mercer Global Pension Index ranked the Netherlands and Australian systems 1 and 2 in the world, and the project was originally conceived in response to that. But it has now broadened in its projected scope to encompass

comparison of social pension designs, investigation of decumulation structures with mandatory pre-funded pension policy paradigms, and approaches to incorporating aged care support in pension decumulation products.

Ralph Stevens, a Senior Research Fellow at CEPAR and former Netspar Fellow, Hazel Bateman, Michael Sherris and John Piggott will spearhead the CEPAR side of the project; Netspar will bring Lans Bovenberg and Theo Nijman to the table. Preliminary work on the project will begin in 2013, and further support will be sought through a Linkage grant application in late 2013. (Partners have already been identified for this initiative.) Professor Nijman will be visiting in mid-2013 as a keynote speaker for the CEPAR conference, and it is expected that the project will be advanced during his visit, along with the Linkage application.

INSTITUTO DE ESTUDOS DE SAÚDE SUPLEMENTAR (IESS), BRAZIL

The IESS is a private research institute, founded and sponsored by large health insurers in Brazil (with about 20 million policy holders). It is focussed on the economic aspects which affect the

sustainability of the private health insurance industry in Brazil. One of its major concerns is the long-term effects of population ageing on the economy, not only its direct impact on the health insurance industry, but also in terms of future budgetary implications for public health and pensions.

Recently, John Piggott visited IESS to present material on the Australian approach to documenting demographic change, and to discuss how Brazil compares with regard to various indicators. The outcome is that IESS is now considering how to extend the relationship, using CEPAR expertise to build awareness of the impacts of demographic change in Brazil.

While Brazil is younger than Australia at the moment, demographically speaking, it will age much more rapidly. It took Australia 70 years for the population proportion over 65 to double from 7% to 14%; it is projected that in Brazil, this same transition will take less than 20 years.

The country therefore presents an unusual opportunity for CEPAR to help promote awareness of population ageing internationally, and we are looking forward to working with IESS in the future.



IAGG CONFERENCE ON AGEING IN AFRICA. FROM LEFT TO RIGHT: MELVYN FREEMAN (SOUTH AFRICA), JOSEPH MUGISHA (UGANDA), ROBERT CUMMING (CEPAR), JOHN BEARD (WHO), THOMAS CLAUSEN (NORWAY), OUSMANE FAYE (SENEGAL)

INTERNATIONAL CONFERENCES

One of the ways in which we facilitate global discussion of the implications of population ageing is through the sponsorship of sessions at international conferences.

ASIAN POPULATION ASSOCIATION CONFERENCE

This special session organised by CEPAR as part of the Asian Population Association Conference held in Bangkok in August focused on Intergenerational

Support of the Elderly and featured presentations from researchers based in China, Japan, Malaysia and the United Kingdom. Chaired by CEPAR's Deputy Director, Peter McDonald, the session included an analysis of the results of the 2007 Global Ageing Survey (GLAS), which involved individuals aged between 40 and 79 years residing in 21 countries and territories across five major regions of the world, as well as presentations covering country-specific studies.

INTERNATIONAL ASSOCIATION OF GERIATRICS AND GERONTOLOGY (IAGG) CONFERENCE ON AGEING IN AFRICA

To support the inaugural IAGG Africa Region Conference on Ageing in Africa, Chief Investigator Bob Cumming organised a special session on 'Adapting Africa's Health Systems to Manage Non-Communicable Diseases in Older Persons'. Africa has the fastest growing number of older people in the world. John Beard, Director of the World Health Organisation's

Department of Ageing and the Life-course, joined five other speakers to explore this important issue. Thomas Clausen from the University of Oslo; Melvyn Freeman from South Africa's Department of Health; Joseph Mugisha from MRC Entebbe, Uganda; Ousmane Faye from the University Cheikh Anta Diop of Dakar, Senegal; together with Bob Cumming, discussed how to expand the agenda of African ministries of health from infectious diseases in children to include diseases like heart attacks, stroke and cancer.

INTERNATIONAL VISITORS

The Centre hosted 33 international visitors in 2012. 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:

Emily Grundy, Cambridge University's first Professor of Demography, delivered the inaugural CEPAR Distinguished Lecture in February 2012. In her lecture, 'Later Life Health and Wellbeing in Ageing Populations: European Perspectives', Professor Grundy presented results from research in the UK and Europe on demographic and other influences on intergenerational support, including kin availability. She also explored how individual family life course trajectories, namely fertility and marital histories, influence later life health and wellbeing.

Carol Jagger, AXA Professor of Epidemiology of Ageing at the UK's Newcastle University and CEPAR Partner Investigator, was the special guest at the Ageing Well: Evidence for a Healthy Future Seminar in April 2012. Hosted by University of Sydney, CEPAR, together with the Australian Association of Gerontology (NSW), Hunter Medical Research Institute Public Health, and the Sax Institute, the Seminar featured a presentation by Professor Jagger on "Healthy Active Ageing - Prospects for the Future Drawing on a Number of Longitudinal and Epidemiological Studies".

Ermanno Pitacco, Professor of Economics from the University of Trieste, Italy, delivered a public lecture at UNSW in July titled 'From "Benefits" to "Guarantees": Looking at Life Insurance Products in a New Framework'. This lecture explored a variety of packages and options and the wide range of "guarantees" and hence risks borne by the insurance company or pension fund; discussed modelling tools; and examined appropriate product design aimed at sharing risks between the insurer and the policyholders. Professor Pitacco also presented at the Longevity Risk Workshop hosted by PwC as well as

the Risk Rated Health and Sickness Insurance Workshop hosted by the Institute of Actuaries of Australia.

Dimitris Christelis, a Research Fellow at the Centre for Studies in Economics and Finance at the University of Naples Federico II, visited CEPAR on two separate occasions in 2012, spanning more than 60 days in total. As a Research Officer working extensively with the Survey of Health, Ageing and Retirement in Europe (SHARE), Christelis was well placed to participate in discussions with CEPAR on the development of a proposal to create a pilot dataset for Australia harmonised with the US Health and Retirement Survey (HRS), the English Longitudinal Study of Ageing (ELSA), and SHARE. He provided expert input to the proposed survey design and valuable insight into the European experience. In late 2012, Dr Christelis formalised his relationship with the Centre by accepting an affiliation as an Associate Investigator. His ongoing guidance and expertise will be critical to the further development of this dataset. During his visit he also worked extensively with early career researcher, Isabella Dobrescu on two research projects.



AGEING WELL: EVIDENCE FOR A HEALTHY FUTURE SEMINAR. FROM LEFT TO RIGHT: ANTHONY BROWN (UNIVERSITY OF WESTERN SYDNEY), CAROL JAGGER (NEWCASTLE UNIVERSITY, UK) JULIE BYLES (NEWCASTLE UNIVERSITY, NSW) VASI NAGANATHAN (UNIVERSITY OF SYDNEY), HAL KENDIG (UNIVERSITY OF SYDNEY)



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, University of Cambridge and is Visiting Professor in the Epidemiology of Ageing in the Institute of Primary Care and Health Sciences Research, Keele University. She is a Fellow of the Faculty of Public Health, Fellow of the Royal Statistical Society and Chartered Scientist, Member of the British Geriatrics Society and a Fellow of the Gerontological Society of America.

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.

In 2012, CEPAR was proud to host the following visitors:

PROFESSOR HENRY OHLSSON
Department of Economics,
Uppsala University
3 October 2011–31 January 2012

ERIK HERNAES
Frisch Centre for Economic
Research, University of Oslo
4 January–7 March 2012

DR SIMEN MARKUSSEN
Frisch Centre for Economic
Research, University of Oslo
4 January–7 March 2012

PROFESSOR EMILY GRUNDY
Centre for Population Studies,
London School of Hygiene and
Tropical Medicine
23 January–19 February 2012

DR SOPHIE PENNEC
*Institut national des études
démographiques, Paris*
23 January–9 June 2012

DR DIMITRIS CHRISTELIS
Centre for Studies in Economics
and Finance, University of Naples
Federico II
31 January–22 February 2012;
5 September–20 October 2012

PROFESSOR JAMES SMITH
RAND Institute
1–6 February 2012

JIM OEPPEN
Max Planck Institute for
Demographic Research
13 February–11 March 2012

DR PAUL MCNAMEE
Health Economics Research Unit,
University of Aberdeen
27 February–12 April 2012

**ASSISTANT PROFESSOR BERTEL
SCHJERNING**
University of Copenhagen
12 March–30 March 2012

PROFESSOR JOHN RUST
University of Georgetown
12 March–30 March 2012

YANG ZHENZHEN
College of Public Administration,
Zhejiang University
31 March–17 May 2012

DR SEVERINE GAILLE
University of Lausanne
16 April–15 June 2012

PROFESSOR CAROL JAGGER
Institute of Ageing and Health,
Newcastle University, U.K.
23–24 April 2012

**ASSISTANT PROFESSOR
JOCHEN O. MIERAU**
The University of Groningen
1 May–8 June 2012

**ASSISTANT PROFESSOR
VIOLA ANGELINI**
The University of Groningen
1 May–8 June 2012

DR ELLEN GARDE
University of Copenhagen
11–23 May 2012

PROFESSOR ARNSTEIN MYKLETUN
The University of Bergen
13–14 June 2012

DR NILAM RAM
Pennsylvania State University
18–29 June 2012

**ASSISTANT PROFESSOR
MINCHUNG HSU**
National Graduate Institute for
Policy Studies, Tokyo
25 June–1 July 2012

PROFESSOR ANNAMARIA OLIVIERI
University of Parma
3–21 July 2012

PROFESSOR ERMANN PITACCO
University of Trieste
3–21 July 2012

PROFESSOR OLIVIA S. MITCHELL
Wharton School,
University of Pennsylvania
12–20 July 2012

PROFESSOR JAMES FEIGENBAUM
Utah State University
24–25 July 2012

DR HONGQIN CHANG
Business Administration College,
Talyuan University of Technology
31 July–6 August 2012

DR RENUKA SANE
Indira Gandhi Institute of
Development Research
31 July–6 August 2012

PROFESSOR NORIYUKI TAKAYAMA
Research Institute for Policies
on Pension and Aging, Tokyo
6–18 September 2012

DR DOUGLAS POWELL
Department of Psychiatry,
Harvard Medical School
16–18 September 2012

DR FANNY ANNEMARIE KLUGE
Max Planck Institute for
Demographic Research
26 September–16 October 2012

DR NATHAN CONSEDINE
The University of Auckland
10–12 October 2012

PROFESSOR PETER ZWEIFEL
University of Zurich
29–30 November 2012

DR JOSHUA WIENER
RTI International
3–4 December 2012

DR JOSÉ-LUIS FERNÁNDEZ
London School of Economics and
Political Science
3–4 December 2012



Noriyuki Takayama is a Distinguished Scholar at the Research Institute for Policies on Pension and Aging (RIPPA) and a JRI Pension Research Chair Professor at the Institute of Economic Research at Hitotsubashi University. He is also a CEPAR Associate Investigator.

He holds a PhD from the University of Tokyo. He is Director General and CEO of a research Project on Intergenerational Equity (PIE: 2000–2015). He has been a key influence in Japanese pension reform for many years and has published numerous books and articles in international publications including *Econometrica* and the *American Economic Review*.

Professor Takayama has a long-standing collaborative relationship with John Piggott. As well as facilitating the proposal for a joint conference with RIPPA, his visit in September enabled the development of a collaborative research project with John Piggott and Hazel Bateman on risk-control in designing pension policies. He also presented the paper, “Does a Bad Start Lead to a Bad Finish in Japan?” as part of the CEPAR Seminar Series.

INTERNATIONAL VISITS

CEPAR investigators were invited to visit a number of leading research institutions in 2012:

DANIEL ALAI
University of Manitoba
3 August 2012

KAARIN ANSTEY
Museum of Modern Art, New York
19 April 2012

University of California,
San Francisco
21 April 2012

University of Alberta
8–12 July 2012

ELENA CAPATINA
National Graduate Institute for
Policy Studies (GRIPS), Tokyo
14–21 December 2012

BOB CUMMING
National Geriatric Hospital
Hanoi, Vietnam
17 April 2012

JOELLE FONG
Oxford Institute of Ageing
24 June 2012

Singapore Management University
2–6 July 2012

KATJA HANEWALD
Department of Finance,
Maastricht University
25–30 March 2012

University of Parma
3–14 September 2012

FEDOR ISKHAKOV
University of Copenhagen
15–22 June 2012

Nuffield College, Oxford University
8–22 December 2012

MICHAEL KEANE
Arizona State University
10 January–6 February 2012

Nuffield College, Oxford University
1 September 2012–30 August 2013

HAL KENDIG
Leeds University
21–23 May, 2012

Manchester University
24–25 May 2012

BEI LU
Zhejiang University, China
May 2012

ELISABETTA MAGNANI
Centre for Labour Market Studies,
Leicester University
22–27 November 2012

Bologna Institute for Policy
Research, Johns Hopkins
University, Bologna Center
15 September–20 December 2012

SHIKO MARUYAMA
The Rockwool Foundation
Research Unit, Copenhagen
31 October–3 December 2012

CERGE-EI, Prague
12 November 2012

PETER MCDONALD
United Nations Population Fund,
New York
7 May 2012

RAMONA MEYRICKE
Cambridge University
27 August–3 September 2012

KATE O’LOUGHLIN
Leeds University
21–23 May 2012

Manchester University
24–25 May 2012

JOHN PIGGOTT
World Bank
9–10 January 2012

Ragnar Frisch Centre for Applied
Economic Research, Oslo
13–16 November 2012

Netspar
21–29 January 2012
23 November 2012

Institute for Fiscal Studies, UK
24 November 2012

*Instituto de Estudos de Saúde
Suplementar–IESS*, Sao Paulo
26–27 November 2012

MICHAEL SHERRIS
University of Manitoba
3 August 2012

University of Parma
3–14 September 2012

Collegio Carlo Alberto,
University of Torino
10 September 2012

Terry College of Business,
Athens, Georgia
12 November 2012

ALAN WOODLAND
The University of Aix-Marseille
20 August–17 October 2012



SECTION

4

PERFORMANCE INDICATORS
& FINANCIAL STATEMENT

2012 KEY PERFORMANCE INDICATORS

MEASURE	TARGET	RESULT
RESEARCH FINDINGS		
Total research outputs	40	268
– Refereed journal articles	12	89
– Percentage appearing in A* and A journals	35%	49%
Invited talks/papers/keynotes given at major international meetings	12	40
Commentaries about the Centre’s achievements		
– Media releases	8	14
– Articles	6	68
RESEARCH TRAINING AND PROFESSIONAL EDUCATION		
Attended professional training courses for staff and postgraduate students	5	7
Centre attendees at all professional training courses	17	65
New PhD students working on core Centre research and supervised by Centre staff	6	8
New postdoctoral researchers recruited to the Centre working on core Centre research	8	8
New Honours students working on core Centre research and supervised by Centre staff	4	3
Postgraduate completions	0	2
Early Career Researchers working on core Centre research	13	24
Students mentored	150	300 ¹⁰
Mentoring programs	4	5
INTERNATIONAL, NATIONAL AND REGIONAL LINKS AND NETWORKS		
International visitors and visiting fellows	12	33
National and international workshops held/organised by the Centre	3	9
Visits to overseas universities or organisations	6	35
Interdisciplinary research: Research projects and papers co-authored by writers with different disciplinary backgrounds	2	8

¹⁰ Includes students mentored under the Emerging Researchers in Ageing initiative.

MEASURE	TARGET	RESULT
END-USER LINKS		
Government, industry and business community briefings	5	59
Public awareness programs	2	2
Currency of information on the Centre's website (number of updates per year)	10	updated at least weekly
Website hits	4000	4,022 unique visitors
Public talks given by Centre staff	15	17
ORGANISATIONAL SUPPORT		
Annual cash contributions from Collaborating Organisations ¹¹	\$938,250	\$938,250
Annual in-kind contributions from Collaborating Organisations	\$969,201	\$1,450,584
Annual cash contributions from Partner Organisations	\$150,000	\$100,000
Annual in-kind contributions from Partner Organisations	\$729,722	\$793,019
Other research income secured by Centre staff ¹²		
– ARC grants	\$250,000	\$1,261,929
– Other Australian Competitive Grants	\$250,000	\$2,106,021
– Other Commonwealth, State and Local Government Grants	\$125,000	\$347,609
– Industry/Private Sector Grants	\$125,000	0
Number of new organisations collaborating with, or involved in, the Centre	1	4
NATIONAL BENEFIT		
Contribution to the National Research Priorities and the National Innovation Priorities		
– Public conferences	1	2
– Government and industry briefings	3	59
– Communiqués etc	12	82

¹¹ Included in this figure is a delayed payment of \$116,520 from ANU which will be made in the first quarter, 2013.

¹² 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 2012 income is shown.

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RESEARCH OUTPUTS

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OTHER OUTPUTS

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- 2 Booth, H. (2012). Poster Presentation. Social Networks and Ageing Project (SNAP). Presented at the 16th Australian Population Association Biennial Conference, Melbourne, Australia, December, 2012 and the 45th Australian Association of Gerontology National Conference, Brisbane, Australia, November, 2012.
- 3 Booth, H. (November 2012). Poster Presentation. New Forecasts of Population Ageing in Australian States. 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
- 4 Booth, H. and Hyndman, R. (December 2012). Poster Presentation. Mortality Forecasts: Methods and Software. 16th Australian Population Association Biennial Conference. Melbourne, Australia.
- 5 Booth, H., Nepal, B., Pennec, S., Brown, L. and the DYNOPTA Team. (November 2012). Poster Presentation. Modelling Disability and its Risk Factors Using DynoptaSim. 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
- 6 CEPAR. (2012). Aged Care Fact Sheet. CEPAR, Sydney, Australia.
- 7 Cherbuin, N. (May 2012). Poster Presentation. Higher Fasting Plasma Glucose Levels in the Normal Range are Associated with Hippocampal Atrophy in Cognitive Healthy Community-Based Older Adults in their 60s. International Society for Magnetic Resonance in Medicine (ISMRM). Melbourne, Australia.
- 8 Cherbuin, N., Mortby, M., Janke, A., Abhayaratna, W., Sachdev, P.S. and Anstey, K.J. (June 2012). Poster Presentation. Improving the Detection of Blood Pressure and Regional Gray Matter Volume Associations in the Healthy Elderly. Presented at the Human Brain Mapping Conference, Beijing, China, June, 2012 and the ANU Dementia Collaborative Research Centres Poster Presentation Day, Canberra, Australia, June, 2012.
- 9 Jaeni, N., McDonald, P. and Utomo, I. (August 2012). Poster Presentation. Determinants of Unintended Pregnancy among Married Women in Indonesia. 2nd Asian Population Association Conference. Bangkok, Thailand.
- 10 Utomo, I., McDonald, P., Reimondos, A., Hull, T. and Utomo, A. (August 2012). Poster Presentation. Contraceptive Use and Sexual Behaviour among Unmarried Young Adults in Indonesia. 2nd Asian Population Association Conference. Bangkok, Thailand.
- 11 Wesson, J., Clemson, L., Brodaty, H. and Reppermund, S. (November 2012). Poster Presentation. Clinical Utility of Allen’s Cognitive Disabilities Model. Allen’s Cognitive Network Symposium. San Diego, USA.

E1 CONFERENCE: FULL WRITTEN PAPERS IN REFEREED PROCEEDINGS

- 1 Feng, J. (November 2012). The Effect of Tax Incentives on Voluntary Contributions to Superannuation. Proceedings of the 11th National Conference of Emerging Researchers in Ageing. Brisbane, Australia, 106–109.
- 2 Motamarri, S., Akter, S., Ray, P. and Tseng, C.L. (July 2012). MHealth: A Better Alternative for Healthcare in Developing Countries. Proceedings of the 16th Pacific Asia Conference On Information Systems conference. Ho Chi Minh City, Vietnam.
- 3 Shao, W., Sherris, M. and Hanewald, K. (November 2012). Equity Release Products Allowing for Individual House Price Risk. Proceedings of the 11th Emerging Researchers in Ageing Conference, 94–97.

E2 CONFERENCE: FULL WRITTEN PAPERS IN NON-REFEREED PROCEEDINGS

- 1 Veprauskaite, E. and Sherris, M. (July 2012). An Analysis of Reinsurance Optimisation in Life Insurance. Proceedings of the Annual Conference of the Asia Pacific Risk and Insurance Association. Seoul, Korea.
- 2 Blackburn, C., Hanewald, K., Olivieri, A. and Sherris, M. (July 2012). Comparing Life Insurer Longevity Risk Management Strategies in a Firm Value Maximizing Framework. Proceedings of the Annual Conference of the Asia Pacific Risk and Insurance Association. Seoul, Korea.

E4 UNPUBLISHED CONFERENCE PRESENTATIONS

- 1 Abbasi-Shavazi, M.J., Hosseini-Chavoshi, M. and Bittles, A. (August 2012). Consanguinity and Fertility in Iran. Marriage in Asia: Trends, Determinants and Implications. 2nd Asian Population Association Conference. Bangkok Thailand.
- 2 Alai, D., Gaille, S. and Sherris, M. (August 2012). Investigating Causal Mortality using the Multinomial Logistic Model. North American Actuarial Research Conference. University of Manitoba. Manitoba, Canada.
- 3 Alai, D., Landsman, Z. and Sherris, M. (September 2012). Lifetime Dependence Modelling using the Truncated Multivariate Gamma Distribution. Eighth International Longevity Risk and Capital Markets Solutions Conference. Waterloo, Canada.
- 4 Alai, D., Chen, H., Cho, D., Hanewald, K. and Sherris, M. (September 2012). Developing Equity Release Markets: Risk Analysis for Reverse Mortgage and Home Reversion. Eighth International Longevity Risk and Capital Markets Solutions Conference. Waterloo, Canada.
- 5 Ali, P. and McDonald, P. (August 2012). The Compounding Effects of Demographic, Socio-Economic, and Morbidity to the Future Demand for Health Care in an Ageing Population: A Case for Indonesia. The 2nd Asian Population Association Conference. Bangkok, Thailand.

- 6 Anstey, K. (December 2012). Plenary Speaker. Physical and Mental Health and Cognitive Decline: Implications for Prevention? Australasian Society for Psychiatric Research 2012 Conference. Perth, Australia.
- 7 Anstey, K. (October 2012). Plenary Speaker. Implications of Developments in Neuroscience for Judging. National Dialogues on Being a Judge. Adelaide, Australia.
- 8 Anstey, K. (September 2012). Plenary Speaker. Dementia Prevention. Australasian Consortium of Centres for Clinical Cognitive Research (AC4R) Annual Seminar. Canberra, Australia.
- 9 Anstey, K. (September 2012). Plenary Speaker. Update on Prevention of Alzheimer's Disease. National Dementia Collaborative Research Centre Forum. Canberra, Australia.
- 10 Anstey, K. (September 2012). The Association between Obesity, Cognitive Decline and Dementia from Middle-Age to Late-Life. The 3rd Annual Food Industry Forum for Nutrition Research. Sydney, Australia.
- 11 Bateman, H. (July 2012). The Future of Financial Advice and MySuper. 17th Melbourne Money and Finance Conference: Recent Developments in Financial Regulation. Melbourne, Australia.
- 12 Blackburn, C., Hanewald, K., Olivieri, A. and Sherris, M. (September 2012). Comparing Life Insurer Longevity Risk Management Strategies in a Firm Value Maximizing Framework. 39th Seminar of the European Group of Risk and Insurance Economists. Palma de Mallorca, Spain.
- 13 Booth, H. (December 2012). Coherence in Mortality Forecasting: Applications to the Australian Population by Sex and State. Australian Population Association 16th Biennial Conference. Melbourne, Australia.
- 14 Booth, H. (November 2012). Unlocking the Structure of Mortality Data for Improved Forecasting. Australasian Mortality Data Interest Group (AMDIG). Sydney, Australia.
- 15 Booth, H., Rioseco, P. and Crawford, H. (December 2012). Demographic Determinants of the Social Connectivity and Wellbeing of Older Australians: Results from the Social Networks and Ageing Project. Australian Population Association 16th Biennial Conference. Melbourne, Australia.
- 16 Booth, H., Rioseco, P. and Crawford, H. (November 2012). SNAP Results on Social Connectivity and Wellbeing among Older Australians. 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
- 17 Byles, J. (March 2012). Access to Health Care for Older Women in Rural and Remote Areas. Australian Association of Gerontology and Aged and Community Services Association of NSW and ACT Incorporated NSW Rural Conference. Dubbo, Australia.
- 18 Byles, J. (September 2012). Inspired by Ageing. South Australia Gerontology Conference 2012. Adelaide, Australia.
- 19 Capatina, E. (2012). Life-Cycle Effects of Health Risk. Presented at the 3rd Australasian Workshop on Econometrics and Health Economics, Sydney, Australia, April, 2012 and the 9th CAER Summer Workshop in Health Economics. Sydney, Australia, February, 2012.
- 20 Chen, H., Sherris, M., Sun, T. and Zhu, W. (January 2012). Living with Ambiguity: Pricing Mortality-Linked Securities with Smooth Ambiguity Preferences. Western Risk and Insurance Association (WRIA) Annual Conference. Hawaii, USA.
- 21 Cherbuin, N. (September 2012). From the Individual to Policy: A Multi-Faceted Approach to Assess and Decrease Dementia Risk and Inform Population Health. National Dementia Forum. Canberra, Australia.
- 22 Cherbuin, N. (June 2012). Subjective Memory Difficulties are Associated with Hippocampal Atrophy Over 4 Years: The Path Through Life Study. Alzheimer's Association International Conference. Vancouver, Canada.
- 23 Cho, D., Hanewald, K. and Sherris, M. (December 2012). Risk Management and Payout Design of Reverse Mortgages. 5th Australasian Actuarial Education and Research Symposium. Melbourne, Australia.
- 24 Chomik, R. and Piggott, J. (July 2012). Pensions, Ageing and Retirement in Australia: Long Term Projections and Policies. 20th Annual Colloquium of Superannuation Researchers. Sydney, Australia.
- 25 Chomik, R. and Piggott, J. (May 2012). Long-Term Fiscal Projections and the Australian Retirement Income System. Interger+10 Workshop. Canberra, Australia.
- 26 Clemson, L. (2012). Older People Preventing Falls – Using Principles of Enablement to Attain Sustainability. Presented at the IFA 11th Global Conference on Ageing, Ageing Connects, Prague, Czech Republic, May, 2012 and the Gerontological Society of America, 65th Annual Scientific Meeting San Diego, San Diego, USA, November, 2012.
- 27 Clemson, L. (November 2012). Active Ageing, Health, Behavioural and Social Resources. 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
- 28 Clemson, L. (November 2012). The Profiles of Fallers and those who Fear Falling are Different: Implications for Practice. 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
- 29 Cumming, R.G. (October 2012). HIV among Older People in Sub-Saharan Africa: A Comprehensive Review. Africa Ageing Beyond Madrid +10. 1st Africa Region Conference of Gerontology and Geriatrics. Cape Town, South Africa.
- 30 Feng, J. (July 2012). Determinants of Voluntary Contributions in Superannuation. 20th Annual Colloquium of Superannuation Researchers. Sydney, Australia.
- 31 Fong, J., Piggott, J. and Sherris, M. (August 2012). Public Sector Pension Funds in Australia: Longevity Selection and Liabilities. American Risk and Insurance Association Annual meeting. Minneapolis, USA.
- 32 Gaille, S. and Sherris, M. (October 2012). Causes-of-Death Mortality: What Can Be Learned from Cointegration. IAA International AFIR/ERM Colloquium. Mexico City, Mexico.
- 33 Gaille, S. and Sherris, M. (September 2012). Forecasting Mortality Trends Allowing for Cause-of-Death Mortality Dependence. Eighth International Longevity Risk and Capital Markets Solutions Conference. Waterloo, Canada.
- 34 Hanewald, K. (January 2012). Statistical Models for Postcode-Level House Price Risk for Applications in Banking and Insurance. Annual Meeting of the Western Risk and Insurance Association. Hawaii, USA.
- 35 Hanewald, K. and Sherris, M. (April 2012). House Price Risk Models for Banking and Insurance Applications. Actuaries Institute Financial Services Forum. Melbourne, Australia.
- 36 Hanewald, K. Post, T. and Sherris, M. (August, 2012). Risk Management in Retirement – What is the Optimal Home Equity Release Product? American Risk and Insurance Association Annual Meeting. Minneapolis, USA.
- 37 Hanewald, K. (2012). Solvency Capital, Pricing and Capitalization Strategies of Life Annuity Providers. Presented at the 1st *European Actuarial Journal* Conference. Lausanne, Switzerland, September 2012; the Annual Conference of the Asia-Pacific Risk and Insurance Association, Seoul, South Korea, May 2012; and the 39th Seminar of the European Group of Risk and Insurance Economists. Palma de Mallorca, Spain, September 2012.
- 38 Hanewald, K., Nirmalendran, M. and Sherris, M. (September 2012). A Comparison and Economic Analysis of International Solvency Regimes for Life Annuity Markets. 1st *European Actuarial Journal* Conference. Lausanne, Switzerland.

RESEARCH OUTPUTS

- 39 Heese, K., O'Loughlin, K. and Kendig, H. (November 2012). Socio-Demographic and Occupation Correlates of Age Discrimination: Who is at Risk? 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
- 40 Hosseini-Chavoshi, M., Abbasi-Shavazi, M.J. and McDonald, P. (August 2012). Lifetime Pregnancy and Contraceptive Usage among Women Living In Low Fertility Regions of Iran. 2nd Asian Population Association Conference. Bangkok, Thailand.
- 41 Hosseini-Chavoshi, M., McDonald, P. and Abbasi-Shavazi, M.J. (December 2012). Fertility Projection in Iran: A New Approach to Measurement of Fertility. Australian Population Association 16th Biennial Conference. Melbourne, Australia.
- 42 Hosseini-Chavoshi, M. (May 2012). Past Trends and Future Prospects of Fertility Transition in Iran. 7th International Shanghai Forum. Shanghai, China.
- 43 Hosseini-Chavoshi, M., McDonald, P. and Abbasi-Shavazi, M.J. (June 2012). Fertility Projection in Iran: A Comparison of Iran and Australia. European Population Conference. Stockholm, Sweden.
- 44 Iskhakov, F., Schjerning, B. and Rust, J. (June 2012). A Dynamic Model of Leapfrogging Investments and Bertrand Price Competition. Conference for the Society of Economic Dynamics. Limasol, Cyprus.
- 45 Iskhakov, F., Schjerning, B. and Rust, J. (June 2012). A Generalized Endogenous Grid Method for Discrete-Continuous Choice. Conference for the Society of Economic Dynamics. Limasol, Cyprus.
- 46 Johar, M. and Maruyama, S. (2012). Externality and Strategic Interaction in the Location Choice of Siblings under Altruism toward Parents. Presented at the 66th European Meeting of the Econometric Society, Malaga, Spain, August 2012; the Japanese Economic Association Spring Meeting, Sapporo, Japan, June, 2012; the 4th Biennial Conference of the American Society of Health Economists (ASHEcon), Minneapolis, USA, June, 2012; the 12th SAET Conference on Current Trends in Economics, Brisbane, Australia, July, 2012 and the 34th Australian Conference of Health Economists (AHES), Darwin, Australia, September 2012.
- 47 Jung, J. and Tran, C. (April 2012). Fiscal Austerity Measures: Spending Cuts or Tax Increases. Australasian Macroeconomics Workshop. Melbourne, Australia.
- 48 Kendig, H. (November 2012). Modifiable Factors in Ageing Well: Australian Longitudinal Findings. Gerontological Society of America, 65th Annual Scientific Meeting. San Diego, USA.
- 49 Kendig, H. (May 2012). Ageing Well in Australia: Research and Action. IFA 11th Global Conference on Ageing, Ageing Connects. Prague, Czech Republic.
- 50 Kendig, H. (May 2012). Attitudes Towards Intergenerational Equity in Australia. IFA 11th Global Conference on Ageing, Ageing Connects. Prague, Czech Republic.
- 51 Kendig, H. (May 2012). Universal and Equal Access to Health Care Services. IFA 11th Global Conference on Ageing, Ageing Connects. Prague, Czech Republic.
- 52 Kendig, H., O'Loughlin, K. and Heese, K. (November 2012). Intergenerational Equity in Australia: Attitudes and Policies. Gerontological Society of America, 65th Annual Scientific Meeting. San Diego, USA.
- 53 Kendig, H. and Browning, C. (April 2012). Life Style Influences on Ageing Well: Findings from MELSHA. Ageing Well: Evidence for a Healthy Future. Australian Association of Gerontology. Sydney, Australia.
- 54 Kendig, H., O'Loughlin, K., Noone, J., Byles, J. and Nazroo, J. (November 2012). Life Course Influences on Disadvantage Among Australian Baby Boomers. The Australian Sociological Association Conference. Brisbane, Australia.
- 55 Kudrna, G. (July 2012). Macroeconomic and Welfare Effects of the 2010 Changes to Australia's Mandatory Superannuation. International Conference on Demographic Trends, Saving and Retirement Security. Munich, Germany.
- 56 Kudrna, G. (June 2012). Progressive Tax Changes to Private Pensions in a Life-Cycle Framework. 18th International Conference on Computing in Economics and Finance. Prague, Czech Republic.
- 57 Kumru, C. and Piggott, J. (2012). Optimal Capital Income Taxation with Means-Tested Benefits. Presented at the Econometric Society Australasian Meeting (ESAM), Melbourne, Australia, July, 2012; the Australian Conference of Economists (ACE), Melbourne, Australia, July, 2012; the 20th Annual Colloquium of Superannuation Researchers, Sydney, Australia, July, 2012; the Public Economic Theory (PET) Conference, Taipei, Taiwan, June 2012; and the Dynamics, Economic Growth and International Trade (DEGIT) 2012, Milan, Italy, September, 2012.
- 58 Loh, V. and Kendig, K. (November 2012). Productive Engagement across the Lifespan: Paid Work, Caregiving, and Volunteering. 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
- 59 Lu, B. (May 2012). Rural Pension, Income Inequality and Family Transfer in China. The First Aging and Social Security International Conference. Zhejiang, China.
- 60 Lu, B. and Piggott, J. (July 2012). Meeting the Migrant Pension Challenge in China. CESifo Venice Summer Institute Workshop. Venice, Italy.
- 61 McDonald, P. (December, 2012). Plenary Speaker. Taking the Population Pressure off Capital Cities: Myth or Reality? Australian Population Association 16th Biennial Conference. Melbourne, Australia.
- 62 McDonald, P. (August 2012). The Compounding Effects of Demographic, Socio-Economic, and Morbidity to the Future Demand for Health Care in an Ageing Population: A Case of Indonesia. The 2nd Asian Population Conference. Bangkok, Thailand.
- 63 McDonald, P. (May 2012). The Population Dimension in the Intergenerational Reports. Interger+10 Workshop. Canberra, Australia.
- 64 Meyricke, R. and Sherris, M. (June 2012). Aggregating Survival Models: Individual vs Population Mortality Dynamics. 16th International Congress on Insurance Mathematics and Economics. Hong Kong.
- 65 Meyricke, R. and Sherris, M. (September 2012). Systemic Risk, Diversification and the Securitization of Longevity Risk. Eighth International Longevity Risk and Capital Markets Solutions Conference. Waterloo, Canada.
- 66 Nasrabad, H., Shavazi, M., Hosseini-Chavoshi, M. and Tabatabaei, M. (August 2012). Short Postponement of Entry to Motherhood in Iran. The 2nd Asian Population Association Conference. Bangkok, Thailand.
- 67 Nirmalendran, M., Sherris, and Hanewald, K. (May 2012). A Comparison and Economic Analysis of International Solvency Regimes for Annuity Markets. Actuaries Institute Financial Services Forum. Melbourne, Australia.
- 68 Njenga, C. and Sherris, M. (January 2012). Mortality Stress Margins for Insurer Risk-Based Capital Requirements for Pensions and Life Annuities. Western Risk and Insurance Association (WRIA) Annual Conference. Hawaii, USA.
- 69 O'Loughlin, K. (May 2012). Age Discrimination in Australian Workplaces. IFA 11th Global Conference on Ageing, Ageing Connects. Prague, Czech Republic.
- 70 O'Loughlin, K., Heese, K. and Kendig, H. (August 2012). Age Discrimination among Older Workers: The Australian Experience. Second ISA Forum of Sociology. Social Justice and Democratization. Buenos Aires, Argentina.

- 71 Piggott, J. (January 2012). Economic Aspects of Intergenerational Solidarity. NETSPAR International Pensions Workshop. Amsterdam, The Netherlands.
 - 72 Rahimi, A., Liaw, S.T., Ray, P. and Tagaart, J. (August 2012). Developing an Ontology for Data Quality in Chronic Disease Management. 24th European Medical Informatics Conference. Pisa, Italy.
 - 73 Richardson (Wales), K. (June 2012). Assessment and Evaluation of Older Adults at Risk of Functional Limitations: A Systematic Review and Analysis of Psychometric Properties. Northern Territory Occupational Therapy Conference. Darwin, Australia.
 - 74 Sargent-Cox, K. (October 2012). Longitudinal Change in Self-Perceptions of Ageing and Mortality. The Psychology of Healthy Ageing Symposium. Canberra, Australia.
 - 75 Sarntisart, S. (October 2012). The Economic Implications of Religious Giving. 11th International Conference of the Japan Economic Policy Association (JEPA). Nagoya, Japan.
 - 76 Tran, C. and Woodland, A. (July 2012). Trade-Offs in Means-Tested Pension Design. Macroeconomics Dynamic Workshop. Sydney, Australia.
 - 77 Utomo, A., Temple, J., McDonald, P. and Rice, J. (December 2012). Work and Exit Patterns of Older Workers in Two Australian Public Service Organisations. Australian Population Association 16th Biennial Conference. Melbourne, Australia.
 - 78 Utomo, I.D., McDonald, P., Reimondos, A., Hull, T. and Utomo, A. (August 2012). Marriage and Relationship Patterns among Young Adults in Greater Jakarta. The 2nd Asian Population Association Conference. Bangkok, Thailand.
 - 79 Wesson, J., Clemson, L., Brodaty, H. and Reppermund, S. (September 2012). Functional Cognition and Performance of Everyday Tasks in Older People. International Psychogeriatrics Association International Meeting. Cairns, Australia.
 - 80 Windsor, T. (November 2012). Profiles of Social Relations among Older Australian Adults. Australian Psychological Society - Psychology of Relationships Interest Group Conference. Adelaide, Australia.
 - 81 Windsor, T.D. (November 2012). Age, Health and Emotions in Middle and Older Adulthood. 45th Australian Association of Gerontology National Conference. Brisbane, Australia.
 - 82 Yu, Y. (2012). The Body Mass-Mortality Association in the United States: A Reassessment of Secular Trends. Presented at The Australian Mortality Data Interest Group (AMIDG) Workshop, Sydney, Australia, November, 2012 and the Australian Population Association 16th Biennial Conference, Melbourne, Australia, December 2012.
 - 83 Yu, Y. and Booth, H. (2012). Educational Differences in Mortality among Australian Women and the Role of Smoking. Presented at the Australian Mortality Data Interest Group (AMIDG) Workshop, Sydney, Australia, November, 2012 and the Australian Population Association 16th Biennial Conference, Melbourne, Australia, December 2012.
 - 84 Zhao, J. (August 2012). Mortality Data in Three Chinese Societies: Comparability, Institutional Causes, and Adjustment. The 2nd Asian Population Association Conference. Bangkok, Thailand.
 - 85 Zhao, J. (2012). Patterns of Aged-People Life Expectancy in Three Chinese Cities. Presented at the Population Association of America 2012 Annual Meeting, San Francisco, USA, May, 2012 and the 24th International Conference on Health Expectancy, Taichung, Taiwan, May 2012.
 - 86 Zhao, Q. (December 2012). A Subordinated Markov Model for Australian Health and Mortality. Australasian Actuarial Education and Research Symposium. Melbourne, Australia.
 - 87 Ziveyi, J., Blackburn, C. and Sherris, M. (October 2012). Pricing European Options on Deferred Insurance Contracts. IAA International AFIR/ERM Colloquium. Mexico City, Mexico.
- A further 35 unpublished presentations were made at major international meetings. These are included in the following list.
- ### INVITED PRESENTATIONS TO MAJOR INTERNATIONAL MEETINGS
- 1 Alai, D. and Sherris, M. (August 2012). Longitudinal Analysis of Mortality Risk Factors. North American Actuarial Research Conference. University of Manitoba. Manitoba, Canada.
 - 2 Anstey, K. (June 2012). Keynote Speaker. Optimizing Cognitive Development over the Life Course and Preventing Cognitive Decline: Findings from Longitudinal Research. International Society for the Study of Behavioural Development 2012 Biennial Meeting (ISSBD 2012). Alberta, Canada.
 - 3 Anstey, K.J. (November 2012). Longitudinal Change in Functional Biomarkers Correlates with Cognitive Decline in Mid and Late-Life. Gerontological Society of America, 65th Annual Scientific Meeting. San Diego, USA.
 - 4 Anstey, K. (April 2012). Plenary Speaker. Health and Cognition, Overview of Health and Cognitive Aging. 13th Cognitive Aging Conference. Georgia, USA.
 - 5 Bartlett, H. (June 2012). Keynote Speaker. Health and Social Care for Older Persons from Culturally and Linguistically Diverse Backgrounds: Australian Policy and Practice. The 2nd International Leadership Assembly of Nursing Homes cum APIAS-Tsao-ILC Symposium for Junior Researchers on Active Ageing. Hong Kong, China.
 - 6 Bateman, H. (December 2012). Keynote Speaker. How will China Finance its Pension System in the Future? Mariazell Dialogue 2012. Mariazell, Austria.
 - 7 Bateman, H. (September 2012). Converting Retirement Savings to Income: Lessons from Australia. Retirement Strategy Forum 2012. Seoul, Korea.
 - 8 Blackburn, C., Hanewald, K., Olivieri, A. and Sherris, M. (July 2012). Comparing Life Insurer Longevity Risk Management Strategies in a Firm Value Maximizing Framework. Annual Conference of the Asia Pacific Risk and Insurance Association. Seoul, Korea.
 - 9 Capatina, E. (March 2012). Skills and the Evolution of Wage Inequality. 4th International Conference of Macroeconomics and Policy. Tokyo, Japan.
 - 10 Cherbuin, N. (July 2012). Modifiable Risk Factors for Conversion to Mild Cognitive Impairment in the PATH Through Life Study. International Society of the Study of Behavioral Development Conference. Edmonton, Canada.
 - 11 Cherbuin, N. (July 2012). Trajectories of Brain Structure in Middle-Age to Early Old Age and their Interaction with Health and Lifestyle Risk Factors. International Society for the Study of Behavioral Development Conference. Edmonton, Canada.
 - 12 Chomik, R. and Piggott, J. (November 2012). Private Pensions in Australia. European Pension Funds Congress. Frankfurt, Germany.

RESEARCH OUTPUTS

- 13 Cumming, R.G. (October 2012). Osteoporosis and Falls. Africa Ageing Beyond Madrid +10. 1st Africa Region Conference of Gerontology and Geriatrics. Cape Town, South Africa.
- 14 Fong, J. (June 2012). Beyond Age and Sex: Enhancing Annuity Pricing. RAND Data set Workshop at the Oxford Institute of Ageing. Oxford, U.K.
- 15 Ho, D. and Sherris, M. (November 2012). Portfolio Selection for Insurance Linked Securities: An Application of Multiple Criteria Decision Making. Southern Finance Association Annual Meeting. South Carolina, USA.
- 16 Jagger, C. (April 2012). Healthy Active Ageing - Prospects for the Future. Ageing Well: Evidence for a Healthy Future, Australian Association of Gerontology. Sydney, Australia.
- 17 Johar, M. and Maruyama, S. (July 2012). Externality and Strategic Interaction in the Location Choice of Siblings under Altruism toward Parents. The 9th European Conference on Health Economics (ECHE 2012). Zurich, Switzerland.
- 18 McDonald, P. (May 2012). Life Course Markers, Independence from Parents and Locus of Control among Young Adults in Greater Jakarta, Indonesia. Population Association of America 2012 Annual Meeting. San Francisco, USA.
- 19 McDonald, P. (May 2012). Premarital Sex, Conception and Birth among Young Adults in Jakarta, Bekasi and Tangerang, Indonesia. Population Association of America 2012 Annual Meeting. San Francisco, USA.
- 20 McDonald, P. (September 2012). Keynote Speaker. Conference of the British Society for Population Studies. Nottingham, England.
- 21 McDonald, P. and Utomo, A. (May 2012). Keynote Speaker. The Implications of Low Fertility for Future Labour Supply and GDP Per Capita in East Asian Countries. 7th International Shanghai Forum. Shanghai, China.
- 22 McDonald, P. (June 2012). Plenary Speaker. Gender Equity Investments and Economic Outcomes. European Population Conference. Stockholm, Sweden.
- 23 McDonald, P. (August 2012). Plenary Speaker. Opening plenary session of the 2nd Asian Population Association Conference. Bangkok, Thailand.
- 24 McDonald, P. (September 2012). Plenary Speaker. A Century of Population Studies, Society and Population Studies' Societies. British Society for Population Studies Conference. Nottingham, England.
- 25 Olivieri, A., Blackburn, C., Hanewald, K. and Sherris, M. (October 2012). Comparing Life Insurer Longevity Risk Management Strategies in a Firm Value Maximizing Framework. IAA International AFIR/ERM Colloquium. Mexico City, Mexico.
- 26 Piggott, J. (January 2012). Keynote Speaker. Mandating DC Private Retirement Provision: Questions for the Accumulation Phase. NETSPAR International Pensions Workshop. Tilburg, The Netherlands.
- 27 Piggott, J. (January 2012). Keynote Speaker. Mandating Private Retirement Provision: Decumulation Challenges. NETSPAR International Pensions Workshop. Tilburg, The Netherlands.
- 28 Piggott, J. (May 2012). Keynote Speaker. Ageing and Social Security. The 1st Aging and Social Security International Conference. Zhejiang, China.
- 29 Piggott, J. (April 2012). Living Longer, Working Longer: Challenges and Opportunities. Pensions: The Way Forward. Employees Provident Fund (EPF) International Seminar 2012. Kuala Lumpur, Malaysia.
- 30 Piggott, J. (November 2012). Population Ageing in Australia. Instituto de Estudos de Saúde Suplementar (IESS Conference). Sao Paulo, Brazil.
- 31 Ray, P. (December 2012). Keynote Speaker. Towards an Intelligent and Ubiquitous Healthcare Infrastructure. Annual Conference of the Computer Society of India. Kolkata, India.
- 32 Ray, P. (October 2012). Realizing Ubiquitous Healthcare in this World: Motivations and Challenges. International Congress on u-Healthcare. Geyoung-Ju, South Korea.
- 33 Reimondos, A., Utomo, I., McDonald, P. and Hull, T. (June 2012). STI/HIV Knowledge and Sexual Behaviour: Evidence from the 2010 Transition to Adulthood Survey of Greater Jakarta. European Population Conference. Stockholm, Sweden.
- 34 Sargent-Cox, K., Anstey, K.J. and Luszcz, M.A. (November 2012). Self-Perceptions of Aging Predict Major Health Events in Older Adults. The Gerontological Society of America. 65th Annual Scientific Meeting. San Diego, USA.
- 35 Sherris, M. (April 2012). Keynote Speaker. Global Developments and Lessons for Singapore. Singapore Actuarial Society and Life Insurance Association. Improving Retirement Security in Singapore Conference. Singapore.
- 36 Sherris, M. (August 2012). FCP and the Twin Peaks System in Australia. CICS Summer International Symposium. Seoul, Korea.
- 37 Veprauskaite, E. and Sherris, M. (July 2012). An Analysis of Reinsurance Optimisation in Life Insurance. The Annual Conference of the Asia Pacific Risk and Insurance Association. Seoul, Korea.
- 38 Veprauskaite, E. and Sherris, M. (September 2012). An Analysis of Reinsurance Optimisation in Life Insurance. The 1st European Actuarial Journal (EAJ) Conference, University of Lausanne, Lausanne, Switzerland.
- 39 Wesson, J., Clemson, L., Brodaty, H. and Reppermund, S. (November 2012). Sydney Memory and Ageing Study: LACLS-5 and AMPS in Older People. Allen's Cognitive Network Symposium. San Diego, USA.
- 40 Windsor, T.D., Mogle, J. and Sliwinski, M. (July 2012). Intraindividual Variability in Daily Self-Efficacy Beliefs: Findings from an Online Study of Midlife and Older Adults. International Society for the Study of Behavioural Development 2012 Biennial Meeting (ISSBD 2012). Alberta, USA.

SEMINAR PRESENTATIONS

- 1 Bartlett, H. (August 2012). The Ageing Research Agenda: Where are we now? ERA Virtual Seminar. Australia.
- 2 Bateman, H. and Thorp, S. (February 2012). The Paradox of Choice: Unravelling Complex Superannuation Decisions. CPS Seminar Series. Sydney, Australia.
- 3 Blackburn, C. (April 2012). Annuity Pricing and the Implied Price of Risk. CPS Seminar Series. Sydney, Australia.
- 4 Booth, H. (December 2012). New Developments in Mortality Forecasting: Coherent Forecasts for Subpopulations. ANU Research School of Finance, Actuarial Studies and Applied Statistics (RSFAS, CBE) Summer School. Canberra, Australia.
- 5 Capatina, E. (2012). Life-cycle Effects of Health Risk. Presented at the Macroeconomics Seminar, Economics Department at ANU, Canberra, Australia, February 2012 and the Applied Economics Seminar, University of Queensland, St Lucia, Australia, May 2012.
- 6 Capatina, E. (June 2012). Skills and the Evolution of Wage Inequality. Macroeconomics Lunchtime Workshop. Sydney, Australia.
- 7 Cho, D. (August 2012). An Analysis of Reverse Mortgage Payout Design. CEPAR Honours Workshop. Sydney, Australia.
- 8 Chomik, R. (August 2012). Mature-age Labour Force Participation. CPS Seminar Series. Sydney, Australia.

- 9 Fan, X. (November 2012). Retiring Cold Turkey. The University of Auckland Business School Seminar. Auckland, New Zealand.
- 10 Hanewald, K. (September 2012). Comparing Life Insurer Longevity Risk Management Strategies in a Firm Value Maximization Framework. Research Seminar of the Department of Economics, University of Parma. Parma, Italy.
- 11 Johar, M. and Maruyama, S. (2012). Externality and Strategic Interaction in the Location Choice of Siblings under Altruism toward Parents. Presented at the Rockwool Foundation. Copenhagen, Denmark, January, 2012; the University of Toyama, Toyama, Japan, February, 2012; the School of Economics Internal Seminar, UNSW, Sydney, Australia, March, 2012; the CERGE-EI (Centre for Economic Research and Graduate Education - Economics Institute), Prague, Czech Republic, November, 2012; the Tilburg University Economics Seminar, Tilburg, The Netherlands, April, 2012; the University of Copenhagen Economics Seminar. Copenhagen, Denmark, May, 2012; the University of Adelaide Economics Seminar, Adelaide, Australia, May, 2012 and the Nagoya University Economics Seminar, Nagoya, Japan, June, 2012.
- 12 Hanewald, K. and Sherris, M. (September 2012). Longevity Risk Management Research. Presented at the Joint Seminar of the Italian Institute of Actuaries and the University of Turin, and Collegio Carlo Alberto, Moncalieri, Turin, Italy.
- 13 Hanewald, K. (November 2012). The Impact of Family Structure on Risk Attitudes and Financial Planning. CPS Seminar Series. Sydney, Australia.
- 14 Hanewald, K. (October 2012). Developing Equity Release Markets: Risk Analysis for Reverse Mortgage and Home Reversion Products. Housing Markets Workshop, University of Tasmania. Hobart, Australia.
- 15 Keane, M. (June 2012). Income Taxation in a Life Cycle Model with Human Capital. Department of Economics Seminar Series, National University of Singapore. Singapore.
- 16 Kudrna, G. (June 2012). Macroeconomic and Welfare Effects of the 2010 Changes to Mandatory Superannuation. CPS Seminar Series. Sydney, Australia.
- 17 Kumru, C. (December 2012). Fiscal Policy and Behavioral Economics in DSGE Models – Social Security. The Department of Public Finance, National Chengchi University. Taipei City, Taiwan.
- 18 Kumru, C. (December 2012). Behavioral Economics. Institute of Economics, Academia Sinica. Taipei, Taiwan.
- 19 Kumru, C. (December 2012). Fiscal Policy for Population Ageing. The Department of Public Finance, National Chengchi University. Taipei City, Taiwan.
- 20 Maruyama, S. (November 2012). Understanding Returns to Birthweight. The Rockwool Foundation Research Unit. Copenhagen, Denmark.
- 21 Meyricke, R. (August 2012). Hedging Using Longevity Bonds: Costs, Benefits and Financial Risks. CPS Seminar Series. Sydney, Australia.
- 22 Ray, P. (May 2012). Towards Ubiquitous Healthcare in the World: eHealth Perspective. The University of the Sunshine Coast. Queensland, Australia.
- 23 Sarntisart, S. (July 2012). The Economic Implications of Religious Giving. Macro Seminar, Research School of Economics (RSE). Canberra, Australia.
- 24 Sherris, M. (September 2012). Portfolio Selection for Insurance Linked Securities: An Application of Multiple Criteria Decision Making. Seminar at Department of Economics, University of Parma. Parma, Italy.
- 25 Stevens, R. (November 2012). Modelling and Forecasting Healthy Life Expectancy. CPS Seminar Series. Sydney, Australia.
- 26 Tran, C. (August 2012). Market Inefficiency, Individual Mandate and Welfare: The U.S Healthcare Reform 2010. Melbourne University. Melbourne, Australia.
- 27 Sherris, M. (November 2012). Solvency Capital, Pricing, and Capitalization Strategies of Life Annuity Providers. University of Georgia, Terry College of Business. Georgia, USA.
- 28 Wesson, J. (July 2012). Issues for Managing Dementia and Delirium in Acute Care – Occupational Therapy Role. Leadership in Dementia Care Forum. Sydney Children's Hospital, Randwick, Australia.
- 29 Wesson, J. (September 2012). Functional Cognition and Everyday Performance Study: Preliminary Results. Centre for Healthy Brain Ageing (CHeBA)/BARP Forum. Randwick, Australia.
- 30 Wong, A. (August 2012). Impact of Pricing on Natural Hedging of Longevity Risk. CEPAR Honours Workshop. Sydney, Australia.
- 31 Zhou, Q. (August 2012). A Subordinated Markov Model for Australian Mortality Experience. CEPAR Honours Workshop. Sydney, Australia.

IN 2012 CEPAR CONTINUED TO BUILD ITS DOMESTIC AND INTERNATIONAL PROFILE AS WELL AS RAISE AWARENESS OF THE IMPLICATIONS OF DEMOGRAPHIC CHANGE.

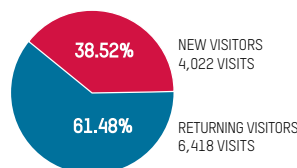
10, 439
WEBSITE VISITS IN 2012
(29,769 PAGE VIEWS)

We employed a number of strategies to engage industry, government, community groups and the general public, using both traditional and social media to publicise our research and activities and contribute to public debate. The centrepiece of our communications strategy this year was the launch of the new CEPAR website. We also introduced two new resources for end-users: the CEPAR Briefing Paper series and the CEPAR Fact Sheet series. Keeping our stakeholders regularly informed of our activities is also a priority and to facilitate this we began publication of a monthly newsletter in April 2012.

68 MEDIA ARTICLES
IN PRINT, RADIO, TV
AND ONLINE MEDIA

WEBSITE

In April 2012, CEPAR launched its new website www.cepar.edu.au. In eight months, it has attracted more than 10,000 visits from more than 4000 users. Offering a comprehensive overview of our research and activities, the website is our major communication platform.



14 MEDIA RELEASES
IN 2012

E-NEWSLETTER

The first edition of our monthly e-newsletter was issued in April 2012. The e-newsletter is designed to provide our subscribers with a regular update on CEPAR's activities. In addition, it provides our readers with an opportunity to discover more detail about our researchers, research projects and events. We have steadily built our readership over the last eight months and now have 260 subscribers across academia, industry, government and community groups. A key communication channel for CEPAR, we will continue to expand the audience in 2013.

142 TWITTER
FOLLOWERS

BRIEFING PAPERS AND FACT SHEETS

The CEPAR Briefing Paper series is designed to provide in-depth analysis of a particular issue for a non-academic audience. Our first briefing paper, *Mature-age labour force participation: Trends, barriers, incentives and future potential*, was released in September and distributed to our industry, government and community partners and made available on the CEPAR website. Further papers on Asia's ageing demographic; aged care; and retirement incomes are planned for 2013.

CEPAR Fact Sheets provide key facts and figures on particular topics of interest to our stakeholders. The first of these, the Aged Care Fact Sheet, was launched at the Aged Care Policy Dialogue on 4 December.

Both resources are available in print and on our website: www.cepar.edu.au/publications.aspx.

ENGAGED | CONNECTED | DYNAMIC
MULTIDISCIPLINARY | INNOVATIVE | GLOBAL



MEDIA

We regularly engage with the media to communicate the results of our research and promote CEPAR events and activities. CEPAR also provides expert commentary and opinion in public discussions of matters relating to population ageing. With experts from the fields of demography, psychology, economics, actuarial studies, sociology and epidemiology, CEPAR is gaining recognition among the media fraternity as a place for reliable expert commentary in these areas.

Our media appearances in 2012 include:

PRINT

China Social Security, *China Rural Social Security* November-December 2012, featuring Lu Bei.

Sydney Morning Herald, Money, *Catch 82: We're all living longer ... but can we afford to?*

9 November 2012, featuring Michael Sherris.

Australian Financial Review, *Siblings off the teat as Baby Bonus cut* 22 October 2012, featuring Peter McDonald.

Coffs Coast Advocate, *Aussie seniors suffering from a serious case of self loathing* 25 October 2012, featuring Kerry Sargent-Cox.

The same article was syndicated and appeared in the Daily Mercury, Coolum News and Toowomba Chronicle.

Women's Weekly, Health News, *Get moving, stay strong* October 2012, p196, featuring Lindy Clemson.

The Canberra Times, *Driving days coming to a slow stop* 15 October 2012, featuring Kaarin Anstey.

Australian Financial Review, *Don't fiddle with super, says Cooper* 10 September 2012, featuring John Piggott.

Australian Financial Review, *Plenty of pluses in a longer working life* 10 September 2012, opinion piece by John Piggott.

Health Matters, *Moving in the direction of better aged care* September 2012, featuring Hal Kendig.

Daily Mail UK, *How going out on a limb can cut falls: Simple exercises by the elderly can reduce chance of accident by a third* 8 August 2012, featuring Lindy Clemson.

Risk Management Today, *House price risk modelling – insights from a study on the Sydney property market*, 1 June 2012, by Katja Hanewald and Michael Sherris.

News Limited, National Features, *Property plans built on sand* 14 May 2012, Michael Sherris.

Sydney Morning Herald, Business Day, *SMEs in the demographic age* 9 May 2012, Michael Sherris.

Australian Financial Review, *Tax fiddle risks entire pension system* 30 April 2012, opinion piece by John Piggott.

Herbert River Express, General news, *Fun high on over 50s agenda* 18 April 2012, featuring Kaarin Anstey.

The Sydney Morning Herald, *People poorly informed on retirement choices* 9 April 2012, featuring Hazel Bateman.

The Daily Telegraph, *A super solution to some giant needs* 7 April 2012, by Michael Sherris.

The Daily Telegraph, *Ageing: Age-old issue needs fixing* 27 March 2012, by Lindy Clemson.

The Adelaide Advertiser, *Hitting the books to be older and wiser* 27 March 2012, featuring Kaarin Anstey.

Townsville Sun, *Seniors an adventurous bunch* 7 March 2012, featuring Kaarin Anstey.

Sunday Mail Brisbane, Escape, *Backpacking room* 19 February 2012, featuring Kaarin Anstey.

The same article was syndicated and appeared in the Sunday Herald-Sun, Melbourne.

The Sydney Morning Herald, *Right call: Individual factors influence price most* 11 February 2012, featuring Michael Sherris and Katja Hanewald.

Best Week Asia Pacific, *Acquisitions boost profit for QBE, IAG* 7 February 2012, featuring Michael Sherris.

The Daily Telegraph, *Congratulations for looking after your staff* 7 February 2012, opinion piece by Hal Kendig.

The Sydney Morning Herald, *Blueprint for wealth* 1 February 2012, featuring Michael Sherris.

ONLINE PUBLICATIONS

Medibank be. Magazine, *What you can do to reduce your risk of dementia* 18 December 2012, by Kaarin Anstey.

Knowledge@ASB, *Australia's superannuation has the country well placed* 22 November 2012, by John Piggott.

Knowledge@ASB, *Will we live too long to enjoy retirement?* 12 November 2012, by Michael Sherris.

Australian Ageing Agenda, *Positive thinkers live longer* 25 October 2012, featuring Kerry Sargent-Cox.

Aging Well, *Balance, strength training in everyday tasks can prevent falls* 15 August 2012, featuring Lindy Clemson.

ScienceAlert, *How to reduce falls in the elderly* 10 August 2012, featuring Lindy Clemson.

Mature Times, *Simple exercises can reduce fall risk* 8 August 2012, featuring Lindy Clemson.

The Conversation, *It's time to redefine the traditional working age* 28 September 2012, by Rafal Chomik.

Australian Ageing Agenda, *NSW embraces its ageing population* 10 July 2012, featuring Hal Kendig.

The Conversation, *Australian census: Women are living longer, and on less* 27 June 2012, by Rafal Chomik.

Knowledge@ASB, *Better policy needed for an older Australia* June 7th 2012, by Rafal Chomik.

The Conversation, *Enterprise migration agreements – Why won't Australians do the work?* 30 May 2012, featuring Peter McDonald.

Super Review, *Investors funding retirement with property appreciation in for a shock* 3 May 2012, featuring Michael Sherris and Katja Hanewald.

SeniorAU, *Drop in house prices – A warning to retirees* 3 May 2012, featuring Michael Sherris.

The Conversation, *Moving in the right direction for better aged care* 25 April 2012, by Hal Kendig.

The Conversation, *Healthy ageing, happy life: Lessons from China* 7 April 2012, by Colette Browning.

Knowledge@ASB, *State of mind: What's really in the balance in the crisis fallout?* 20 March 2012, featuring Kerry Sargent-Cox.

Knowledge@ASB, *Population ageing: How to turn around attitudes to older Australians?* 5 March 2012, featuring Hal Kendig and Julie Byles.

The Wall Street Journal Blog, *An age-old debate* 2 March 2012, featuring Michael Sherris.

CurtiseCall, *Sydney's property market awakes in 2012 to find the devil is in the details* 29 February 2012, featuring Michael Sherris and Katja Hanewald.

Knowledge@ASB, *House price risk: What's driving property values?* 31 January 2012, featuring Michael Sherris and Katja Hanewald.

RADIO

2UE Radio Sydney,
Mornings,
Can we afford to live longer?
9 November 2012, interviewed
Michael Sherris.

ABC Radio Canberra,
Mornings,
How will we fund old age?
9 November 2012, interviewed
Michael Sherris.

ABC South East South Australia,
Mornings,
Positive ageing and mortality
31 October 2012, interviewed
Kerry Sargent-Cox.

ABC Capricornia Queensland,
Mornings,
Positive ageing and mortality
31 October 2012, interviewed
Kerry Sargent-Cox.

ABC Radio National, Life Matters,
Positive ageing and mortality
30 October 2012, interviewed
Kerry Sargent-Cox.

ABC Radio, Sydney News,
Positive ageing and mortality
25 October 2012, featuring Kerry
Sargent-Cox.

ABC Radio, Melbourne Drive,
Positive ageing and mortality
25 October 2012, interviewed
Kerry Sargent-Cox.

ABC Canberra, News,
Research funding grants
20 October 2012, featuring
Kaarin Anstey.

2CC Canberra, Breakfast,
NRMA road safety trust study
11 October 2012, interviewed
Kaarin Anstey.

ABC Radio Perth, Breakfast,
***Population ageing and the
retirement age***
9 October 2012, interviewed
Rafal Chomik

ABC Radio Mid North Coast,
The Morning Show,

Population ageing and the retirement age

2 October 2012, interviewed
Rafal Chomik.

ABC South East NSW, Mornings,
***National Dementia
Awareness Week***

27 September 2012, interviewed
Kaarin Anstey.

2CC Canberra, Afternoons,
***National Dementia
Awareness Week***

26 September 2012, interviewed
Kaarin Anstey.

ABC Radio Adelaide,
***Preparing Australia for an
ageing population***

13 September 2012, interviewed
Hal Kendig.

ABC New England NorthWest
NSW, Mornings,
***Difference between Alzheimers
and Dementia and risk factors***

1 August 2012, interviewed
Kaarin Anstey.

ABC Radio, The World Today,
***Aged care reform with CEPAR
Investigator Hal Kendig and
Minister Mark Butler***

4 May 2012, Hal Kendig.

ABC PM Program,
***IMF calls on governments to
lift the pension age***

12 April 2012, John Piggott
and Hal Kendig interviewed.

6PR Breakfast with Steve Mills,
***How will changes to
superannuation rates affect you?***

20 March 2012, featuring
John Piggott.

ABC Canberra, Evenings
and ABC 666 Canberra,
***Brain decline commences in
middle age***

7 January 2012, interviewed
Kaarin Anstey.

ABC Radio National, Drive,
***Cognitive decline in older
Australians***

6 January 2012, interviewed
Kaarin Anstey.

TELEVISION

ABC News Breakfast,
Aged Care Policy Dialogue
4 December 2012,
interviewed Hal Kendig.

News Asia TV,
***Singapore extends the minimum
sum topping-up scheme***
12 April 2012, featuring
Michael Sherris.

SOCIAL MEDIA

CEPAR has a presence on
Twitter, Facebook and LinkedIn.
We regularly promote our
activities, events and research
through these social media
channels. We have seen steady
growth in our audience
culminating in 142 followers at
year end on Twitter from across
the finance, superannuation,
academic, public policy and aged
care sectors. We will continue to
grow our social media reach in
the coming year.

Details about our current research
and activities are available at
[http://cepar.edu.au/latest-
news.aspx](http://cepar.edu.au/latest-news.aspx)

PRESENTATIONS TO GOVERNMENT, INDUSTRY AND THE BUSINESS COMMUNITY

- 1 Anstey, K.J. (May 2012). Minding your Mind - the Evidence. COTA Australia Policy Forum 2012. Canberra, Australia.
- 2 Anstey, K.J. (October 2012). Issues Arising from Cognitive Capacities and Mental Health. FaHCSIA Roundtables on Workforce Participation and on Health and Care. Canberra, Australia.
- 3 Anstey, K.J. (April 2012). Using Data Synthesis Techniques to Answer Policy Relevant Questions in Ageing. Geriatric Medicine Unit VA Hospital. San Francisco, USA.
- 4 Booth, H. (October 2012). Health, Care and Social Networking. FaHCSIA Roundtables on Workforce Participation and on Health and Care. Canberra, Australia.
- 5 Booth, H. and Rioseco, P. (April 2012). Demographic Forecasting; and Social Networks, Ageing and Retirement. Networks and Ageing Project. Presentation at the ANU/Ernst and Young Networking Forum. Canberra, Australia.
- 6 Browning, C. and Kendig, H. (October 2012). Healthy Ageing and Health Service Use. FaHCSIA Roundtables on Workforce Participation and on Health and Care. Canberra, Australia.
- 7 Chomik, R. and Piggott, J. (October 2012). Morbidity and Mortality: Linking Retirement Age and Mortality. FaHCSIA Roundtables on Workforce Participation and on Health and Care. Canberra, Australia.
- 8 Hanewald, K. and Sherris, M. (April 2012). Statistical Models for Postcode-Level House Price Risk for Applications in Banking and Insurance. Financial Services Forum. Melbourne, Australia.
- 9 Hanewald, K. and Sherris, M. (May 2012). Longevity Risk Management Research. PriceWaterhouseCoopers. Melbourne, Australia.
- 10 Kendig, H. (August 2012). Capacity to Provide and Access Services Across Australia: Aged Care Reforms. Aged Care Continuum Committee for Economic Development of Australia. Melbourne, Australia.
- 11 Kendig, H. (September 2012). Empowering Seniors - Discovering their Strengths and Resilience, 'Consumer-Directed Care'. National Council of Social Services. 4th Annual Dr Robert C.K. Lawrence Eldercare Seminar. Singapore.
- 12 Kendig, H. (August 2012). The Imperative for Fundamental and Ongoing Aged Care Reform. Parliamentary Library Lecture. Canberra, Australia.
- 13 Kendig, H. (May 2012). Overview of research conducted by the ARC Centre of Excellence in Population Ageing Research relating to senior Australians. Older Australians Working Group. Canberra, Australia.
- 14 McDonald, P. (October 2012). Population Ageing: Mitigation or Adaptation? FaHCSIA Roundtables on Workforce Participation and on Health and Care. Canberra, Australia.
- 15 McDonald, P. (August 2012). The Preliminary Results of the Survey of Partners of Immigrants to Australia. Department of Immigration and Citizenship. Canberra, Australia.
- 16 McDonald, P. (April 2012). Housing Projections for Australia. National Housing Supply Council, Department of the Treasury. Canberra, Australia.
- 17 McDonald, P. (April 2012). Demographic Forecasting. ANU/Ernst and Young Networking Forum. Canberra, Australia.
- 18 McDonald, P. (April 2012). Estimated Resident Population. 30th Anniversary of ERP, Australian Bureau of Statistics. Canberra, Australia.
- 19 Nirmalendran, M., Sherris, M. and Hanewald, K. (April 2012). A Comparison and Economic Analysis of International Solvency Regimes for Annuity Markets. Actuaries Institute Financial Services Forum. Melbourne, Australia.
- 20 O'Loughlin, K. (October 2012). Paid and Unpaid Work and Care, Including GFC and Chronic Disease Impacts. FaHCSIA Roundtables on Workforce Participation and on Health and Care. Canberra, Australia.
- 21 Wesson, J. (July 2012). Getting Involved with Research in the Workplace. Agency for Clinical Innovation, Allied Health Clinical Innovation and Research in Aged Health Forum. Sydney Children's Hospital, Randwick, Australia.
- 22 Piggott, J. (October 2012). Mature Labour Force Participation. Human Rights Commission Advisory Panel on Positive Ageing. Sydney, Australia.
- 23 Wesson, J. (September 2012). Functional Cognition and Performance of Everyday Tasks in Older People. Aged Care Psychiatry Unit In-service. Sydney, Australia.

- 24 Woodland, A. and Kudrna, G. (October 2012). Modelling the Workforce Impact of the Age Pension and Superannuation. FaHCSIA Roundtables on Workforce Participation and on Health and Care. Canberra, Australia.

BRIEFINGS, COMMITTEE MEMBERSHIPS AND PARTICIPATION IN ROUNDTABLE AND PANEL DISCUSSIONS

- 1 Anstey, K. (December 2012). Panellist. Session One: Issues in Delivery Modalities (Ageing in the Home; Transitions; Family Support). Aged Care Policy Dialogue. Canberra, Australia.
- 2 Anstey, K. (September 2012). Appointed Committee Member of the Ministerial Advisory Council on Ageing. Canberra, Australia.
- 3 Bartlett, H. (August 2012). How to Strengthen our Approach to Drive the Growth of Regional Victoria and Elevate the Role of the Regional Cities in the State's Future Development. Government Briefing. OECD Meeting. Melbourne, Australia.
- 4 Bateman, H. (October 2012). Briefed AMP on the Influence of Presentation Arrangements on Choices of Retirement Products. AMP. Sydney, Australia.
- 5 Chomik, R. (November 2012). Discussion about Mature-Age Labour Force Participation. Institute of Australian Company Directors. Sydney, Australia.
- 6 Kendig, H. (December 2012). Panellist. Session One: Issues in Delivery Modalities (Ageing in the Home; Transitions; Family Support). Aged Care Policy Dialogue. Canberra, Australia.
- 7 Kendig, H. (September 2012). Ageing - Social Determinants of Health. Academy of Social Sciences Research Roundtable. Canberra, Australia.
- 8 Kendig, H. Membership to the Older Australian Working Group.
- 9 McDonald, P. (April 2012). Meeting with the Productivity Commissioner, Alison McClelland. Productivity Commission. Canberra, Australia.
- 10 McDonald, P. (April 2012). Population Policy for Australia. ACT Branch of the Australian Greens Party. Canberra, Australia.
- 11 McDonald, P. (August 2012). Projections of Housing Demand. Meeting with the National Housing Supply Council. Department of the Treasury. Canberra, Australia.
- 12 McDonald, P. (August 2012). Regional Migration Agreements. Meeting with Officers of the Department of Immigration and Citizenship. Department of Immigration. Canberra, Australia.
- 13 McDonald, P. (December 2012). Demographic Research Relating to Indonesia. AusAID. Canberra, Australia.
- 14 McDonald, P. (December 2012). Irregular Migration Research Advisory Group Meeting. Department of Immigration and Citizenship. Canberra, Australia.

END USER LINKS

- 15 McDonald, P. (December 2012). Panellist. Session Three: Issues in Policy Implementation. Aged Care Policy Dialogue. Canberra, Australia.
- 16 McDonald, P. (June 2012). Greater Jakarta Transition to Adulthood Study. Presentations to Indonesian Government officials, Members of Parliament and NGOs. Jakarta, Indonesia.
- 17 McDonald, P. (June 2012). Meeting in relation to the proposed Indonesian Gender Law. Indonesian Senate. Jakarta, Indonesia.
- 18 McDonald, P. (June 2012). Meeting regarding an ARC-funded study of the demography of Indonesia. Statistics Indonesia and the Indonesian Population and Family Planning Board, UNFPA. Jakarta, Indonesia.
- 19 McDonald, P. (June 2012). Meeting with the Commonwealth Government Enquiry Group on Asylum Seekers. Canberra, Australia.
- 20 McDonald, P. (June 2012). Membership of the Research and Advisory Committee of National Seniors. Canberra, Australia.
- 21 McDonald, P. (June 2012). Preparatory discussion relating to the Migration Council of Australia. Scanlon Foundation Advisory Group. Canberra, Australia.
- 22 McDonald, P. (June 2012). Revisions to Migration Statistics. Meeting with the Australian Bureau of Statistics. Canberra, Australia.
- 23 McDonald, P. (2012). Membership of the Ministerial Advisory Council on Skilled Migration. Canberra, Australia.
- 24 McDonald, P. (November 2012). Meeting with the Director of the United Nations Population Fund (UNFPA). Canberra, Australia.
- 25 McDonald, P. (October 2012). The Future of Infrastructure in Australia. Interview with Evans and Peck. Canberra, Australia.
- 26 Piggott, J. (30 July and 26 October 2012). Meetings with AMP to discuss research programs. Sydney, Australia.
- 27 Piggott, J. (October 2012). Meeting with Chris Roberts, Director, Economics and Policy, PwC, to discuss collaborative work on superannuation. Sydney, Australia.
- 28 Piggott, J. (September 2012). Health Policy Roundtable: Health Systems and Ageing in the Asia-Pacific Region: Challenges and Policy Options for the Future. Canberra, Australia.
- 29 Piggott, J. and Bateman, H. (November 2012). Meeting with pension experts from the Korean Institute of Health and Welfare and the Ministry of Health and Welfare to discuss developing an adequate 'safety net' pension. Sydney, Australia.
- 30 Piggott, J. Membership of Advisory Committee for the Review into Commonwealth Legal Barriers to Older Persons Participating in the Workforce or Other Productive Work. Australian Law Reform Commission. Sydney, Australia.
- 31 Piggott, J., McDonald, P., Kendig, H., Sherris, M., Cumming, R.G. and Sargent-Cox, K. (August 2012). Meeting with the Hon Susan Ryan AO, the Age Discrimination Commissioner. Sydney, Australia.
- 32 Piggott, J., Browning, C., Gordon, A., Booth, H., Kendig, H., Anstey, K.J. and Capatina, E. (September 2012). Teleconference with Medibank to discuss collaborative research. Sydney, Australia.
- 33 Piggott, J., Gordon, A., Browning, C., Byles, J. and Kendig, H. (November 2012). Aged Care Teleconference with Medibank. Sydney, Australia.
- 34 Sherris, M. (December 2012). Panellist. Session Two: Financing Models (Fiscal Projections; the Role of the Family Home). Aged Care Policy Dialogue. Canberra, Australia.
- 35 Wesson, J. (October 2012). Working group to develop an information brochure for consumers and carers, supporting the implementation of the SMHSOP Acute Unit Model of Care Project. Dept of Health, Mental Health Unit, Specialist Mental Health Services for Older People Unit. Teleconference, Sydney, Australia.
- 3 Anstey, K. (October 2012). Preventing Dementia – The Latest Science. National Gallery of Australia's Art and Dementia. Canberra, Australia.
- 4 Byles, J. (August 2012). Our Shared Future: Health Care for Older People. Newcastle Hospitals Congress. Newcastle, Australia.
- 5 Chomik, R. and Piggott, J. (July 2012). Mature Labour Force Participation. Australian Conference of Economists (ACE 2012). Melbourne, Australia.
- 6 Chomik, R. (November 2012). Introduction to Population Ageing. The Annual Conference of the Victorian Commercial Teachers Association (Comview201). Melbourne, Australia.
- 7 Keane, M. (June 2012). Invited Lecture: Structural and Reduced Form Policy Effects. Programme Evaluation for Policy Analysis. National Centre for Research Methods, University College London (UCL). London, U.K.
- 8 McDonald, P. (April 2012). Immigration to Australia. Wentworth Forum of the Australian Liberal Party. Canberra, Australia.
- 9 McDonald, P. (May 2012). Address to Liberal Party students, Menzies Research Centre, Parliament House. Canberra, Australia.
- 10 McDonald, P. (December 2012). Invited Lecture: Implications for Security of International Demographic Trends. National Security College, Australian National University. Canberra, Australia.
- 11 Mitchell, O.S. (July 2012). Implications of Population Aging: Perspectives from the US. Australian Conference of Economists (ACE 2012). Melbourne, Australia.
- 12 Piggott, J. and Chomik, R. (September 2012). Mature Labour Force Participation. Australian Economic Forum 2012. Sydney, Australia.
- 13 Piggott, J. and Chomik, R. (September 2012). Mature Labour Force Participation. Older Workers and Business Growth Conference. Sydney, Australia.
- 14 Piggott, J. and Chomik, R. (October 2012). Asia's Changing Demographic: Challenges and Opportunities. The 50th Anniversary Australia - Japan Joint Business Conference. Sydney, Australia.
- 15 Sargent-Cox, K. (July 2012). ARC Centre of Excellence in Population Ageing Research and CRAHW Research Streams. Ageing Well in the ACT: Research Showcase Program. Canberra, Australia.
- 16 Waern, R. (June, 2012). Nutrition across the Lifespan. The University of Sydney. Sydney, Australia.
- 17 Wesson, J. (April, 2012). Environment and Dementia. Eastern Sydney Dementia Advisory Service, Dementia Care Commitment Behaviours of Concern Session. Sydney, Australia.

PUBLIC TALKS

- 1 Anstey, K. (June 2012). The Impact of Cognitive Ageing, Cognitive Impairment and Dementia on Older Driver Safety. Older Driver Task Force, NSW Government Transport for NSW. Sydney, Australia.
- 2 Anstey, K. (June 2012). Invited Sax Oration, Brain Training, Fish Oils, Social Engagement or Medications? What is the Evidence for Population-Based Approaches to Dementia Prevention? Public Health Association of Australia. Canberra, Australia.

NEW GRANTS AWARDED IN 2012

OUR RESEARCHERS
WERE SUCCESSFUL
IN SECURING
ADDITIONAL
GRANT FUNDING
IN 2012.

THE FOLLOWING
GRANTS WERE
AWARDED TO
RESEARCH TEAMS
WHICH INCLUDED
CEPAR CHIEF
INVESTIGATORS OR
RESEARCH FELLOWS:

ARC GRANTS

PIGGOTT, J., ANSTEY, K.J.,
CUMMING, R., KEANE, M.P.,
KENDIG, H.L., MCDONALD, P.F,
SHERRIS, M., WOODLAND, A.D.

ARC Post Award
Funding 2012:

Total amount awarded:
\$ 1,245,156

ANSTEY, K.J., CHERBUIN, N.
BAMMER, G., BUTTERWORTH,
P.J., BAKER, C.M, HATHERLY,
C.G., KELLY, P.M.

ARC Linkage 2012:
Improving methods of
grading, transferring
and facilitating translation
of knowledge in
population health.

Total amount awarded:
\$315,000

MCDONALD, P., HULL, T.,
UTOMO, I., KHOO, S.E., HUGO, G.

ARC Linkage 2012:
Population and development
in Indonesia: Achieving
greater certainty for
evidence-based
policy making.

Total amount awarded:
\$495,000

OTHER AUSTRALIAN COMPETITIVE GRANTS

MEROM, D., CUMMING R.,
ANSTEY, K.J., RISSEL, C.,
CERIN, E.

NHMRC Project Grant 2012:
The effectiveness of social
dancing as a strategy to
prevent falls in older people:
A cluster randomised
controlled trial.

Total amount awarded:
\$575,592

BEI LU
Academy of Social
Sciences Australia-China
Joint-action Exchange
2012 Grant:

Total amount awarded:
\$6,500

CENTRE FINANCE

2012 FINANCIAL STATEMENT

INCOME		2012 (\$)	
ARC Centre Grant distributed as follows:		2,004,179	
University of New South Wales	1,344,910		
Australian National University	330,162		
University of Sydney	329,107		
ARC Post Award Funding distributed as follows:		460,026	NOTE 1
University of New South Wales	205,026		
Australian National University	255,000		
NSW Science Leveraging Fund distributed as follows:		347,609	NOTE 2
University of New South Wales	160,674		
University of Sydney	186,935		
University of New South Wales		678,000	
Australian National University		13,730	NOTE 3
University of Sydney		130,000	NOTE 4
Commonwealth Treasury		50,000	
AMP		50,000	
Academy of Social Sciences Australia		6,500	
Emerging Researchers in Ageing Conference		-2,000	NOTE 5
Total income		3,738,044	
EXPENDITURE			
Salaries		2,254,769	
Scholarships		105,324	
Travel (including visitors' expenses)		291,975	
Emerging Researchers in Ageing initiative: annual contribution		69,803	
Events		60,387	
Other research related expenses		37,766	
Recruitment and relocation expenses		47,648	
Centre administration, consumables and IT maintenance		38,507	
Equipment		49,336	
Website, branding and marketing		94,800	
Total expenditure		3,050,315	
Opening balance at the beginning of 2012		1,937,499	
Closing balance as at 31/12/2012		2,625,228	

ESTIMATES OF FUTURE EXPENDITURE

IN 2013 THE CENTRE PLANS TO CONTINUE TO FUND A NUMBER OF SUCCESSFUL INITIATIVES IMPLEMENTED IN 2011 AND 2012 AS WELL AS EXPAND ITS ENGAGEMENT WITH STAKEHOLDERS AND THE WIDER COMMUNITY.

Salaries for Early Career Researchers (ECRs) will continue to account for a large portion of the Centre budget. As the Centre reaches maturity, it is expected that close to \$3 million will be spent on salaries and scholarship stipends. We also anticipate investment in new initiatives.

The activities described below will draw on 2013 income as well as funds carried forward from 2012.

PERSONNEL

It is anticipated that the Centre will spend approximately \$2.9 million in 2013 on research personnel, most of whom will be ECRs. Of this total, about \$700,000 will be used to fund new staff appointed in 2013; the remainder will be used to support continuing personnel.

Twenty five students will be supported by CEPAR scholarships in 2013 at a total cost of \$132,000. This includes five scholarships for new honours students and eight new supplementary PhD scholarships awarded in 2013 as well as continuing students.

MENTORING OPPORTUNITIES FOR ECRs AND STUDENTS

CEPAR will continue to support the Emerging Researchers in Ageing (ERA) initiative in 2013 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 the 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 2013 is approximately \$135,000.

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 2013 on travel and research assistance to support the development and execution of collaborative research projects.

NOTE 1: In 2011 the ARC awarded CEPAR \$1,245,156 in post award funding for the support of early career researchers 2012 - 2017. The ARC paid the full amount to UNSW on trust in 2011. Only funds available to be spent in 2012 in accordance with the proposal are shown here.

NOTE 2: 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 is contingent on approval by the funding body. Only funds released in 2012 plus interest earned on funds held at UNSW are shown here.

NOTE 3: \$106,420 was received in 2012. This included \$92,690 that was reported as 2011 income but not received until 2012. ANU has undertaken to make a delayed payment of \$116,520 for 2012 in the first quarter of 2013 (this will be recorded as income in the 2013 financial statement).

NOTE 4: \$149,375 was received in 2012. This included \$19,375 that was reported as 2011 income but was not received until 2012.

NOTE 5: Overpayment of sponsorship funds reported as income in 2011 returned to sponsor in 2012.

ESTIMATES OF FUTURE EXPENDITURE

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 multidisciplinary international population ageing conference, *Analysing Population Ageing: Multidisciplinary Perspectives and Innovation*, will be mounted by the Centre in July. Also in July, we will join forces with the School of Risk and Actuarial Studies at UNSW to host the 21st Annual Colloquium of Superannuation Researchers. To build our relationship with Zhejiang University and the Chinese Academy of Social Sciences, as well as create opportunities for ECRs, we will organise two workshops focused on intergenerational solidarity. In late September the Centre will co-host a conference on the *Economics of Population Ageing* at Harvard and, in collaboration with the Research Institute for Policies on Pension and Aging, a joint conference focused on pre-funded national pension plans is

planned for November. In addition we will sponsor special sessions on ageing-related issues at major conferences. In several cases, these initiatives are co-funded with other organisations.

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 and fact sheets aimed at the wider community are 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 2013 is about \$600,000.

OTHER

About \$450,000 will be spent on supporting the operation of the Centre. Salaries for administrative personnel account for the bulk of funds.

An estimated \$20,000 will be spent on data acquisition and a further \$20,000 on the development of a LIEF proposal for an Australian panel survey to capture the behaviour and circumstances of the older demographic.

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