



Policy Implications of the Ageing of Australia's Population

Conference
Proceedings

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The Productivity Commission

The Productivity Commission, an independent agency, is the Australian Government's principal review and advisory body on microeconomic policy and regulation. It conducts public inquiries and research into a broad range of economic and social issues affecting the welfare of Australians.

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Foreword

In March 1999, the Productivity Commission and the Melbourne Institute of Applied Economic and Social Research jointly convened a conference on the policy implications of the ageing of Australia's population. This cooperative venture drew together researchers, policy makers and practitioners from different fields.

The conference explored a broad range of key issues to do with ageing, including its effects on economic growth, government revenue and expenditure in the long run, superannuation, health, the provision of long term care and housing arrangements. The conference papers inspired a robust and fruitful discussion and we hope that this publication will stimulate and guide development of research in this important field.

This publication brings together the papers, discussants' comments and summaries of general discussion in each session. In a few cases, authors have revised their papers in the light of discussants' comments. However, the majority of discussants' comments relate to the published version of the conference paper.

We are grateful to everyone who participated in the conference, particularly those who prepared the papers contained in this publication. We are also grateful to those involved in organising the workshop and editing the conference proceedings. The organising group comprised Peter Dawkins and David Johnson from the Melbourne Institute and Meredith Baker, Patrick Laplagne, Penny Taylor, Craig de Laine and Janet Savvides from the Productivity Commission. Broad conference and editorial direction was provided by an editorial committee, comprising Meredith Baker, Peter Dawkins, Robert Kerr and Lynne Williams, while the detailed editing of the publication was undertaken by Meredith Baker and Craig de Laine with support from Patrick Laplagne, Karen Thomson and Michael Feild.

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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AFLCS	Australian Family Life Course Study
AIHW	Australian Institute of Health and Welfare
AURDR	Australian Urban and Regional Development Review
AWOTE	average weekly ordinary time earnings
COAG	Council of Australian Governments
CPI	consumer price index
CSHA	Commonwealth State Housing Agreement
DB	Defined Benefit
DC	Defined Contribution
DCS	Department of Community Services
DHFS	Department of Health and Family Services
DHHCS	Department of Health, Housing and Community Services
DHHLGCS	Department of Health, Housing, Local Government and Community Services
EPAC	Economic Planning Advisory Commission
EU	European Union
HACC	Home and Community Care program
HLE	high life expectancy

HREOC	Human Rights and Equal Opportunity Commission
IDS	Income Distribution Survey
GDP	gross domestic product
MLE	medium life expectancy
NATSEM	National Centre for Social and Economic Modelling
NILF	not in the labour force
OECD	Organisation for Economic Cooperation and Development
PAYG	pay as you go
PC	Productivity Commission
QIAS	Quality Improvement and Accreditation System
RIMGROUP	Retirement Income Modelling Group Superannuation Model
RIMHYPO	Retirement Income Modelling Hypothetical Model
RIM	Retirement and Income Modelling Unit
TAFE	Technical and Further Education
UK	United Kingdom
US	United States

1 Introduction

Gary Banks

In this UN designated International Year of Older Persons it will come as no surprise to hear that the world population is ageing. This is not a new development (demographers tell us it has been going on for centuries) but it is accelerating. What is perhaps less well known is that, while developed country populations are older on average than those in developing countries, the latter are ageing even more rapidly: there is convergence at work. So population ageing is both a universal and a perennial phenomenon for the world community.

However unwelcome ageing may be to individuals, it should be recognised as a sign of success for society as a whole. Improvements in life expectancy resulting from better health and aged care mean that more people than ever can look forward to a productive and fulfilling later life. While these growing numbers pose some policy challenges, they also constitute an asset and an opportunity. Elderly Australians embody a wealth of knowledge, experience and understanding which is valuable in economic as well as human terms. Their contribution to the wellbeing of the nation has the potential to expand if underpinned by appropriate policies. In this sense, it is important to consider not only the costs, but also the benefits of population ageing, and how they can be better harnessed.

1.1 Uncertainties ahead

Admittedly, the costs are easier to identify and quantify. This has contributed to the sense of urgency pervading the issue of ageing populations. Countries like Italy, Germany and Japan are already contemplating the prospect of population declines in the next few years, brought on by very low birth rates. In combination with declines in retirement ages and in male labour force participation rates, low population growth has meant that, in most developed countries, net additions to the labour force are trending downwards. This can only accelerate when the ‘baby boom bulge’ reaches pensionable age.

This amounts to a decline in the number of workers relative to non-workers or — to use the jargon — an increase in the ‘dependency ratio’. It has been viewed in some

influential quarters — notably international agencies such as the World Bank and OECD — as a cause for concern, because it is primarily through the work of those in employment that a nation's wealth is created. Further, it is through the goods and services that workers produce, and the income they generate, that governments can afford to provide the safety net to which people in the so-called first world have become accustomed. It is also, ultimately, only because of the efforts of those in employment that our superannuation fund managers can afford to pay us interest on our contributions. So even self-funded retirees are reliant on the work of others for their material welfare, if less visibly.

By the standards of developed countries, the Australian population is neither very old nor ageing very rapidly. Nonetheless, as noted, the entry into retirement of baby-boomers is only a few years away and will at the very least put pressure on Australia's social expenditure levels. How *much* pressure is open to debate, and some of the papers in this publication should enlighten us considerably on this point. To give an order of magnitude, one of the Productivity Commission's predecessors — the Economic Planning Advisory Council (EPAC) — estimated some years ago that expenditure on education, health, employment and welfare/pensions would rise from 21 per cent of gross domestic product (GDP) in 1990 to 24 per cent in 2051 (EPAC 1994). While this is only an increase of three percentage points, it must be kept in mind that real GDP will be much higher in 2051 than it is now. In constant dollars per capita, this increase translates into a doubling of the social expenditure 'burden' facing each Australian man, woman and child.

On the positive side, an increase in real GDP also means an increase in the tax base, with the result that taxation may not have to rise too far to meet increased public outlays on pensions, health and aged care. EPAC put the required increase in average taxes between 1990 and 2051 at eight per cent, an increase not dissimilar to historical trends and below international trends (EPAC 1994). Thus, the 'intergenerational warfare' predicted by some, as a result of significantly higher taxes required to finance the retirement of baby boomers, may fail to break out.

However, this does not obviate the need for some hard decisions. In its latest survey of Australia, the Organisation for Economic Cooperation and Development (OECD) suggested that the concurrent increase in pensions and health care outlays would pose a risk to government finances (OECD 1998). Specifically, it estimated that without policy changes, these trends would mean that Australia's budget balance net of interest payments would deteriorate from a surplus of 1.8 per cent of GDP in 2000 to a deficit of 1.4 per cent of GDP in 2030. While acknowledging that this potential deterioration was not as drastic as for many other member countries, the OECD nonetheless called for a number of reforms designed to soften the impact of ageing on public finances. These centre around the need to make people more self-

sufficient in the areas of retirement incomes, health care and aged care. The papers in this publication, together with discussants' comments and the general discussion, provide some thought-provoking reading on these topics.

Beyond the most obvious and immediate impact of ageing on the government sector, the wider issue of the implications of ageing for long term economic growth must be considered. As mentioned earlier, the output of goods and services is the real driver of a nation's capacity to 'afford' its aged. No consensus appears to have emerged in the economics profession concerning the impact of ageing on economic growth.

Our knowledge of the impact of ageing on the determinants of economic growth remains fragmented. For instance, life cycle theory suggests that an older population will dissave relatively more; combined with the greater public dissaving predicted by the OECD, a reduction in the national saving rate thus looms as a possibility. Simulations carried out by Miles (1999) for the United Kingdom and Europe, support this prospect. However, his simulations also point to a rise in the capital-labour ratio, as population ageing and an increased consumption of leisure cause the aggregate labour supply to fall. Thus, a fall in the national saving rate need not equate with a reduction in the amount of physical capital per worker and, hence, labour productivity. This is especially true in an era when foreign capital is more plentiful and mobile than ever.

Nevertheless, the OECD predicts that a slow-down in labour force growth will decrease Australia's rate of economic growth from 2000 onward (OECD 1998). Two factors may help mitigate this outcome:

- first, some debate still surrounds future changes in attitudes to retirement. Clearly, a reversal of today's trend towards early retirement would alter the outlook on labour force growth; and
- second, there is the *quality* of labour to consider. Research carried out by the Productivity Commission for this conference suggests that Australia's stock of human capital (adjusted for quality) will be higher in future — as more educated cohorts join the labour force. This is likely to have a positive influence on labour productivity. The precise extent to which this growing human resource will impact on growth is not known, although 'new growth theory' would give it a significant role.

All in all, the wide range of contradictory influences linking population ageing and economic growth makes long term predictions difficult. Some of these influences are explored in this publication.

Finally, the natural tendency of economists to bring everything back to GDP per person must be curtailed when considering the effects of ageing. While income per

head is obviously an important indicator of wellbeing, it is not the only one. Community wellbeing is and will continue to be influenced by the broader economic and social environment in which we live; thus, the quality and affordability of services such as housing, transport and education in an ageing Australia must also be examined. As the Commission's work for the Australian governments' review of services demonstrates, performance in such areas depends on both efficiency and effectiveness measures, including equitable access.

It follows from all this that the impact of ageing on the Australian economy, while significant, is also likely to be multifaceted. In particular, the interplay of economic factors, both with each other and with demographic and social factors, makes it hard to restrict the analysis.

1.2 Why a conference?

The importance of these issues led the Productivity Commission, in collaboration with the Melbourne Institute of Applied Economic and Social Research (the Melbourne Institute), to convene a conference on the policy implications of the ageing of Australia's population — the proceedings of which comprise this publication.

A key objective of the conference was to help the Commission do its job better, by exposing it to current knowledge in an important policy area and hence allowing it to incorporate this knowledge in its own research and policy advice to governments. By hosting academic researchers, as well as public and private practitioners — and publishing the conference proceedings — synergies can also be achieved in the exchange of ideas.

The quality of that exchange was enhanced by using a roundtable format for the discussions and by ensuring that all relevant disciplines and sectors were represented. Demographers, planners, health experts, actuaries and representatives of welfare organisations, for example, participated in the conference. Such a multi-disciplinary approach, combined with international and Australian expertise, is particularly important when considering the impact and policy implications of ageing. A broad perspective of this kind, informed by social as well as economic considerations, is of particular value to both the Commission and the Melbourne Institute.

The Commission's fundamental role is to help inform policy choices that will enhance Australia's productivity and living standards over the long term. From experience, the Commission is most able to add value to the policy debate in areas where problems are complex or contentious, where economic and social dimensions

are intertwined, and where there is a potentially high payoff to the Australian community from ‘getting it right’. A rigorous analytical approach, informed by extensive public consultations and input, is the best way to shed light on such problems, and thus prepare the way for policy progress.

Examples of such an approach can be found in the Commission’s current work program, which includes inquiries into the gambling industries, the regional impact of national competition policy, and the provisions of the *Broadcasting Services Act 1992*. In these, as well as in its other inquiries and activities, the Commission takes an economy-wide or community-wide view, and is required to consider the social repercussions of its policy recommendations.

The Melbourne Institute is also concerned with the interplay of economic and social issues. In many ways, the preoccupations of the Melbourne Institute resemble those of the Commission. We were therefore pleased to have joined forces with the Melbourne Institute in the organisation of this conference. As a leading research institution, the Melbourne Institute is able to draw on considerable in-house and external academic expertise, domestically as well as internationally. In that, it complements well the Commission’s capacity to attract public sector specialists and practitioners in the field.

1.3 Paving the way for future policy

A stocktake of our knowledge of the economic impact of ageing — imperfect though it is — is probably overdue at the dawn of a century which will see more elderly people in Australia than ever.

If the changes brought about by ageing are as dramatic as predicted by some, then it is critical that they be analysed early and comprehensively, so appropriate policies can be devised within the requisite lead times. The introduction of the Superannuation Guarantee shows that fairly radical measures can be accepted by the community if it is kept informed of what is at stake. If major reforms are likely to be needed in the area of aged care or health, for instance, critical issues will have to be identified, priorities set and timeframes determined.

Conversely, if we conclude that ageing-induced changes are unlikely to be greater than have been faced successfully in the past, the current sense of alarm could be alleviated and policy development would obviously involve less urgency.

The conference was convened and structured around a series of themes which are reflected in this publication. The papers presented in part II set the scene for the conference, focusing on ‘big picture’ issues — specifically, the effects of ageing on

public policy and economic growth, and the demographic dimensions of ageing. Part III examines issues associated with modelling the impact of ageing. The papers in part IV discuss issues associated with ageing and retirement incomes. Part V sets the scene for the papers presented in subsequent sections, which focus on various aspects of social expenditure. The papers in part VI discuss the consequences of ageing for dependence or independence, focusing on the roles of families, individuals and governments. The papers in part VII examine the consequences of ageing for health and family service expenditures. Finally, part VIII includes papers that discuss the consequences of ageing on education, housing and transport.

In addition, a list of conference participants is provided in appendix A. Appendix B comprises a background paper (prepared by Commission staff for the conference) which was forwarded to authors when their papers were commissioned. Appendix C outlines some suggestions for further research.

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2 Ageing in the twenty-first century: implications for public policy

Paul Johnson

2.1 Introduction: problematising population ageing

Population ageing is very different from other crises — such as global warming, the AIDS pandemic, or pollution — faced by our societies at the end of the twentieth century. In the case of climate change, or disease, or environmental degradation, there is massive scientific uncertainty about causes and cures, but with ageing there is no mystery. We know why our societies are ageing — a general and long run decline in fertility rates, combined with a more gradual increase in life expectancy at higher ages. These trends have been common to most industrial nations for the past 100 years, and have spread to almost all countries in the last third of the twentieth century. Both these trends are, of course, to be welcomed. Lower fertility means less population pressure on food supply and other resources; lower mortality means longer life. We also know that this ageing of the population will not alter the individual physiological process of ageing, so it is unlikely to pose unforeseen scientific or medical challenges (although medical and scientific advance in the twenty-first century will almost certainly ameliorate the physical process of ageing for the older individual). If there are no new bio-medical challenges created by the demographic process of population ageing, and if the underlying fertility and mortality processes are to be welcomed, how come ageing has been problematised — transformed into something to worry about, even into a ‘crisis’?

The reason, I think, is that it is widely believed that ageing will alter established economic and social relationships by affecting both the rate of growth of the economy and the distribution of resources within the economy. Ageing is not alone in promising these effects — the globalisation of markets, the communications revolution, and bio-technology are all frequently identified as potential but unpredictable formative elements of social and economic life in the twenty-first century. But whereas these other prospects are more usually seen in positive rather than negative terms, population ageing is almost always seen as a problem because

it is commonly believed it will reduce economic growth, and effect a redistribution that will reduce utility for at least some groups in society.

The scope for, and utility of, public policy responses to an ageing of the population depends heavily upon the validity of these negative presumptions. They may be valid, but we should not assume, just because ageing is often discussed in alarmist language, that the alarm is justified. Moreover, even if the alarm is justified, it is not axiomatic that there should be a dramatic public policy response. It may be that demographic and market mechanisms will exhibit a high degree of homeostasis, and will automatically generate countervailing responses through shifts in preferences and relative prices. This seems to have been the case in the recent past. Thirty years ago, Ehrlich (1968) was prophesying mass starvation and complete depletion of natural resources by the end of the century as a consequence of population growth. In fact the demographic projections were reasonably sound, but today there is no global food crisis, and the real price of many commodities such as oil and most metal ores are at their historic lows. Technology and preferences together have prevented an imagined problem from emerging. We need to be *very* sure that today's imagined problems really will develop into tomorrow's practical crises before developing and applying public policy 'solutions' that may impose negative and distortionary economic and social costs.

It is crucial, therefore, that we give as much critical attention to assumptions about the socioeconomic impact of ageing as to the evaluation of potential public policy interventions. With this in mind, I will address in turn four distinct questions:

1. Do we have the necessary knowledge to evaluate assumptions about growth and distribution?
2. Are the negative assumptions valid?
3. How can adverse consequences of ageing be ameliorated by policy interventions?
4. What policy interventions might be appropriate in Australia?

2.2 Evaluating assumptions about growth and distribution

The impact — positive or negative — that the population structure may have on growth and distribution is one of the oldest topics in economic analysis. Yet after 200 years of discussion there is as yet no consensus about either the strength or the direction of the links between the demographic and economic systems. Thomas Malthus in 1798, and more recent neo-malthusians have argued that rapid growth inevitably leads to resource depletion and economic decline. On the other hand, the

population economist Julian Simon believes that there is ‘consistently strong evidence of the absence of a negative causal effect’ of population growth on economic growth (Simon 1989). Simon and others argue that population growth stimulates economic activity through innovation, division of labour, and economies of scale. Despite these strong disagreements among economic demographers, most formal models of economic growth from the 1950s to the 1980s did not give much prominence to demographic factors. Typically, population entered as a limiting factor on the rate of labour force growth, and the dynamic work in the models was done by savings and capital accumulation. This theoretical reluctance to treat demography as a dynamic economic factor gained support from empirical tests (for example, Kelley 1988) which failed to identify any consistent relationship between population and economic growth rates for a wide range of countries and time periods.

Over the past decade, however, a growing interest in the phenomenon of population ageing, together with a revival in economists’ interest in theories of economic growth, has produced new insights into the relationship between population and growth. There is clear evidence, from the recent economic experience of South East Asian economies, of a positive relationship between the growth of the working age population and of national income (Dowrick 1995; Bloom and Williamson 1997). If this were a general effect, then it would imply that an ageing population experiencing low or negative growth rates of people of working age would suffer an adverse effect on overall economic performance. However, the mechanism driving the positive demographic–economic link for the Asia Pacific region from the 1970s to the 1990s is not clear. The positive impact on growth may come via the labour force, but it may also come through savings effects, or from technology, or structural change. Moreover, the currently fashionable ‘new growth theory’ emphasises the quality of inputs as much as the quantity, so it is not obvious that the size of the workforce should have a greater impact on growth rates than the quality of human or social capital. At present we still have a lot to learn about long run mechanisms of economic growth, and how demographic and economic systems interact. There must, therefore, be a fair degree of uncertainty associated with projections about the impact of ageing on economic growth.

This uncertainty is exacerbated in the case of Australia because it is a small, relatively open economy. Any long run macroeconomic projections for Australia need to locate the country within a long run equilibrium model of the world economy, and such long run multi-country models are even more sensitive to key underlying assumptions than are short run national macro models. Macroeconomic modelling has not had good press recently — a result of both enduring gaps between model projections and empirical outcomes, and of intellectual disagreement between advocates of structural and non-structural approaches to modelling (Diebold 1998).

Given the contestability of most long run macro economic model projections, I think it would be unwise to base any element of public policy changes solely on the long run view of economic growth generated by such models.

The impact of population ageing on the distribution of economic resources is easier to analyse and model. When looking at distribution either in cross-section or over time, and whether looking at transfers between individuals or cohorts or economic sectors, we can use both macro-simulation and micro-simulation models to examine economic and demographic interactions, assuming a certain stability in both behaviour and environmental conditions. This type of analysis can produce plausible projections about income, poverty, pensions, welfare expenditure, taxation and so on. Even so, there can be considerable uncertainty and disagreement about the assumptions built into such models. Take, for instance, the case of informal care for the elderly. Since most informal care is provided by family members, it seems likely that the size and structure of kinship groups in the future will have a strong influence on the supply of informal care, and thus on the demand for paid care services. But the future kinship ties of older people are difficult to predict. High current rates of cohabitation, of divorce and remarriage, and of step-parenting mean that older people in the twenty-first century are likely to have more lateral and descendant kin than do older people today, despite the low fertility rates prevailing in the last third of the twentieth century. But these kinship links will, on average, be more attenuated than in the past (Wachter 1997). Whether this will have a positive or negative effect on the availability of informal care is unknown.

So do we have the necessary knowledge and techniques required to evaluate assumptions about the impact of ageing on growth and distribution? I would say less so when it comes to projecting the interaction of ageing on macroeconomic performance than with more micro issues concerned with distribution. It is important to bear in mind this uncertainty when considering public policy responses to population ageing. I would suggest that policy change or intervention should be considered only when the likely outcomes are believed to be generally desirable, even if projected demographic-economic interactions turn out to be incorrect. For instance, policies to increase the savings rate or improve the health of the older population may ameliorate some of the projected problems associated with population ageing. However, if they are likely to produce positive efficiency or welfare outcomes even in the absence of the anticipated problem, then there are doubly good reasons for implementing the policy change.

2.3 Are the negative assumptions valid?

Given the degree of uncertainty that must surround our understanding of the future interaction of demographic and economic systems, is it possible to say anything coherent about the long run consequences of population ageing? And more specifically, are the negative assumptions that pervade the literature on the economics of ageing valid?

The most frequently identified negative feedback mechanisms from ageing to the macroeconomy are through an adverse impact on savings/investment and on labour productivity. Nearly all macroeconomic models incorporate some version of the life cycle saving hypothesis, which posits that individuals will first accumulate a stock of assets during their working years, which they then decumulate during retirement. By extension, as a national population ages, it is likely first to experience an increase in the net private savings rate as more people enter their high-earning, high-saving years from 40 to 55 (just what appears to be happening now in the United States, as middle-aged baby-boomers save heavily for their retirement, thus driving up equity prices, and driving down yields, to record levels). This is followed by a decline in net private savings as more people enter retirement and begin to draw upon their assets. However, the life cycle hypothesis has proved difficult to verify empirically at both the individual and the aggregate level (Borsch-Supan and Stahl 1991). Moreover, given the wide variation in savings rates between countries and over time, it is not obvious that we can expect the demographic structure to be a key determining factor of private saving rates in the future.

Another mechanism for the reduction in national savings rates is the anticipated dissaving by the public sector, as rising public pension expenditure and popular resistance to higher taxes or contributions forces governments to increase the current account deficit, thus reducing the flow of funds into private sector investment. This effect is, of course, contingent on the absence of effective reform of public expenditure and revenue systems — an issue I will return to later. However, according to some macroeconomic projections, future dissaving may not be such bad news as it at first appears. As the rate of growth of the working-age population falls, or becomes negative, then less net investment is needed to maintain the capital–labour ratio at its prevailing level. If this effect is large, as suggested by the results of some multi-country models (Cutler et al. 1990; Higgins 1998), then the aggregate savings rate in the future may need to fall rather than rise to keep the economy in balance. This is a controversial conclusion; the World Bank (1994), for instance, argues strongly in the opposite direction, and there are other reasons relating to distributional issues that point towards the need for an increase in the net saving rate. On balance, I feel there is too much uncertainty, both empirical and

theoretical, to suppose that ageing will necessarily have a negative impact on long run savings.

The impact of ageing on labour productivity is also ambiguous. An increase in the ratio of older to younger workers is not necessarily bad for the economy. A meta-analysis of worker performance has found no negative relationship between age and productivity below the age of 60 or 65 (Warr 1994). Older workers tend to be more reliable and have better interpersonal skills; younger workers are more adept at very rapid production line and information processing work. Since service sector employment draws more heavily on interpersonal skills than does most manufacturing, it seems possible that an ageing workforce will be well suited to a further shift towards services in the advanced economies. On the other hand, an ageing population will require a significant proportion of service sector expansion to occur in the health and social care sectors. Health care, and even more so social care, is a labour intensive activity with limited scope for productivity growth. For an older person who requires assistance with the activities of daily living, such as bathing or getting dressed, there are relatively few ways in which capital can be substituted for the time of a care worker. An expansion of the social care sector looks set to restrict overall rates of productivity growth in the future.

It is commonly assumed that ageing will have a negative effect on the aggregate supply of labour, even if the productivity effect is ambiguous, because of declining labour force participation rates among the expanding cohorts of older males. It is certainly true that participation rates for males aged over 50 fell in all industrialised countries throughout the 1970s and 1980s (Kohli et al. 1991). However, this trend towards early retirement has flattened out in many countries since the early 1990s, though not in Australia (see appendix B). Survey evidence from a number of countries indicates that a substantial part of this move towards early retirement reflects a choice by workers to trade work for leisure (OECD 1998). On the other hand, it is also clear that the retirement decision is strongly influenced by public and private pension system rules that allow individuals to retire before the 'normal' retirement age, often on an actuarially preferential basis (Lumsdaine, Stock and Wise 1997). As long as economic growth is positive, the income effect will continue to induce older workers to retire, but policy interventions which change normal retirement ages and early retirement eligibility rules provide scope for significantly changing the effective price at which leisure is substituted for work, and thus for increasing labour force participation at older ages.

Overall, I think there is little reason to believe that ageing will inevitably reduce the savings rate, or lower labour productivity, or significantly limit the size of the labour force. All these effects are possible, but there is sufficient uncertainty about long run outcomes to caution against taking these outcomes as problems against which a

policy response should be launched. When we turn attention to the impact of ageing on distribution, however, some negative conclusions seem unequivocal.

Population ageing will inevitably increase the demand for hospital services, for nursing homes, for social care, for pension payments. This would not create an distributional problem if the additional demand for 'old age services' resulted in the market automatically increasing supply. When demand for other goods or services increases, this is normally regarded as an opportunity rather than a problem. If people want more cars, Nissan and Toyota respond by hiring more workers to produce more vehicles. If people want more overseas holidays, they switch their expenditure away from domestic vacations, and the airlines provide more seats on more flights. Why should an increase in demand for 'old age services' be any different?

The reason is that many of these 'old age services' are currently provided not by the market, but via the public sector. Many older people are relatively poor and are unable to purchase from their own resources a socially acceptable standard of living or level of social and health care. These are provided to a large extent by the public sector, either directly through the supply of services, or indirectly through transfer payments (such as the age pension). This expected increase in the demand for old age services will, therefore, have large distributional consequences through its impact on government expenditure and tax rates.

It should be stressed that many of the distributional consequences of population that have a bearing on public policy are a function of the relative poverty of the older population. The fundamental importance of personal resources in old age can be seen by considering the case of Britain's most famous 98 year old — Her Majesty Queen Elizabeth the Queen Mother. Last year she fell and needed a hip replacement. Surgery was carried out swiftly, and she spent several weeks receiving intensive nursing care, and a much longer period of physiotherapy. She has made a good recovery, and recently has even performed one or two royal duties. Inevitably, however, her mobility is somewhat restricted and, like most 98 year olds, she requires some assistance with activities of daily living. She has a caring and supportive family, but they do not help with many of the basic chores of life: her daughter, the Queen, has rather more experience of walking on red carpets than of cleaning them. Yet the Queen Mother's need for assistance is not a burden on the public social services because she is served by a large personal staff. As a very wealthy member of one of the richest families in the country, she can, and does, purchase whatever assistance she needs. If all 98 year olds had the resources of the Queen Mother, then there would be no need for public pensions, community care services, or publicly financed health care. But, of course, most 98 year olds are relatively poor; they are likely to be widows who have only basic pension

entitlements which do little more than cover food and fuel costs, and they depend on the state to pay for some or all of their housing, social care and health care. And their numbers are increasing in Australia, as in all other developed countries.

An expansion of private pension and insurance provisions today may well reduce the future dependency of older people on public transfers and services, but little can be done over the next ten or twenty years to alter this position. In fact Australia may have less opportunity for reducing this public expenditure burden than many other countries, because of the low relative income of retired households. Table 2.1 shows the relative disposable equivalised income of individuals in households where the head is aged 65 and above, for a range of OECD countries. Although this type of comparison is fraught with methodological and definitional complexities, it seems that the relative income of pensioner households in Australia is low by international standards, and has declined over the past two decades. The Superannuation Guarantee Charge (SGC) will no doubt help change this, but its impact will be felt only gradually over the next two decades. At present, and despite the fully means-tested basis of the Australian age pension, around half of the aged population receives a full pension, with another quarter receiving a reduced pension. There is no immediate prospect of increasing the private resources of the aged population in Australia, and so little chance of reducing reliance on public sector transfers.

This heavy dependence of retired Australians on the public sector is not just a function of the extensive take-up of the age pension. Table 2.2 reports estimates compiled by Creedy (1998) of combined Commonwealth and State social

Table 2.1 Relative disposable equivalised income of individuals in retired households

	<i>Relative income 1994^a</i>	<i>Change in relative income, 1975–94</i>	<i>Population share of age 65+ households</i>
Australia	68.2	-5.7	13.1
Canada	87.3	-0.4	16.6
Denmark	73.4	4.7	16.2
Finland	78.1	1.1	14.7
France	95.0	0.8	14.7
Germany	89.3	4.3	19.4
Italy	84.7	2.9	17.6
Japan	93.1	-0.8	12.2
Netherlands	87.5	-8.9	14.9
Norway	73.7	4.0	14.8
Sweden	89.3	16.5	17.6
United States	91.9	6.4	14.2
Unweighted average	84.3	2.1	15.5

^a The relative disposable equivalised income for all households in each country is set at 100.

Source: OECD (1998).

Table 2.2 Social expenditure costs per year per head, 1990

	<i>Age pension</i>	<i>Other aged assistance</i>	<i>Unemployment benefits</i>	<i>Other social security</i>	<i>Health</i>	<i>Education</i>	<i>Employment</i>	<i>Total</i>
0–15	0	4	0	883	443	913	2	2 245
16–24	0	2	384	346	443	1 529	165	2 870
25–39	1	2	300	423	602	303	60	1 690
40–49	6	3	211	503	565	141	38	1 466
50–59	57	6	215	1 088	942	58	25	2 390
60–64	1 139	12	184	1 729	1 579	24	13	4 681
65–69	2 430	31	0	2 041	2 185	16	0	6 703
70–74	3 368	60	0	1 626	3 255	16	0	8 324
75+	4 168	263	0	1 135	6 111	12	0	11 689

Source: Creedy 1998.

expenditure per capita, by age of recipient. These estimates do not include all elements of public social expenditure; for instance, they omit housing outlays, because these cannot be apportioned by age. In addition, they overemphasise the extent to which public expenditure as a whole is skewed towards older people. Many public services, such as defence, are effectively consumed equally by all citizens, and other items of expenditure, such as grants for inward investment by foreign companies, are implicit employment subsidies towards people of prime working age. Nevertheless, the data in table 2.2 show that the age pension never dominates per capita public social expenditure for people over retirement age; other social security benefits and health care expenditures are of equal or greater significance. Neither of these types of expenditure are likely to be much affected in the medium term by an increase in the level of private saving and insurance for old age. In consequence, social expenditure in Australia is likely to increase its share of gross domestic product (GDP) from around 20 per cent today to 27 per cent by 2031 (Creedy 1998). So, despite considerable uncertainty about the economic impact of ageing and how to model/project the future, some negative assumptions (particularly in relation to future public expenditure levels and tax rates) appear to be plausible. What can be done in response?

2.4 What can governments do?

There is a wide range of public policy responses to population ageing available to governments. In this section I will review some of the strategies adopted in other countries, before moving on in the final section to consider what might be appropriate in the case of Australia. Since demographic and economic conditions, and current public policy regimes, vary considerably among developed countries, it cannot be assumed that policies which have been successfully implemented in one place will be either appropriate or successful if tried elsewhere. I will first look at

policies that respond to macroeconomic concerns relating to the labour force, savings and public finances, and then turn to attempts that have been made to increase the resources and the social and economic choices available to older persons.

It is a commonplace that governments can do little to alter long term national demographic trajectories. Attempts elsewhere to raise fertility rates, or to prevent them following the downward trend common since the 1960s, have been unsuccessful. However, immigration can be thought of as a (short run) substitute for fertility in limiting the growth rate of the older population, and Australia, with its large net immigration flows, could use immigration policy to manage its overall rate of ageing. Higher immigration would tend to increase the labour supply and, depending on the entry criteria adopted, might improve the skills base of the workforce. The support ratio (the number of workers relative to each retired person) would increase, and the per capita tax burden necessary to support public transfers to the elderly would be reduced. On the other hand, public investment would probably need to rise to accommodate a large number of migrants, and this could exacerbate any general deficiency in the level of private savings. Moreover, immigration cannot solve the fiscal problems associated with ageing, because immigrants age too, and they also tend rapidly to conform to the host population's fertility rate. The most that a higher level of immigration can do is shift the fiscal problems some decades into the future, but it can do that only if the additional immigrants are fully employed, and thus contributing to the tax base. Since the goal of full employment is not easy to reconcile with the rapid population growth implied by an increase in the net immigration rate, changing immigration policy as a response to population ageing seems foolhardy.

A potentially important response to the labour force consequences of population ageing is to change work and retirement incentives. Many public and private pension schemes encourage early retirement and penalise deferred retirement because benefits are not strictly related to contributions and years of employment (Blondal and Scarpetta 1998). In addition, the number of older people drawing disability benefits has increased in most industrialised countries, despite reported improvements in both age-specific health status and mortality. The OECD (1998, p. 47) has caustically remarked that 'it is hard to believe that a third or more of those aged 55–64 in Austria and some northern European countries are incapable or working, when a far smaller proportion is so designated in other countries'. A harmonisation of labour force withdrawal rules across both public and private pension schemes and other forms of public non-employment benefit schemes could drastically reduce the opportunities for early retirement. But while this may be a desirable policy goal from the point of view of public expenditure, it may have wide ranging negative effects. It would prevent employers using the rules and incentives

of pension schemes as a form of severance pay (Lazear 1983), and it would impose unemployment on some marginal older workers.

A different tack would be to enhance the stock of human capital by encouraging re-training among older workers. Much of the rhetoric about lifelong learning is premised upon the belief that skills age more rapidly than people, and that older people need additional training to keep themselves productive in fast changing modern economies. However, a cross-country study by Casey (1998) found that employees aged 45–54 receive as much employer-sponsored training as those aged 26–45, and that measured skill levels remain fairly steady throughout working years. Skills begin to tail off from ages 55–60, but the reason they do so is not age *per se*, but rather the relatively low foundation skills of cohorts now close to retirement. I am sure that lifelong learning is a desirable goal for developed economies to aspire to, but I think the scope for it to have a major impact on labour productivity in ageing societies is slight.

Governments can also attempt to reduce reliance on public services and transfer payments by restricting access and by increasing private resources in old age. Over the past decade, most OECD countries have reduced current or future public pension expenditure by reducing the generosity of payments, increasing the number of years needed to qualify for a public pension, and increasing the degree of advance funding by encouraging or requiring current workers to pay into a private pension scheme (OECD 1988). Increasing the level of private old age saving is a necessary condition for the successful reduction of public pension expenditure, since otherwise the income of future cohorts of pensioners would decline. In the UK the reduction in the relative value of public pension payments since the early 1980s has not been matched by a substantial increase in private pension saving, particularly among the bottom third of the income distribution. This has exacerbated the potential pension shortfall for today's lower paid workers — something that the UK Government has recently proposed to remedy through a mixture of persuasion and tax incentives rather than compulsory savings (UK Department of Social Security 1998).

It is difficult to determine how responsive private retirement savings are to tax breaks or to exhortation. Traditional economic assumptions (based on the life cycle hypothesis) imply that if individuals choose to save more through personal retirement saving plans, they will save less in other personal financial assets and there will be no net increase in personal savings. However, detailed longitudinal savings data for the US show that for the most part these traditional economic assumptions are inconsistent with observed individual behaviour; Venti and Wise (1997) find no apparent offset to the measured increase in personal retirement saving in the US since 1984. Much of this additional saving has been directed into

401(k) pension plans which have been established by employers to allow employees to contribute pre-tax dollars to qualified personal retirement plans. By 1989, after just a decade of operation, contributions into 401(k) plans exceeded contributions into either conventional defined benefit or defined contribution plans, and these contributions represented new, incremental household saving (Poterba 1997). This US experience shows that it is possible to increase private retirement savings without compulsion. However, the responsiveness of private savings is likely to vary significantly between countries because of differences in tax regimes and in the structure and management of savings institutions, so it should not be assumed that this positive US experience is readily exportable.

I have argued so far that the social and economic choices available to older persons can be maximised by ensuring that they have adequate financial resources to purchase the goods and services they require; this is why I have emphasised the importance of pensions and income in old age. However, in Australia as elsewhere, many retired people are, and will continue to be, dependent on public transfers and public services. Maximising their choice in old age means changing the way in which public transfers and services are delivered so that they become more responsive to the needs of older people. In the UK, for instance, there has been a deliberate attempt in the past decade to reduce the level of institutionalisation of older people by expanding access to domiciliary care, and by developing standardised forms of need assessment. This policy innovation matches with attitudinal research which shows clear preferences among older dependent people to remain in their own home when possible. However, the practical achievements of this innovation in community care have been well below expectations because (public) resources have been inadequate to meet the revealed demand for domiciliary services. This UK experience shows that structural reform of services will not necessarily improve outcomes in the presence of binding resource constraints. Although some efficiency gains have been achieved, they have not matched the increases in demand arising from an expansion in the number of people over 75 together with a continued increase in the labour force participation of married women who have traditionally supplied the majority of informal care.

One further way in which the choices of older people can be increased is through regulation. Governments can create a multitude of inclusionary and exclusionary thresholds by means of legislation — for instance, planning regulations can insist that new buildings provide access to people with disabilities; employment legislation can require similar facilities in the workplace; anti-discrimination legislation can outlaw age-specific recruitment. But this type of legislative intervention is not costless. Designing wheelchair access in a new shopping centre may involve little marginal expenditure, but retro-fitting the same into a 1950s factory would likely be enormously expensive. Preventing age discrimination in

employment can enhance employment prospects for older workers, but as many US universities have found, if old professors will not retire, young professors can not be hired, with the result that the age gap between students and faculty rises. Using all means possible to increase the social and economic choice of older people would be uneconomic, and would impinge in some cases on the choices available to the non-elderly. The difficulty comes in determining where to draw the line.

Finally, let me say something briefly about reform of public pension systems. This subject has received massive coverage from the World Bank, the OECD and other organisations over the past five years, and there is no need to go over the same ground. I would wish to make just three general points. First, it is obviously sensible for national pension systems to adjust revenue and expenditure streams so that they are in long run financial balance; hence the widespread implementation of pension reforms in the 1990s. But, second, it is not necessary for countries to aim for strict intergenerational equity in public pension systems. Attitudinal surveys indicate that people tend not to evaluate public pension systems according to the tenets of generational accounting. The idea that each birth cohort articulates its own distinct politico-economic interests is a popular one with social scientists, but in practice interpersonal relationships within families and communities cut across these neat cohort boundaries. Third, retrenchment in public pension schemes will only be successful in the long run if alternative forms of private provision for old age more than compensate for any loss of public pension income, since when the baby boomers retire, they are likely to have higher consumption expectations than current cohorts of retirees. In a number of countries, for instance the UK and New Zealand, it is far from obvious that actual or projected public pension retrenchment has been matched by appropriate increases in (largely voluntary) private old age saving.

2.5 What public policy responses might be appropriate in Australia?

Australia has managed, either by historical chance or brilliant foresight, to avoid the most pressing public pension finance problems faced by many OECD countries. The means-tested basis of the age pension, together with the compulsory old-age savings introduced with the Superannuation Guarantee, mean that Australia faces very low rates of future public pension expenditure growth, together with a rapidly expanding private pension asset base (table 2.3). The combination of a means-tested safety-net and compulsory old-age savings comes close to the ‘ideal type’ of pension structure advocated by the World Bank (1994). But this does not mean that the retirement saving regime in Australia is perfect. I have already indicated that uncertainty about the relationship between population ageing, economic growth and distribution should make us hesitant about developing radical public policy responses. But there

may be many points of detail in relation to pensions or employment or care policies that warrant reform on simple efficiency grounds, regardless of the future demographic trajectory of society. I want to mention three types of public policy interventions — reform, regulation and innovation — which might be appropriate in Australia. I will take these examples of possible intervention from the distinct areas of pensions, labour and long term care.

Four elements of the Superannuation Guarantee have already attracted considerable negative comment from academic observers — the bizarrely complex tax structure, the opportunity to withdraw assets as a lump sum, the low preservation age, and the omission of self-employed workers from the scheme (Atkinson, Creedy and Knox 1995; Bateman and Piggott 1997). The first of these creates massive lack of transparency, such that few people other than consulting actuaries can determine the true level of tax on retirement savings, or the optimal array of savings instruments. Lump sum withdrawal and the low (though gradually rising) preservation age provide an incentive for people to retire early, binge on their accumulated assets, and then dip back into the age pension five or so years later. I do not know how big a problem this is in practice, but the incentive structure is clearly inappropriate for a compulsory savings system intended to provide a secure income stream in old age. The exclusion of the self-employed appears to provide a loophole (which may be of growing significance as labour markets become more flexible, and self-employment rates rise) for some people to avoid retirement saving; again, I do not know how big an issue this is in practice, and it would require detailed longitudinal income and asset data to resolve the issue. However, I wish to focus on two other aspects of the superannuation system that seem to me to be equally important, which have attracted less comment, and which provide scope for public policy intervention — these are the management of superannuation funds, and competition within the superannuation industry.

Table 2.3 Projected annual growth rates of public pension expenditure, selected OECD countries, 1995–2050

	<i>1995–2010</i>	<i>2010–30</i>	<i>2030–50</i>
Australia	–0.3	1.5	0.7
Canada	0.1	3.7	–0.3
France	–0.9	3.8	0.9
Germany	0.7	4.7	1.0
Japan	3.0	3.8	3.1
New Zealand	–0.7	3.1	1.5
Sweden	0.6	2.6	–0.5
United Kingdom	0.7	0.3	–1.4
United States	0.4	2.1	0.4

Source: Kalisch and Aman (1998, p. 58).

Current superannuation legislation is highly paternalistic. Unless savers contribute to an excluded (self-managed) superannuation fund, which represent just 340 000 of the 18.8 million superannuation accounts (Clare and Liondis 1999), they have little control over how their assets are invested or managed. This is because these funds operate as trusts. Trust law developed in medieval England in order to protect the interests and assets of orphans, children and the feeble minded, who were deemed incapable of managing their own affairs. Superannuation legislation continues to distance the worker from his or her retirement savings by interposing a board of trustees who are required to manage the assets entrusted to them in a 'prudent' manner. It is therefore difficult, and in many funds impossible, for savers to exercise any real investment choice. This extreme paternalism — which effectively treats retirement savers like children — seems to run counter to the general thrust of the Superannuation Guarantee which is premised upon the idea of individuals taking responsibility for their own retirement savings. It is also out of touch with the financial realities of modern life. Many Australians today enter into complex and long term financial transactions to buy houses and life insurance, and they do so in a market which is regulated, but in which they have a very wide range of choice and freedom of action. Why individuals should be considered responsible enough to manage their house mortgage over several decades, but not responsible enough to manage their retirement savings over the same decades, is unclear. I feel that serious attention should be given to reforming the trust law basis of superannuation funds in order to give more responsibility and choice to retirement savers. The challenge, for both the government and the superannuation industry, is to find a way of enhancing the investment choice of savers while maintaining the enviably low cost ratios of the large industry funds.

The second feature of the Australian retirement saving system that deserves attention is the nature of competition within the superannuation industry. A limited amount of choice between superannuation funds exists for some employees in some States. If paternalism is reduced and choice is further increased, then savers will need clear criteria in order to choose between different funds. One obvious criterion that funds can use to compete with each other is the rate of return. However, the headline rate of return is not necessarily the best guide to the desirability of alternative superannuation funds, because they may have widely varying risk exposures. The recent travails of Barings and Long Term Capital Management have shown how initially small errors in the derivatives markets can have catastrophic outcomes. In a competitive market, the quest by superannuation funds for higher returns could lead to a rush into high yield, high risk investments reminiscent of the Savings & Loans fiasco in the US. I can think of two policy responses to this potential problem. One would be to develop a standardised set of risk accounting protocols, so that each fund would be required to state its riskiness as well as its rate of return relative to the industry average. The second would be to establish a

compulsory mutual insurance system across all superannuation funds, which would bail out any fund when its rate of return fell some fixed level below the industry average. But crucially (and unlike the US Pension Benefit Guaranty Corporation) the insurance premia should be risk adjusted, so that the overall rate of return in high risk, high yield funds would in effect be adjusted for the risk profile of the investment portfolio through the higher insurance premia levied on this type of portfolio.

In the labour market, I think the scope for active policies to respond to the conditions of an ageing society are limited, because the impact of ageing on the labour market cannot readily be predicted. The general goal for public policy, here as elsewhere, should be to remove distortions which bias individual work decisions. There may be, however, some additional potential for policy intervention in terms of regulation and standard setting in the supply of care services. At present most formal care is provided by low paid, low skill care workers. While the scope for productivity improvements in care services is limited by the personal nature of the tasks, the scope for increasing value added is large. Care workers have close and repeated, often daily, contact with their clients, and are thus in an ideal position to assess and monitor needs, and manage the client's welfare. To do this, ideally the care worker would have a portfolio of skills which might include counselling, needs assessment, physiotherapy, health monitoring, nutrition, and more. Government may have a role to play here by setting standards — as it has done in the past with midwives, nurses, doctors and social workers. This could lead to a significant improvement over time in the quality of care provided to older persons, without significantly increasing public expenditure.

Finally, I think there may be scope for policy innovation in areas where existing arrangements are deemed unsatisfactory. One such area is the provision of and payment for long term care. This is a contentious issue in many countries, as costs are rising, and funding methods are frequently thought to be inadequate, or inequitable, or both. Some countries, such as Germany, have introduced public compulsory long term care insurance. The UK Royal Commission on Long Term Care (1999) rejected insurance, but really fudged the whole question of finance by saying that rising costs should be covered by general tax revenue. Australia faces a similar dilemma; costs are rising, an asset based means test is considered by many people to be unfair, and the market for private long term care insurance is underdeveloped.

I think a strong case can be made for public provision of long term care, because the intergenerational risks associated with long run bio-medical advances which may drastically alter future disability and survival chances at higher ages are difficult to re-insure against in the private market. But it makes sense for the state to claw back

some of its expenditure through claims it can exercise on the assets of older people, since public welfare systems are supposed to improve the welfare of recipients rather than subsidise intergenerational bequests. In Australia, this asset base of retired people is very large. The combination of high rates of home ownership and the lump sum nature of the Superannuation Guarantee gives retired Australians very high ratios of assets to income (table 2.4). Furthermore, these high asset-to-income ratios are found right across the income distribution. The absence of an effective asset test on access to long term care means that tax payers collectively are subsidising substantial intergenerational transfers of assets. This is a massively regressive tax policy, and one which compounds the already strong fiscal incentives to over-accumulate real estate.

So far Australian voters seem to prefer to subsidise intergenerational bequests rather than to levy long term care charges on asset-rich elders, but the issue is sure to return to the political arena in the future, for the simple reason that the total long term care budget is large and growing. Rather than wait for the financial pressure to reach some (politically determined) break point, it would be better to develop a stable financial regime for long term care. One possibility that might be looked at is a system whereby the state operates a claw back against the assets of people who receive long term care, but in which individuals (or their families) can buy insurance to protect some or all of these assets. This insurance should not be given the mawkish name of long term care insurance, because that would not be its true purpose. It should be called bequest insurance, because its purpose would be to ring-fence assets rather than to provide care. Voluntary bequest insurance would, I think, be much easier to ‘sell’ to an electorate than voluntary or compulsory long term care insurance; it would, in effect, be a voluntary tax on the rich which would have zero incidence on low income, low asset households.

Table 2.4 Wealth-to-income ratios for two person household with head aged 67, by income quintile

	<i>All</i>	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>
Australia	13.4	15.3	11.3	12.1	12.1	15.0
France	11.6	11.0	9.2	9.3	7.7	15.8
Italy	6.9	6.3	5.8	6.2	6.3	7.6
Japan	15.6	20.6	17.3	15.2	14.9	14.6
Germany	4.7	3.4	4.1	4.3	4.8	5.4
Netherlands	3.9	5.2	2.2	2.5	3.9	4.9
Sweden	3.4	4.5	2.8	2.5	3.3	3.9
United Kingdom	7.8	6.8	6.8	8.4	9.2	7.5
United States	7.8	9.0	8.1	8.9	9.0	6.7

Source: Kalisch and Aman (1998, p. 61).

2.6 Conclusion

In this paper I have argued that much of the alarmist discussion of the consequences (particularly the economic consequences) of population ageing is overblown. It is possible to develop enormously pessimistic and enormously optimistic scenarios; often the difference in projected outcomes depends upon slightly different initial conditions which are magnified by compound growth over three or four decades. In many cases I think we lack the knowledge or understanding to adequately differentiate between competing projections of the impact of ageing on the economy. I also think that the manner in which projections are presented and discussed — typically by comparing point estimates of demographic or economic ratios for the 1990s and some future date such as 2030 — gives a false impression of the difficulty of adjusting to the change. Our societies have experienced massive economic and social changes over the past forty years which are of an equivalent magnitude, but which have been accommodated by largely unplanned adjustments to existing patterns of behaviour. If, in Britain in 1951, it had been predicted that over the next forty years the manufacturing sector would collapse from over 50 per cent to under 25 per cent of the workforce, or that the divorce rate would rise to the point that one third of all marriages would end in divorce, then these prospective trends would have been seen as unsustainable, and there would have been a call for urgent ameliorative action by the government. As we all know, these changes did occur, but without creating economic misery or social collapse.

This does not mean that there is no role for public policy. Getting public revenue and expenditure, particularly in relation to the pension system, into long run balance is important, but Australia has already largely solved, or finessed, this particular issue. There is also, as I have indicated, scope for reform, regulation and innovation in public policy in response to population ageing, but this is mainly with respect to existing and identifiable market imperfections. It is also important that public policy reform in areas not directly connected to population ageing are assessed for their impact on or interaction with an ageing society. In the US in the 1980s, for instance, a desire to increase long term saving for old age led to the introduction of 401(k) pension plans. But at the same time, pressure on the Internal Revenue Service to reduce the spiralling budget deficit led to large changes in corporate taxation which significantly reduced contributions into company pension schemes. In Germany in the mid-1980s, the finance ministry was encouraging older people to stay in the labour market in order to reduce pension costs, but the employment ministry was offering early retirement subsidies in order to reduce unemployment rates. There may be a need for explicit coordination of policy across government departments to avoid such problems; ageing is not a matter solely for departments of social security. But nor is population ageing an issue that needs to be at the centre of all public policy discussions. In Australia ageing is not a ‘crisis’ as suggested by the World

Bank (1994), nor is it even that 'complex and formidable set of interrelated challenges' proposed by the OECD (1998). Ageing promises to change some social and economic relationships and interactions over the next 30 or 40 years, but these relationships are not cast in stone. They have always been subject to change, development and renegotiation; ageing represents a continuation, rather than a break with, this historical trend.

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3 Demographic change and Australian economic growth to 2020

Steve Dowrick

3.1 Introduction

What are the implications for economic growth of an ageing Australian population? There are several ways to approach this question. We can examine the labour supply implications and use a growth accounting approach to predict a slowdown in growth: fewer workers supporting relatively more dependents will produce less on a per capita basis. We can also take account of the impacts of ageing on savings, investment, productivity growth, etc. to modify the predictions of the first approach. Alternatively we can look at population ageing as part of the demographic response of Australians to social and technological change whereby ageing is as much an effect as a cause.

Recent theoretical analyses of endogenous fertility and endogenous growth suggest that declining fertility and increased investment in human capital (education and research) go hand in hand. The demographic consequence is an ageing population. The economic consequence is that real growth *per capita* may be increasing. So we might expect ageing and economic growth to be positively rather negatively related. On the other hand, population ageing that is driven by increased life expectancy for the retired population may reduce *per capita* economic growth unless savings and labour force participation increase to offset the increase in age dependency. These issues are discussed in the following section of this paper.

In section 3, an empirical survey suggests that the ageing of the Australian population may be associated with up to 10 per cent reduction in real output by 2020. However, declining birth rates imply that population will be some 9 per cent lower than would have otherwise been the case. So economic growth *per capita* may not be much affected by the combination of demographic changes which are predicted for the next 20 years.

3.2 Some economic theory

Starting with the more general approach, what are the circumstances affecting the demographic profile? Rising income levels and advances in medical technology make it both feasible and affordable for working-age adults to purchase a longer life span than that of the previous generation. These workers were born in the baby boom decades. They have inherited a better stock of physical capital than their parents, albeit perhaps a depleted natural environment. They are better educated than their parents. Women have caught up with or surpassed the educational attainment of men, and given increased opportunities to work outside the home for an almost equal wage they have been choosing to have fewer children and spend longer in the workforce.

Over the next 20 years we expect this large cohort of workers to move into extended retirement years with a smaller cohort of children moving into the working-age group. We refer to this prospect as the ‘ageing of the population’, typically thinking of the rising elderly dependency ratio. But the demographic prospect is more than that. It also represents a substantial fall in child dependency as the birth rate falls. And it represents a slowing of overall population growth. These three demographic trends are part and parcel of the same phenomenon of declining fertility. We must take all three into account when assessing the implications for economic growth.

Are these changes going to reduce economic growth? The economic sophist’s answer is ‘well it all depends on what you mean by economic growth’. In terms of increasing economic welfare, the natural answer is no, ageing should not reduce growth. If we think of a representative household making consistent decisions about production and consumption, the household has been given the opportunity to work with more physical and human capital and expanded technological opportunities. Surely the household would be behaving irrationally if it ended up worse off given these expanded opportunities. (Or the socioeconomic structure might be inefficient in dealing with demographic change — questions explored in other papers in this publication which examine how markets and public institutions cope with changes in intergenerational supply and demand.)

Of course rising real income (welfare) might be realised in the form of increased leisure — particularly in terms of extended years of retirement from the workforce. Additionally, rising real income might be realised in the form of within-household aged care. So there is no guarantee that the national accountant who only measures cash flows will record an increase in gross national product. But if the measurement of economic growth is welfare based, then in the idealised world of the rational representative household we should not expect ageing to ‘cause’ any slowdown in growth. Rather, if population ageing is indeed a rational demographic response to

increased human capital and technological opportunities, it should be associated with faster growth.

The importance of human capital accumulation in promoting economic growth gives further reason to discount fears that ageing might cause a growth slowdown. As each working age cohort inherits a larger stock of human capital — embodied in their own knowledge and skills and also in the form of an expanded stock of accessible knowledge — the opportunity to further increase human capital is enhanced. Traditional growth models assume diminishing returns to investment in physical capital. But human capital may display constant or increasing returns if rising levels of skill and knowledge make it progressively easier to acquire and develop new skills and new ideas.

As human capital increases across generations, rising real incomes raise the opportunity cost of child bearing. So fertility tends to fall, and the population tends to age, whilst true economic growth is maintained or even increases. This process of increasing human capital and declining fertility is the ‘virtuous’ transitional growth path described in Becker, Murphy and Tamura (1990). The economy that starts above a threshold level of human capital moves to a steady state characterised by a high level of human capital (if diminishing returns eventually dominate — as in the Swan-Solow model) or by a stable rate of growth of human capital and output (if constant returns apply in the longer run).

In this model of overlapping generations, fertility and growth are negatively correlated as they adjust towards steady state. In the short term, falling fertility implies that the working age cohort is larger than the young cohort, so the average age of the population is rising until a new demographic steady state is reached.

Unfortunately there is no analysis in this model of the elderly retired population because all adults are assumed to work. Becker, Murphy and Tamura (1990) focus on declining fertility as the immediate cause of population ageing. Declining mortality amongst the elderly population is, however, an important additional factor — as McDonald and Kippen explain in their paper in this publication.

Increasing longevity is the focus of a subsequent paper by Ehrlich and Lui (1991). They consider a self-sustaining system of intergenerational transfers within a family or extended community. Prime-age workers incur the costs of rearing and educating children. They also provide financial and care transfers to the elderly. Constant returns to investment in human capital generate sustained growth.

Longevity, or life expectancy, rises when age-specific mortality rates decline. In the context of the Ehrlich and Lui (1991) model, this is represented by an increase in the probability of the young surviving to working age and/or young adults surviving to

old age. Young adults face a choice between investing in the number of children who will support them in their old age and the quality of their education. If longevity increases, adults will anticipate more support in their old age and will want to increase their investment in the young. The expected returns to doubling the number of children are the same as the returns to doubling the human capital investment — but the cost of the human capital strategy is not doubled because it entails increases only in educational costs, not child rearing costs. So increases in longevity will stimulate human capital investment rather than fertility.

It follows, according to Ehrlich and Lui (1991), that the ageing of the population, associated with increasing longevity, is accompanied by an increase in education per child and an increase in the rate of growth (per capita) of the economy.

In summary, the economic implications of an ageing population are complex. To the extent that ageing is driven by increased life expectancy for retired people, we might expect *per capita* rates of growth to diminish through reductions in the labour force relative to total population. This direct labour force effect may, however, be offset by increases in labour force participation and public or private savings in response to the expectation of longer life. Furthermore, to the extent that ageing is driven by increasing levels of education and consequent reductions in fertility (and therefore reductions in child dependency and population growth), we may expect *per capita* growth to be maintained.

As McDonald and Kippen's paper in this publication points out, ageing of the population is not a new phenomenon in Australia, and it is much further advanced in many other advanced industrial economies. Which of the growth effects have dominated in the past is a matter for empirical investigation which may shed light on what we should expect in the future.

3.3 Empirical findings

A simple growth accounting approach suggests relatively minor direct labour force implications from ageing over the next 20 years. The immediate impact is a rise in the dependency rate — the working age population supporting a proportionally larger dependent population. If we measure economic growth in terms of real output divided by the total population, that implies a slowing in growth. A back-of-the-envelope calculation tells us by how much.

The Australian Bureau of Statistics (ABS) (1994) predicts an increase in dependency from 50 per cent in 1995 to 55 per cent in 2021. This implies that the share of 15–65 year olds in the population falls from 66.7 per cent to 64.3 per cent. In terms of proportional rates of growth, the working age proportion of the total

population is declining 0.15 per cent per year. *Ceteris paribus*, and using the typical growth accounting estimate that labour accounts for two thirds of national income, we expect annual growth of per capita output to slow by 0.10 percentage points.

This really is a minor effect. It implies that income levels in 2021 will be 3 per cent lower than they would have been in the absence of population ageing — an amount less than the fluctuations of the business cycle.

Of course these calculations assume that other demographic variables are unaffected by ageing. We have argued, however, that population ageing is not an isolated demographic phenomenon. It is associated with lower birth rates, lower child dependency and lower population growth.

Furthermore, we should expect that participation rates, savings rates and investment rates — and maybe even productivity growth — will be influenced by the various dimensions of demographic change. This is the approach taken in recent empirical studies by Richardson (1997), Bloom and Williamson (1997), Higgins (1998), Brander and Dowrick (1994) and Dowrick (1995). I will run through the findings of these papers in turn and examine their implications in the context of the predicted changes in the population structure of Australia between 1995 and 2021.

3.3.1 Demographic effects on savings and investment

Richardson (1997) presents a recent OECD study of the impact of demographic trends to the year 2020 for the world economy, using the MINILINK model. He focuses on three mechanisms by which ageing impacts on growth of real gross domestic product (GDP):

1. the labour force effect is, as described above, the direct impact of increased dependency;
2. the savings effect captures the impact of ageing on private savings. The model uses econometric results from Masson, Bayoumi and Samiei (1995) which suggest that a 1 percentage point rise in the dependency ratio tends to reduce the private savings rate by 0.15 points; and
3. the public finance effect assumes that increased public expenditure on health and pensions for the elderly will be debt financed and will crowd out private investment.

Results are presented for the United States, Japan, the European Union (EU) and other large economies or regions. Without the detailed parameters of his model, the closest we can get to implications for the Australian economy is by noting that the predicted demographic trends for the EU are close to ABS predictions for Australia.

The EU dependency ratio is due to rise 5.9 percentage points by 2020, compared with a rise in Australia of five percentage points.

The impact on the level of EU GDP, relative to the scenario of a dependency ratio constant at its 1995 level, is a reduction by 2020 of 4.6 percentage points. Most of this reduction is attributed by Richardson to the labour force effect (3.4 points) with the savings and public finance effects each contributing only 0.6 points to the overall decline in GDP.

Given similar ageing trends in Australia, we might expect Australian GDP levels in 2020 to be similarly diminished by around 5 percentage points. But population will also be lower in 2020, compared with a constant population growth scenario, by nearly 9 per cent. So Richardson's estimates suggest that growth in Australian real GDP per head to 2020 might actually be slightly higher as a result of the combined demographic changes: the ageing of the population more than offset by the fall in the rate of population growth.

3.3.2 Distinguishing child and aged dependency

Higgins (1998) examines the impact of demographic change on savings and investment (and the current account balance) over five year periods since 1950 across one hundred countries. He takes a different approach to Richardson in that he uses direct econometric estimation rather than constructing a simulation model with assumed parameters. He also distinguishes explicitly between child dependency and aged dependency, a distinction which is potentially important in the Australian context. He finds that increases in child dependency and aged dependency each decrease national savings by the same amount, but the negative impact of child dependency on investment is muted. He infers that countries where child dependency is decreasing fastest, as in many of the less developed economies, will tend to have improved current account balances as their savings increase faster than investment.

It is not immediately obvious how to apply Higgins' (1998) econometric estimates to Australia because he uses a nonlinear demographic function. He does, however, present summary results for a number of countries and regions (his table 7) along with the key demographic variables which measure the share of the young (aged under 15) and elderly (aged over 65) in the total population. Reverse engineering of his summary results (regressing his predicted changes in investment on the changes in young and old population shares) implies the following relationship.

$\begin{aligned} \text{Change in investment/GDP} = & -0.33 \times (\text{change in young proportion of population}) \\ & -1.20 \times (\text{change in aged proportion of population}) \end{aligned}$

The ABS projections of demographic change in Australia for 1995–2021 suggest that the young population proportion will fall 3.6 percentage points whilst the aged proportion will rise 5.6 percentage points. The predicted change in the ratio of investment to GDP is a fall of 5.5 points over the 26 years.

Higgins does not himself make predictions concerning GDP growth. But we can draw some inferences for Australia. If the decline in the investment ratio is continuous, 0.2 points per year, and the real return on investment is 10 per cent, that translates into output growth slowing by some 0.02 percentage points each year. Over 25 years, that implies a cumulative GDP shortfall of 6.25 per cent. This is, however, less than the 8 per cent fall in total population which is predicted for 2021 (relative to current rates of population growth). The implication of Higgins' model is that ageing will reduce total capital investment, but capital *intensity* will rise slightly because of the slowdown in the growth of the total population.

3.3.3 Labour supply dynamics

Several studies have been particularly concerned with growth effects during the demographic transitions of the post-war period. Bloom and Williamson (1997) find that the ratio of the economically active population (aged 15–64) relative to the total population is particularly important in explaining the growth of real output per capita. Brander and Dowrick (1994) emphasise that changes in birth rates have two types of effect: short term impacts on labour supply, as the ratio of the adult population (aged 15 and over) to the total population changes; and long term impacts as population growth alters natural resource intensity and capital intensity.

The labour supply effects are what we would expect — more labour per head of the total population raises output per head. Somewhat surprisingly, both studies report that the elasticity of output with respect to the economically active or adult population is higher than the two thirds value predicted by the growth accounting approach. Bloom and Williamson (1997) (their table 4) report elasticities in the range of 1.2–1.9. Brander and Dowrick (1994) (their table 7) report an elasticity of 1.3 for the more developed economies in their sample. They speculate that the high elasticity might be capturing an increase in female labour force participation as child dependency decreases.

Dowrick (1995) estimates a reduced form version of the Brander and Dowrick (1994) results, taking account of demographic effects on investment to capture the

additional negative impact of population growth on per capita output growth due to dilution of capital intensity and resource intensity. The partial relationship is:

$$\text{growth of per capita GDP} = 1.2 \times \text{growth of (adult population/total population)} \\ - 0.5 \times \text{growth of total population}$$

Bloom and Williamson (1997) go further by distinguishing between the growth rate of the child population aged less than 15 and the growth of the elderly population aged greater than 65. They find that the latter variable has hardly any impact on growth. They conjecture that, ‘the elderly continue to make important economic contributions by tending the young, working part-time and perhaps even still by saving, they are a smaller net drag than are the very young who do not work or save at all’ (p. 16). Their estimated relationship is:

$$\text{growth of per capita GDP} = 0.8 \times \text{growth of (population aged 15–64/population aged less than 15)}$$

We can translate these results into predictions for Australian economic growth by calculating the differences between current rates of growth (over the past five years) with projected growth rates of the relevant demographic variables.¹

Table 3.1 Predicted changes in economic growth and demographic variables

<i>Population</i>	<i>Annual rate of growth (per cent)</i>		<i>Predicted impact on per capita growth of real output (annual average percentage points)</i>	
	<i>1993–97</i>	<i>1995–2021</i>	<i>Brander and Dowrick model^a</i>	<i>Bloom and Williamson model</i>
Total population	1.20	0.87	0.16	
0–14	0.57	0.21		
15–65	1.25	0.76		
65+	2.12	2.27		
15+/total	0.18	0.16	–0.02	
15–65/0–14	0.68	0.53		–0.12
Total impact			0.14	–0.12

^a These are the predicted changes relative to the rate of growth of per capita GDP over the period 1993–97, which averaged 2.5 per cent per year. ^b These are the reduced form estimates from Dowrick (1995).

Source: ABS (*Australian Demographic Statistics*, Cat. no. 3101.0 and *Projections of the Populations of Australia*, Cat. no. 3222.0).

¹ It does not make sense to compare the 1995–2021 projections with a base case of stable population ratios — as both Higgins and Richardson do — because the Brander and Dowrick

The Brander and Dowrick (1994) model predicts a modest boost to annual growth of real output as population growth declines and the dilution of capital and natural resources is lessened. The Bloom and Williamson (1994) model predicts a slight slowing of growth (down from 2.5 per cent to 2.4 per cent per year) due to the fact that although child dependency is predicted to continue to fall, it will not fall as fast as it did between 1993–97. The difference in predictions is due to the fact that the first model does not distinguish between child and aged dependency and the second model does not take explicit account of the overall rate of population growth.

3.3.4 Comparison of aggregate effects

The study by Richardson (1997) confirms back-of-the-envelope calculations suggesting that the increase in dependency, particularly aged dependency, will have the direct effect of lowering Australian GDP by around 3 percentage points in the year 2021 — relative to an alternative scenario where the Australian age distribution is static. Studies by Brander and Dowrick (1994) and by Bloom and Williamson (1997) suggest that the labour supply effect may even be positive if the (increasing) aged dependency effect is dominated by the (falling) child dependency effect. Looking to the future, however, I am inclined to discount the latter studies which were largely measuring the impact of changing fertility on labour supply over the period of 1960–1990. To the extent that increased aged dependency in the future is driven by increased life expectancy among the elderly who have already retired from the workforce, we would expect the aged dependency effect on labour supply to be strong.

When it comes to the demographic impact on savings and investment, Richardson (1997) uses avowedly conservative parameter estimates to predict that the impact on real output in 2021 will be a reduction of only 1 per cent. He fails to distinguish between child dependency and aged dependency. Higgins (1998), on the other hand, finds that investment ratios are particularly sensitive to aged dependency. His parameter estimates suggest that the investment effect will be substantially larger, a 7 per cent reduction in GDP.

Erring on the conservative side, we might add together the Richardson (1997) labour supply estimates and the Higgins investment estimates. Taken together, these studies suggest that real GDP might be up to 10 per cent lower in 2021 as a direct result of the shifting age structure of the population.

model requires that the ratios and the overall rate of population growth are specified simultaneously and consistently.

This should not, however, be the end of the demographic story. The ageing of the population, and particularly the reduction in child dependency, are driven in part by reduced fertility which in turn implies falling growth in the overall population. If population growth were to be unchanged at 1.2 per cent per year (the average rate over the period 1993–97) then the population in 2021 would be 24.7 million. However, the ABS (1994) population projection for 2021, taking their relatively high growth A/B series, is 22.5 million — nearly 9 per cent lower.

The effects of increasing dependency and lower rates of population growth seem to cancel each other out over the next 20 years. Over the next two decades ageing is likely to reduce the rate of growth of *total* output of the Australian economy, but real output and income *per capita* are unlikely to be substantially affected.

3.4 Summary and concluding comments

Recent theories of economic growth and demography emphasise interdependence. Rising incomes increase the opportunity cost of child rearing and have the effect of reducing fertility. Lower birth rates are accompanied by higher investment in education. Increases in human capital in turn raise the level of real income and, under certain circumstances, may even raise the rate of growth of real output and income. Falling fertility causes dependency on the working-age population to decrease in the first instance, as child dependency falls; but in the longer run it causes dependency to rise as the larger cohort reaches retirement age. In this scenario, the ageing of the population is not necessarily associated with lower economic growth and may even be associated with faster growth if returns to investment in human capital and research are sufficiently high.

These results do depend on the idealisation of a representative household where young adults are altruistic towards both their parents and their children. In real households and real economies we may not expect such altruism. In part this is justification for tax funded financing of some aspects of education, child rearing and aged care. But as soon as we allow for taxation and market failures we can no longer be sure of the robustness of the models' predictions that ageing will be positively correlated with growth. For instance, it might be socially desirable for young adults to finance the education of their children through borrowing. Problems of moral hazard make it likely that capital markets will fail to deliver sufficient financing and public policy is nowhere guaranteed to fully correct the failure of the intergenerational markets.

In the face of borrowing constraints and policy failure, it might be the case that an ageing population actually reduces the capacity of working-age adults to finance the

optimal level of investment in human and other capital. If so, in the absence of appropriate public policy response to compensate for failure in the credit market, ageing might be accompanied by lower economic growth. Indeed recent empirical studies tend to confirm that physical investment, as measured in the national accounts, does tend to fall as dependency rates rise. The tendency for labour supply to fall as aged dependency rises is only partially offset by the increase in labour supply attributable to falling child dependency. These negative effects on the growth of total output are, however, largely offset by the associated fall in the growth of total population which tends to increase natural resource and capital intensity. Output (and income) *per capita* appear to be unaffected by the type of demographic changes that are projected up to the year 2020.

These empirical estimates support the theoretical proposition that ageing and economic growth are not negatively related when both are driven by endogenous household decisions on fertility and investment. But an important caution is necessary. Much of the demographic change that has been the subject of the reported studies has been driven by falling fertility. Some part of the projected ageing of the population is driven by expected increases in the life expectancy of the retired population, rather than by falling fertility. To the extent that this is the case, we may expect per capita growth to fall with ageing because the negative effects of increased dependency are enhanced by an associated increase in the rate of population growth.

Here we come up against important issues concerning the measurement of economic growth and economic welfare. Economic growth, as currently measured, will record a decline when the life expectancy of the elderly increases. But from the perspective of welfare economics, an expansion in technological opportunities (including medical opportunities which can prolong life) should tend to increase welfare.

Should increased longevity be measured in the national accounts? Dowrick, Dunlop and Quiggin (1998) have analysed life expectancy and its relationship to national expenditures on medicine, education and food across 58 countries. They estimate that the marginal social cost of increasing life expectancy from 73 years to 74 years was over US\$350 dollars *per capita* in 1980 (over A\$1000 per capita) and sharply increasing. Taking account of such valuations might well provide measures of economic growth which would not be downgraded by increases in longevity. There are of course important questions about the quality of life when it is extended through intensive medical intervention, but that is a matter for individual decisions and for social policy. For the purposes of national accounting and measurement of economic growth, activities which enhance longevity should be taken into account.

This brings us to important measurement issues related to whether the increasing amounts of medical and other care consumed by the elderly are provided within the

family, through the private sector or through the public sector. As currently constituted, a switch to within-family care would lower measured economic growth because household services are not included in measures of economic output (although I believe the ABS are investigating these issues). A switch from public to private provision, on the other hand, might cause measured economic growth to rise as many public services are valued at cost whereas private services are measured at market prices. Of course such measurement problems will always be with us. It is particularly important to bear them in mind in the context of enhanced life expectancy which is in danger of being bean counted as a negative.

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4 Ageing: the social and demographic dimensions

Peter McDonald and Rebecca Kippen

4.1 Introduction: why has ageing become an issue?

As fertility and mortality rates fall, populations age. In Australia, as in other advanced industrialised countries, fertility and mortality rates have been falling for more than a century. In 1870, 42 per cent of Australia's population was aged less than 15 years and 2 per cent was aged 65 years and over. In 1998, 21 per cent was aged less than 15 years and 12 per cent was aged 65 years and over. Thus, ageing is not a new phenomenon. Being an outcome of increased control over both fertility and mortality, ageing for the last century has generally been welcomed, so why is it that ageing has now become a major issue? The suddenness of the emergence of ageing as an issue is indicated by the lack of concern expressed about ageing in the 1975 Report of the National Population Inquiry (the Borrie Report). Indeed, the ageing of the population received only passing mention in this, the most comprehensive report on Australia's population ever undertaken and no mention at all in the concluding chapters related to policy.

There are three main reasons why population ageing was not regarded as an issue of importance in the 1975 Borrie Report and each provides lessons about contemporary ageing.

1. In the past 25 years, both birth rates and death rates have fallen to much lower levels than were envisaged in the projections used in the Borrie Report.
2. The Borrie Report's main projections were relatively short term, projecting the population only to the year 2001.
3. Some of the important social or economic changes that make ageing an issue have only occurred since the mid-1970s.

As birth and death rates have fallen in Australia, ageing of the population has become a more pressing and immediate issue. The year 1973 was the last year of recorded statistics available at the time of writing of the Borrie Report. If birth rates

were the same at each age today as they were in 1973, there would have been 40 per cent, or 100 000, more births in 1998. If death rates at each age were the same today as they were in 1971–76, there would have been 60 per cent, or 78 000, more deaths in 1998. These are remarkable changes within a short period of time and are the reasons ageing of the population has emerged as a policy issue. Indicative 100 year projections made in the Borrie Report projected that the ‘ultimate’ proportion of the population¹ who would be aged 65 years and over would be 9–15 per cent, this level being reached by 2030 (National Population Inquiry 1975, vol. 1, p. 294). In only two of the six indicative projections did the ‘ultimate’ proportion aged 65 years and over exceed 12 per cent, a level that we have already passed. As indicated below (figures 4.1, 4.2 and 4.3), indicative projections carried out today have the ‘ultimate’ percentage aged 65 years and over as at least 24 per cent. Almost certainly it will be higher.

The main projections made for the Borrie report were 30 year projections. In this paper, we consider 100 years into the future. If our interest is the size of the population and its age structure, it is important to make projections over a period that is sufficiently long to observe the full consequences of the assumptions that are being made about demographic futures.

The problem of ageing has also come into greater prominence since the Borrie Report because some important intervening changes have exacerbated the demographic trends. First, because pension funds in the 1970s estimated that people would die much faster than has actually been the case, many were increasingly generous in the defined benefits that they offered. Second, generous superannuation and retirement packages, more generous provision of public pensions to those aged 50–64 years, and dislocation of labour resulting from restructuring of industry have all contributed since the 1970s to a major shift towards early retirement. Today, less than 50 per cent of males aged 55–64 years work full time. Third, surgical, medical and pharmaceutical advances in the past 25 years have increased the potential health costs of older people. Thus, the definition of ageing as a problem is not simply driven by the fact that the population is getting older but also by the ways in which we have organised institutions in the society that relate to ageing.

4.2 Demographic components of ageing in the future

The combination of high fertility and somewhat high mortality in the 25 years immediately following the Second World War, with much lower fertility and mortality in the subsequent 25 years from 1973, has left us with the legacy of an age

¹ The stable proportion applying from 2030 onwards.

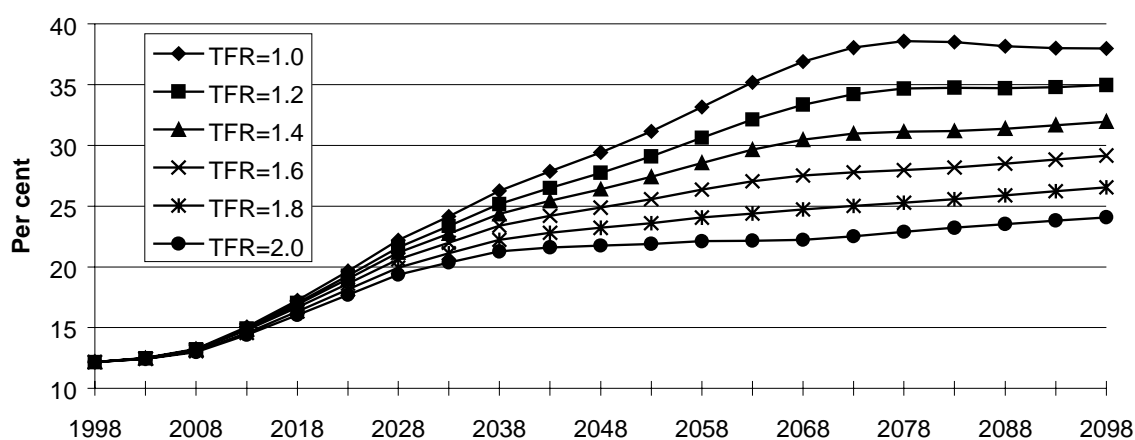
structure which has a very substantial momentum for ageing. The post-war baby boom generation will reach the retirement ages in a time when mortality rates will be low, while, at the same time, the younger generations will be relatively depleted because of the past 25 years of low fertility. Fertility and mortality changes in the next 25 years will not have a major impact on ageing during that period. However, they will have a major impact on the extent of ageing beyond 2020 and especially beyond 2040. These conclusions are evident from figures 4.1 and 4.2.

Figure 4.1 shows the impact over the next century of different levels of fertility on the proportion of the population aged 65 years and over. In this chart, the level of net migration is set at 80 000 per year (the approximate average level for the 1990s) and mortality is set at the level used in the most recent ABS projections (ABS 1998).² The result is that the variations in fertility make very little difference to ageing in the next 25 years, but beyond that time, the differences in ageing begin to increase and become substantial in the second half of the next century.

Figure 4.2 shows the impact on ageing over the next century of two different assumptions about future mortality. These scenarios are based on the assumptions that fertility will fall to 1.65 children per woman in the next decade and then remain at that level and that net migration will be 80 000 per year. The first assumption is that mortality will follow the path assumed in the most recent ABS projections in

Figure 4.1 Proportion of the population aged 65+ under different total fertility rate (TFR) assumptions, Australia, 1998–2098

Annual net migration (ANM) = 80 000, ABS mortality



² The ABS projections are for 50 years. We extrapolate the trends inherent in the ABS mortality assumption for a further 50 years. As the ABS does not publish the age-specific mortality rates used in its projection, our rates may be slightly different from the ABS rates.

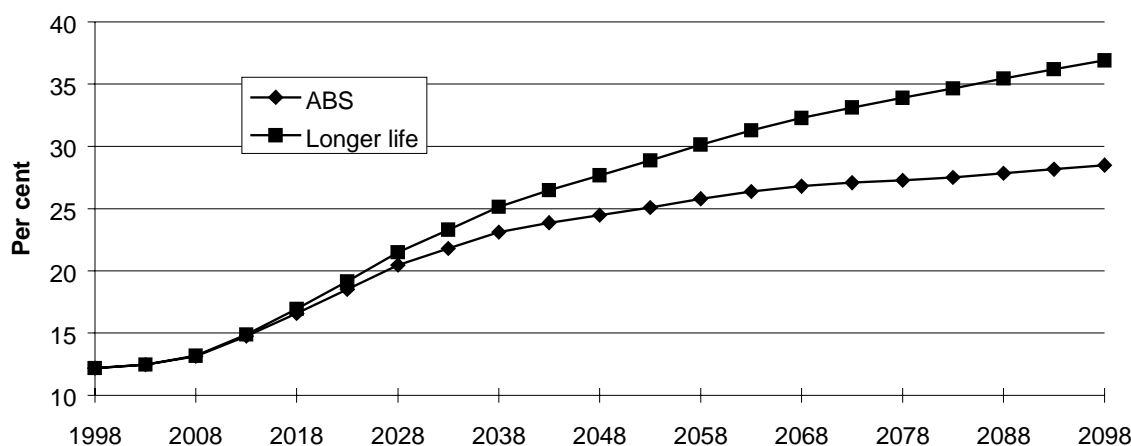
which expectation of life at birth increases by about 10 years over the next century. The second is a more optimistic assumption that expectation of life will increase by 20 years over the next century (say, through an increasing degree of control over cancer mortality). The conclusions mirror those for fertility — the differing levels of mortality have only a very small impact on ageing in the next 25 years, but the impact becomes considerably more important in the subsequent years.

The impact of differing levels of net migration is shown in figure 4.3. The scenarios here assume that fertility falls to 1.65 children per woman in the next decade and then remains constant and that mortality follows the ABS assumed path. The conclusions here are quite different to those for variations in fertility and mortality. The impact of immigration on ageing in the first 25 years is somewhat larger than the impacts of varying levels of fertility and mortality. Immigrants, on average, are relatively young upon arrival in Australia. Therefore, the immigrants have not had time to age in the first 25 years of the projection. Beyond 25 years, however, the impact of immigration on ageing tends to be less than the impacts of changing fertility and mortality. More importantly, at all points in time, the impact of immigration on ageing is subject to diminishing returns. Each additional 50 000 immigrants has roughly half the impact on ageing of the previous 50 000. Thus, a level of net migration of 100 000 per year has a fairly substantial impact on ageing, but there is very little gain in the reduction of ageing from adding another 100 000. That is, levels of immigration above 100 000 per year add large numbers of people to the population with little impact on the age structure.

The central conclusion from figures 4.1, 4.2 and 4.3 is that substantial ageing in

Figure 4.2 Proportion of the population aged 65+ under different mortality assumptions, Australia, 1998–2098

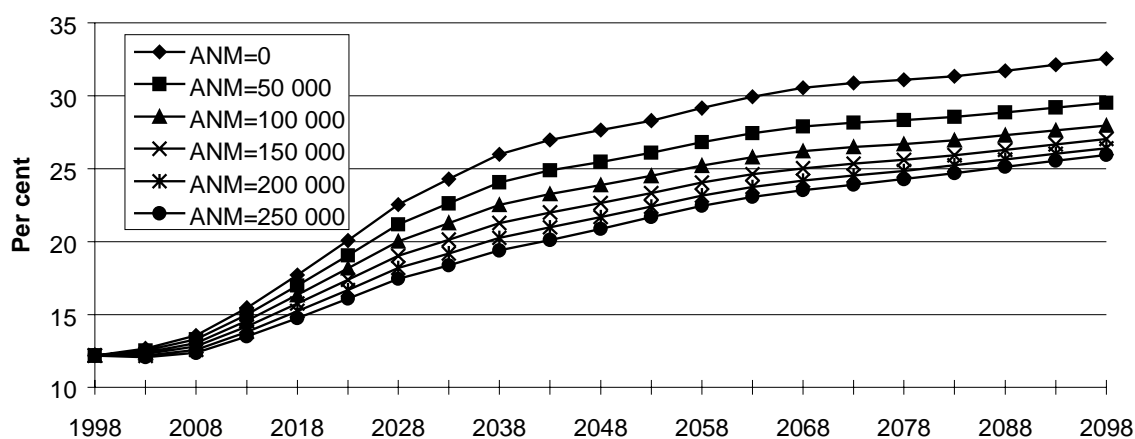
Total fertility rate = 1.65 by 2008, annual net migration = 80 000



Australia over the next few decades is absolutely inevitable and no reasonable change of course in the demographic components will prevent this from happening. Indeed, over the next 25 years, the demographic components will have little bearing on the proportion of the population who will be aged 65 years and over. However, variations in the future paths of fertility and mortality will have major impacts after 2020.

The past and future of Australia's population age structure can be characterised in fundamental demographic terms. In 1971, our age structure, following a period of high fertility, had the shape of a pyramid except for a small irregularity arising from low fertility during the Depression. The pyramid is the classic shape of a population which is growing. Australian fertility has fallen substantially since 1971, has been at below replacement level³ for more than 20 years and is still declining. This change has led to a shift from the pyramidal age structure. Our future age structure depends on the future course of the demographic components. There are two main possibilities. A stable, zero growth, beehive shape will be achieved in about 25 years if Australia's fertility does not fall below 1.6–1.7 births per woman and if net migration is in the region of 60 000 to 100 000 thousand per year. Higher levels of immigration than this ultimately only add people to the population and make little difference to the age structure. The other main possibility is a shift to a coffin shape, resulting from zero migration and a lower level of fertility. This is the classic shape of a population that is declining in size. Its age structure is much older than that of the zero growth population. The change in our age structure from 1971 and the two

Figure 4.3 **Percentage of the population aged 65+ under different annual net migration (ANM) assumptions, Australia, 1998–2098**
Total fertility rate = 1.65 by 2008, ABS mortality



³ Essentially, less than two births per woman.

alternative future age structures are shown in figure 4.4.

Thus, the ageing of Australia's population between 1970 and 2030 represents a very fundamental, historical demographic change. The shift from a pyramid-shaped age structure is likely to occur only once in our history. A return to the pyramid shape would require a return to the fertility rates of the 1960s that were twice as high as the present level of fertility. This seems extremely unlikely. Our choice now from a population policy perspective is between the beehive-shaped and the coffin-shaped age structure. From the perspective of ageing, the beehive shape is clearly the superior option.

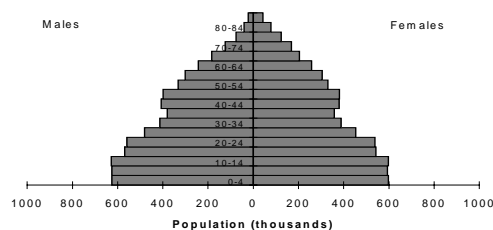
4.3 Timing and dimensions of ageing

In this section, we examine the timing and the dimensions of ageing under standard assumptions about fertility, mortality and net migration. They are 'standard' in the sense that they are extrapolations of current trends into the future.

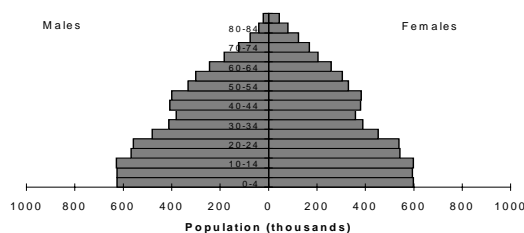
In these projections, fertility is assumed to fall to 1.65 births per woman in the next decade and thereafter to remain constant at that level. Prediction of long term levels of fertility is little better than guesswork, but a shift over the next decade to a level of about 1.65 births per woman seems justified by the data in tables 4.1 and 4.2. Table 4.1 shows that most industrialised countries have fertility levels at present that are lower than the Australian level. Canada, a similar country to Australia in many ways, has already reached this level. Other data show that some of the States and Territories in Australia were already close to this level in 1997, and that metropolitan cities in Australia already had a fertility rate close to 1.65 births per woman in 1997. Table 4.2 shows that the trend in fertility in Australia during the 1990s has been distinctly downward. Birth registration data for the first six months of 1998 suggest that the fall in fertility is continuing.

Figure 4.4 Selected population pyramids, coffin and beehive projections, Australia, 1971–2098

1971



1998



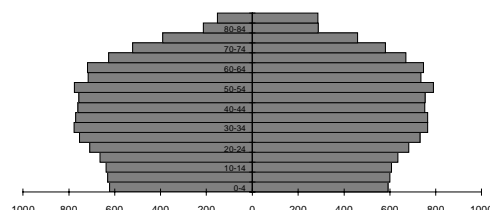
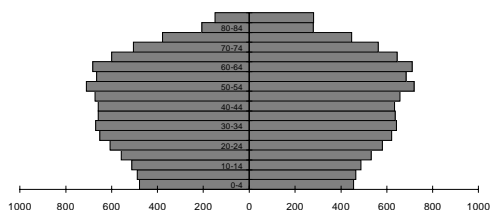
Coffin

TFR = 1.50, ANM = 0, ABS mortality

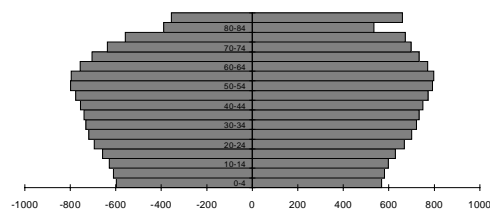
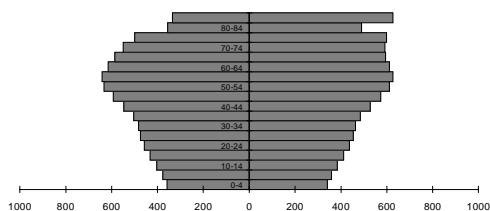
Beehive

TFR = 1.65, ANM = 80 000, ABS mortality

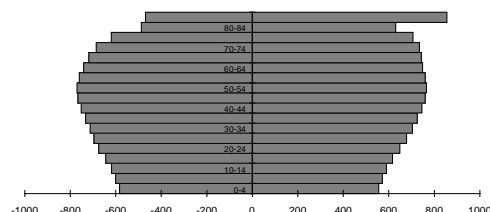
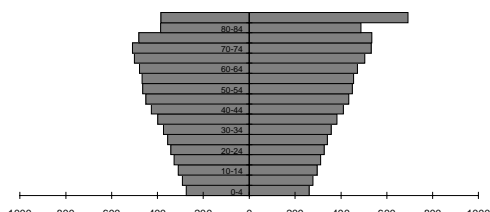
2023



2048



2073



2098

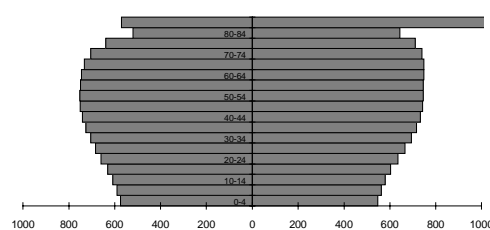
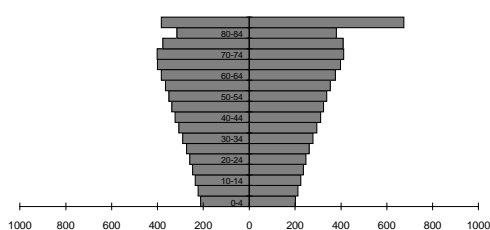


Table 4.1 **Total fertility rates, various countries, 1997 (or nearest available year)**

<i>Country</i>	<i>TFR</i>	<i>Country</i>	<i>TFR</i>
Spain	1.15	Scotland	1.58
Italy	1.22	Canada	1.64
Greece	1.32	France	1.71
Germany	1.36	Luxembourg	1.71
Austria	1.36	England	1.74
Japan	1.44	Denmark	1.75
Portugal	1.46	Finland	1.75
Switzerland	1.48	Australia	1.78
Sweden	1.52	Norway	1.85
Belgium	1.55	New Zealand	2.04
Netherlands	1.57	United States	2.05

Two assumptions are used in relation to mortality — the ABS projection of mortality under which expectation of life at birth rises by ten years over the next century, and a more optimistic assumption under which expectation of life increases by 20 years in the next century. The latter trend is more in keeping with the trend in improvement of expectation of life over the past 140 years and is even a little slower than the trend over the past 20 years, during which expectation of life has risen by about five years. We use two different mortality projections because we are not very sure which is likely to apply and because they have very different implications for the timing and the dimensions of ageing. Finally, in these projections, we assume 80 000 annual net migration, close to the average level for the 1990s.

Under the ABS mortality assumption, the top half of figure 4.5 shows that the ageing of the population in numerical terms is a once-only phenomenon. For age group 65–74 years, almost all of the increment occurs between 2008 and 2028. Beyond 2028, there is very little change in the size of this age group. For age group 75 years and over, there is growth in the size of the population from the beginning of the projection in 1998, but most of the growth occurs, as would be expected, ten years after the growth in age group 65–74 years, that is, from 2018 to 2038. After 2038, increments to the number of people aged 75 years and over are moderate. As

Table 4.2 **Total fertility rate, Australia, 1992–97**

<i>Year</i>	<i>TFR</i>
1992	1.89
1993	1.86
1994	1.85
1995	1.83
1996	1.80
1997	1.78

the social and economic impact of ageing is much more significant for those aged 75 years and over than for those aged 65–74 years, this projection implies a once-only adjustment to ageing between about 2020 and 2040.

If expectation of life rises by 20 years over the next century, the lower half of figure 4.5 shows that the impact on age group 65–74 years is almost exactly the same as the projection using the ABS mortality assumption. However, the impact on age group 75 years and over is very different, with the increments to the size of the age group being much larger between 2018 and 2038. After 2038, large increments continue at a high level throughout the century. The lesson here is that it may be wise for more than one mortality option to be included in the official projections.

To this point, we have talked about demographic ageing, and the measure we have used is the proportion of the population who are aged 65 years and over. *Per se*, ageing is a good thing because it is the result of increased control over fertility and mortality. The perceived problem of ageing relates to its association with dependency. Being aged 65 years and over is taken as a proxy for dependency. Dependency is an elusive and controversial concept. There are dimensions of dependency: financial, physical and emotional. In regard to financial dependency, a person is regarded as dependent if he or she is a net receiver of public and private transfers, including subsidised or freely given services. Measuring public transfers is complex, but public transfers are usually the central feature (often the only feature) of debates about ageing. We have only limited information about private transfers (King and McDonald 1998). Physical dependency can be defined in terms of requiring assistance in performing the functions of everyday life, and there are definitions of degrees of physical dependency which are fairly well measured in surveys of disability. We all have a strong sense of what emotional dependency is but little agreement about how to measure it.

To suggest that the proportion of the population aged 65 years and over is a sufficient measure of the level of dependency in a society would be foolish. First, there are many at other ages, especially children, who, if we were able to measure financial, physical and emotional transfers precisely would be net receivers. Second, there are many people aged 65 years and over who are net contributors. For example, King and McDonald's (1998) analysis of private financial transfers in Australia has shown that, excluding inheritances, older people on average do not become net receivers of private transfers until ages 75 and over. Those aged 65–74 years are substantial net providers. The same paper also shows that people aged 65–74 years are major providers of informal child care services.

Attention in the ageing debate, however, usually focuses only on public financial transfers, so that those who are net contributors to the state through the tax–transfer–service system are ‘independent’ and those who are net receivers are ‘dependent’. But even in this sense, the proportion of the population aged 65 years and over is a poor measure of dependency. Most obviously, children are dependent, albeit mainly upon private transfers, and one of the main reasons for an increase in the proportion of the population who are aged 65 years and over is a decrease in the proportion of the population who are aged less than 15 years. Thus, more refined measures of dependency are desirable.

4.4 The labour force dependency ratio

The debate on ageing as a problem usually has an implied focus on the ratio of non-workers to workers — the labour force dependency ratio. Older people are seen as dependent because they are no longer in the labour force. If dependency is measured as the ratio of non-workers to workers, early retirement, either voluntary or involuntary, is a major aspect of dependency.

Labour force participation rates for males have fallen at all ages since 1973, but the main falls have been at ages 35–64 years, especially at ages 55–64 years. In 1973, 88 per cent of males aged 55–59 years were in the labour force compared to about 74 per cent in 1998. For age group 60–64 years, the change from 1973 to 1998 was from 76 per cent to 46 per cent. Almost all of this shift to early retirement occurred between 1973 and 1982, when, as we have pointed out, ageing was not seen as problem. During that period, pension schemes were changed to provide incentives for early retirement, workers retrenched in their fifties through economic restructuring were welcomed into the social security system. This can be seen as discrimination against older workers and promotion of a culture of early retirement.

Retention of people in the labour force as they get older — that is, a reversal of the trend to early retirement — is now a commonly recommended strategy to deal with ageing (OECD 1998). In this section, we measure the impact on the labour force dependency ratio of a return over a 20 year period to the 1973 participation rates for males aged 35–64 years. The projection also increases the labour force participation rates for females in line with cohort trends. The actual participation rates in 1998 and the levels assumed in the projection to be reached by 2018 are shown in table 4.3.⁴ From 2018 onwards, the rates are assumed to remain unchanged at the 2018

⁴ The labour force participation rate for age group 65 years and over is assumed to remain the same as it is now for men and to increase only slightly for women. It should be noted that this implies rises in participation rates at ages from age 65 years onwards because there will be a shift to older ages within the 65 years and over age range.

levels. These labour force participation rate futures are applied to our standard population projection which has a fertility rate of 1.65 births per woman reached in the next decade, the ABS mortality assumption and net migration of 80 000 per year.

Table 4.4 shows the remarkable result of this projection. The labour force dependency ratio actually falls from 1998 to 2018 and then rises, but only to its current level by 2048. That is, throughout the next 50 years, dependency measured in this way would be lower than it is now. This is a much more favourable result than would be the case in European countries as calculated by the OECD (1998, p. 42):

If the average retirement age for males gradually returned to something close to that ruling in the early 1960s (when today's state pension systems were being created), and female participation rates continued their upward trend, a considerable proportion of the expected slowdown in material living standards would be avoided (it would be necessary, though, to raise the effective age of retirement to as high as 70 to offset completely the adverse implications of ageing on fiscal balances).

Table 4.3 Projected labour force participation rates^a, Australia, 1998–2098

<i>Age group</i>	<i>1998</i>	<i>2003</i>	<i>2008</i>	<i>2013</i>	<i>2018–48</i>
<i>Males</i>					
15–19	550	550	550	550	550
20–24	860	860	860	860	860
25–34	930	930	930	930	930
35–44	920	928	935	943	950
45–54	870	890	910	930	950
55–59	740	775	810	845	880
60–64	460	535	610	685	760
65+	100	100	100	100	100
<i>Females</i>					
15–19	550	550	550	550	550
20–24	770	778	785	793	800
25–34	690	705	720	735	750
35–44	710	720	730	740	750
45–54	700	713	725	738	750
55–59	430	473	515	558	600
60–64	200	250	300	350	400
65+	30	35	40	45	50

^a Rate per 1000 head of population.

Australia is in a more favourable situation because its fertility rate over the past decade or so has not been as low as those of most European countries and we have been able to sustain a moderate flow of immigrants into the country. To repeat our age structure analogies, Australia over the past 15 years has been on a path towards

a beehive age structure, whereas most European countries have been on a path to a coffin structure.

To be successful in reversing early retirement in line with the projection shown in table 4.4, new jobs would need to be created, but only from 1998 to 2018. The number of new jobs required over the next 20 years would be about 2.5 million. In the past 20 years, 1978–98, the labour force has increased by more than double this amount. The distribution of the new jobs by 2018 by age would be as follows:

- under 45 age group — 20 per cent;
- 45–54 age group — 27 per cent;
- 55–64 age group — 48 per cent;
- 65 years and over age group — 5 per cent.

On the surface, this seems to be a feasible policy approach which would go a long way towards alleviating the impacts of ageing, assuming that the cost and revenue balances of workers and non-workers stayed close to today's levels.

Without direct policy measures, labour force participation rates for males aged 60–64 years have already begun to rise. Furthermore, those reaching ages 55–64 years in future will be better educated, less likely to have worked in occupations or industries that have been declining because of restructuring and will be better placed in a knowledge based economy. Future cohorts at these ages will also be less likely to have commenced work by age 15 and less likely to have worked in heavy manual labour. They will also have had more experience of changing jobs during their working life.

Table 4.4 Projected labour force and labour force dependency ratios, Australia, 1998–2048

<i>Year</i>	<i>Labour force (millions)</i>	<i>Dependency ratio^a</i>
1998	9.37	1.00
2003	10.07	0.95
2008	10.73	0.91
2013	11.28	0.89
2018	11.73	0.87
2023	11.84	0.91
2028	11.88	0.95
2033	11.93	0.98
2038	11.94	1.01
2043	11.96	1.02
2048	11.95	1.03

^a Labour force dependency ratio = (non-labour force)/(labour force)

Labour force participation rates of older men may also rise because of an increased demand for labour at these ages arising from possible future labour shortages. If male age-specific labour force participation rates remained at their 1998 levels, there would be almost no further growth in the number of male workers aged under 65 years after about 2015. Furthermore, other countries which are ageing faster than Australia, with much lower fertility rates, will experience falls in the size of their labour forces in the near future. In the context of international labour markets, this is likely to create a demand in other countries for the labour of young and skilled Australians.

Females aged 55–64 years will be more likely to be employed in future years. Each successive cohort of women has increased participation at these ages. Because of disrupted work histories, females will be more likely than men to have inadequate pension entitlements by age 55. Also, reduction in the age difference between partners in future will mean that women will be less likely to retire early because their (older) husband has retired.

Thus, participation rates of 55–64 age groups are likely to rise without specific policy initiatives. Even so, there are several initiatives that might be pursued to promote employment beyond age 55. The OECD (1998) provides an excellent discussion of these. In general terms, the report recommends the reformation of public pension systems, taxation systems and social transfer program in order to ‘remove financial incentives to early retirement, and financial disincentives to later retirement’ and the introduction of measures to ‘ensure that more job opportunities are available for older workers and that they are equipped with the necessary skill and competence to take them’ (OECD 1998, pp. 19–20).

For some workers, major retraining will be required but for most, gradual adaptation to change through learning on the job should be adequate. This direction would be facilitated by a lifelong approach to learning. Older people will require information about job and training opportunities. Flexible work–retirement transitions will be required so that older workers, where appropriate, are able to lessen their level of responsibility and their pay level without incurring penalties to their retirement income entitlements.

There will be a need to change the existing negative attitudes of many employers to older workers. Older workers must be seen as valuable workers. This means a shift in the psychology of employers but also a shift among older workers in the way they see themselves. There may need to be incentives for employers to redeploy rather than to retrench older workers. However, the aim of extending the working life is not to create a gerontocracy. Room will need to be made for younger workers.

Another vital aspect of the reversal of early retirement is good health through measures such as appropriate nutrition, regular exercise and no smoking. The concept of active ageing is also important.

4.5 Living arrangements of older people — family, health and care

The subject matter of this section has been addressed at length in two recent works by the first author (AIHW 1997; McDonald 1997a, pp. 194–210). Here, we first repeat some of the broader points made in these two works and then present new data on trends in living arrangements for older people and new projections of living arrangements.

The central thrust of aged care policy in the past 15 years has been that public and private supports should be seen as part of the one social system of support. There is an inherent mutuality between publicly provided welfare services and private exchanges between people, mainly between family members. For example, Home and Community Care (HACC) services are designed to provide public supports which enable older people to stay in their own homes for as long as possible and to fill gaps in support that family members may not be able to provide easily. Respite care exists to support private carers so that private support does not break down under excessive pressure. This partnership between public and private support in aged care is sound and, as we argue below, successful policy.

Given this policy framework, the efficacy of publicly provided welfare services can only be reliably assessed if considered within the context of the totality of services, including those provided privately and largely by families. It is disturbing, therefore, that some recent reports to government do not take this approach (the 1996 National Commission of Audit Report and the 1997 COAG Report on Commonwealth/State Service Provision) and, instead, focus their attention only upon the efficient delivery of public welfare services. By implication, these reports portray public services for the aged and family support for their older members as separate systems. In this bean-counting approach to aged care, there is no need to investigate the incidence and nature of exchanges that take place in the private or family sphere. So long as families take care of their own, the public system is not interested in how they do it. As a consequence, what happens within families becomes the subject of myth and misconception.

One of the myths is that families do not take care of their own. This myth has been described in an American study as ‘a hydra-headed monster unable to be destroyed by successive thrusts of empirical reality’ (Shanas 1979). The central significance of

aged care provided outside the formal system in Australia, very largely by families, is reiterated in each *ABS Survey of Ageing, Disability and Carers* and in each issue of *Australia's Welfare* (AIHW 1997). A common misperception is that the extended family has no relevance in Australia today. This misperception has it that in some undefined past golden age, extended families abounded and were the fount of support for family members. Now, extended families are gone and we are left with isolated nuclear families. In reality, exchanges that take place between related family members living in different households are an extremely important part of family functioning and social support in Australia.

Two trends have increased the likelihood of family support for older people. First, as mortality rates have fallen and years of healthy life have been extended, the proportion of older people living in a couple relationship has increased (tables 4.5 and 4.6). For adults in couple relationships, the spouse is the primary carer. Second, over the next 30 years or so, older people are much more likely to have surviving children than are the current and more recent generations of older people. Indeed, they will be more likely to have surviving children than any previous generation in Australia's history (AIHW 1997, p. 80). After a spouse, adult children (particularly daughters) are the primary carers. Hence, the potential for mutuality between private and public support of older people will be even greater in the future than it is now.

These trends may be countered to some extent by an increase in family breakdown. The proportion of those aged 45–54 years not living with a partner has been increasing and is now above 20 per cent (McDonald 1998). Most of these single people have had children, but, if their relationship with their children has become distant, care at older ages from children may not be forthcoming. This is primarily an issue of relationships between fathers and their adult children.

Tables 4.5 and 4.6 show trends in living arrangements for older males and females in Australia from 1986 to 1996. The main trends are:

- the rising proportion living in couple families with no children;
- the falling proportion living with other family members, usually children (couple with children, sole parent or other member of a family household);
- the rising proportion living alone; and
- the falling proportion living in non-private dwellings (mainly nursing homes).

These trends seem to affirm the success of policy over the last 15 years designed to assist older people to remain in their own homes and to support themselves as much as practicable. That is, at a given age, older people have been less likely to move in with children and less likely to move to a nursing home.

Table 4.5 Living arrangements of older Australian males, by age, 1986 and 1996, per cent

<i>Living arrangement</i>	<i>Year</i>	<i>65–69</i>	<i>70–74</i>	<i>75–79</i>	<i>80–84</i>	<i>85+</i>
Couple, no children	1986	58.8	61.6	56.8	46.6	29.1
	1996	60.2	63.2	60.9	53.3	35.5
Couple with children	1986	17.5	11.7	8.2	6.6	4.8
	1996	15.6	10.0	6.9	4.8	3.3
Sole parent	1986	2.0	1.9	2.3	2.9	3.2
	1996	1.6	1.6	1.8	2.3	3.3
Other member of family household	1986	4.2	4.5	5.8	7.7	11.8
	1996	2.8	2.8	3.3	4.3	6.4
Living alone	1986	11.0	13.1	16.3	19.2	19.7
	1996	13.9	15.5	18.2	21.8	23.7
Group household	1986	2.4	2.3	1.9	1.9	1.8
	1996	2.0	1.7	1.6	1.3	1.2
Non-private dwelling	1986	4.1	5.0	8.7	15.1	29.6
	1996	4.0	5.1	7.2	12.2	26.6

Source: Special tabulation from the 1986 and 1996 Censuses

Table 4.6 Living arrangements of older Australian females, by age, 1986 and 1996, per cent

<i>Living arrangement</i>	<i>Year</i>	<i>65–69</i>	<i>70–74</i>	<i>75–79</i>	<i>80–84</i>	<i>85+</i>
Couple, no children	1986	47.6	37.8	24.6	13.6	4.5
	1996	51.0	43.3	31.6	18.4	6.3
Couple with children	1986	8.4	4.7	2.9	1.7	0.9
	1996	8.3	4.7	2.6	1.3	0.5
Sole parent	1986	5.5	6.3	7.9	6.8	6.7
	1996	5.8	5.9	6.2	6.5	6.8
Other member of family household	1986	7.1	10.6	13.7	14.2	14.4
	1996	5.0	6.1	7.3	8.8	9.4
Living alone	1986	25.7	32.7	37.8	38.7	26.1
	1996	25.1	33.9	42.6	46.3	34.9
Group household	1986	2.0	2.1	2.0	1.8	1.4
	1996	1.5	1.5	1.3	1.0	0.7
Non-private dwelling	1986	3.6	5.7	11.2	23.1	46.1
	1996	3.2	4.6	8.3	17.7	41.3

Source: Special tabulation from the 1986 and 1996 Censuses

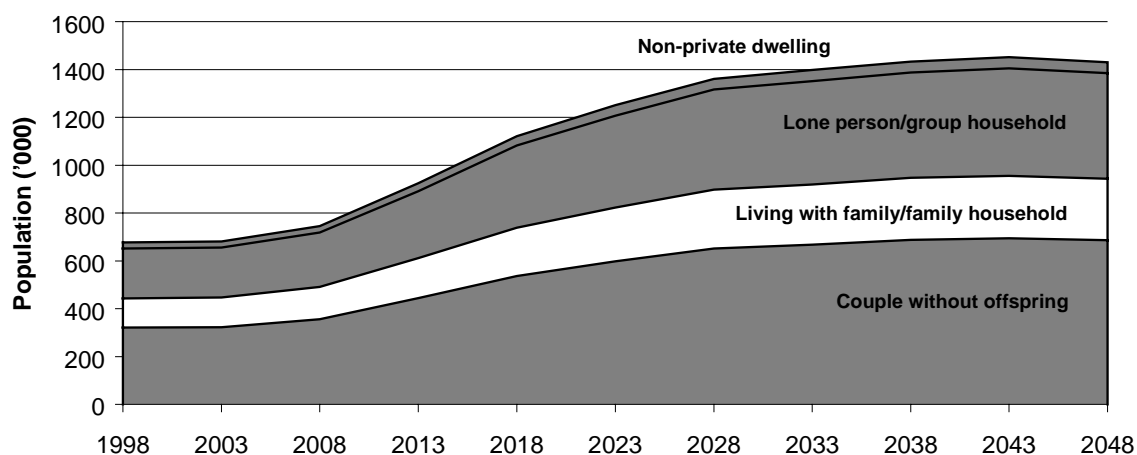
Figures 4.6–4.11 show projections of the living arrangements of older people over the next 50 years. The demographic assumptions underlying these projections are those of the standard projection. The assumptions made about the proportions living in different arrangements in the future have been based on continuation of the four

trends from 1986 to 1996 listed above, using intuitive judgments about future changes to take account of likely future changes, such as changes arising from increases in relationship breakdown. The adjustments have the effect of slowing down most of the trends between 1986 and 1996 such that future proportions in different living arrangements are not very different to those in 1996.

At ages 65–74 years (figures 4.6 and 4.7), the projections indicate very little use of non-private dwellings. By the end of the projection, more than three quarters of males and two thirds of females at these ages will be living with a family member, usually their spouse. As these ages are likely, even more than now, to be years of active healthy life for most people, there seems to be little reason for concern about trends in living arrangements at these ages.

At ages 75–84 years (figures 4.8 and 4.9), the main story for males is increases from 2018 in the proportion who are living in a couple family with no children. From the support perspective, this implies increasing need for respite care and home support services. For females, the main story is increases from about 2018 and especially from 2028 in the proportions living alone. This implies increases in the demand for home support services and services that will enable non-co-resident children to provide support to their aged mothers. Given the timeframe, the growth in need for nursing home care at these ages is only moderate.

Figure 4.6 Projected population of males aged 65–74, by living arrangement, Australia, 1998–2048



Future demand for nursing home care is more evident, as would be expected, for those aged 85 years and over (figures 4.10 and 4.11), but even here the major growth does not begin until 2028.

An emerging issue in regard to living arrangements is the movement into the more dependent ages in the near future of people from southern and eastern Europe who immigrated to Australia in the post-war period to 1970. Many among these groups, especially women, have difficulties with English that would need to be taken into

Figure 4.7 Projected population of females aged 65–74, by living arrangement, Australia, 1998–2048

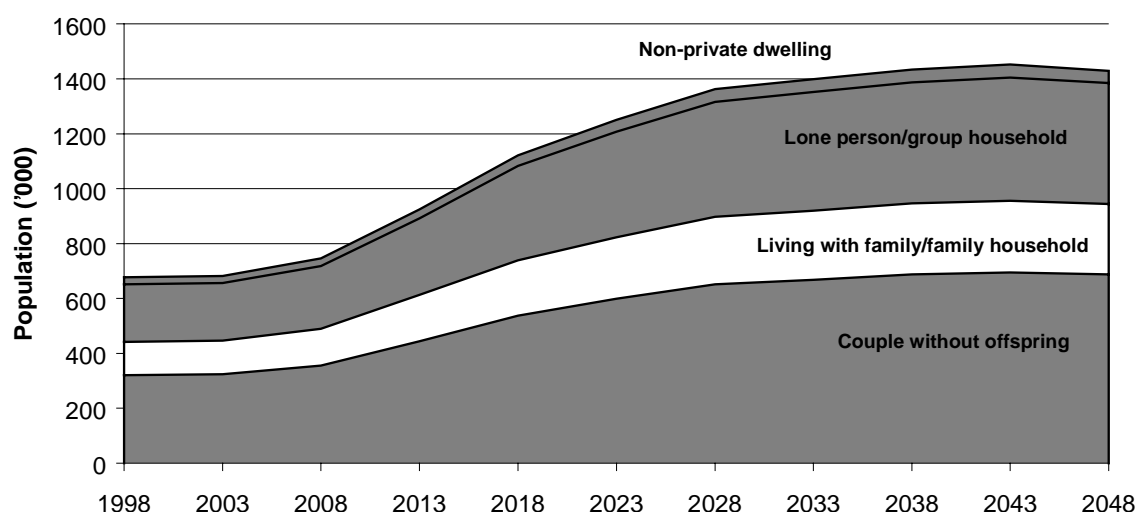
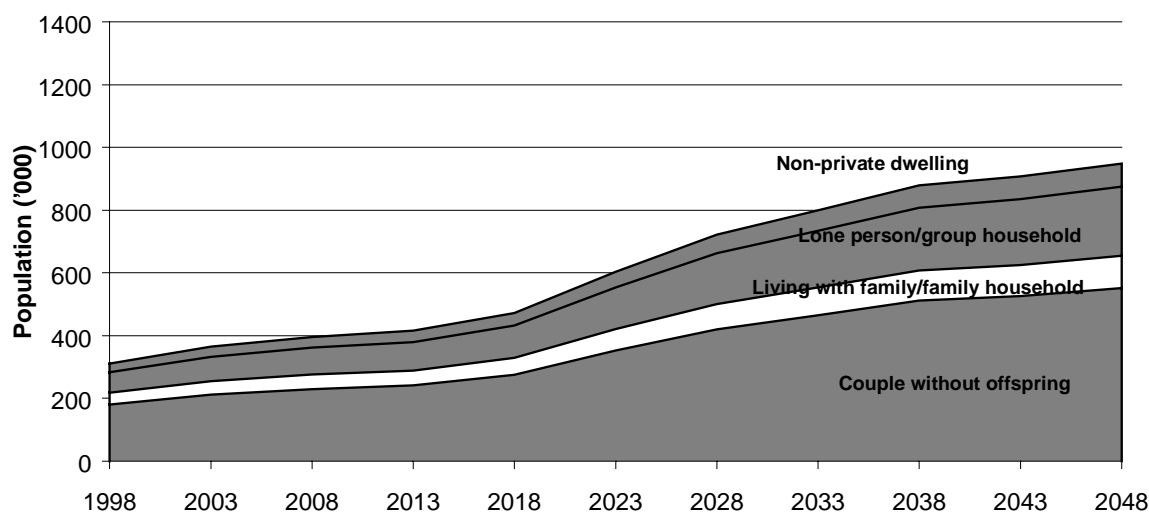


Figure 4.8 Projected population of males aged 75–84, by living arrangement, Australia, 1998–2048

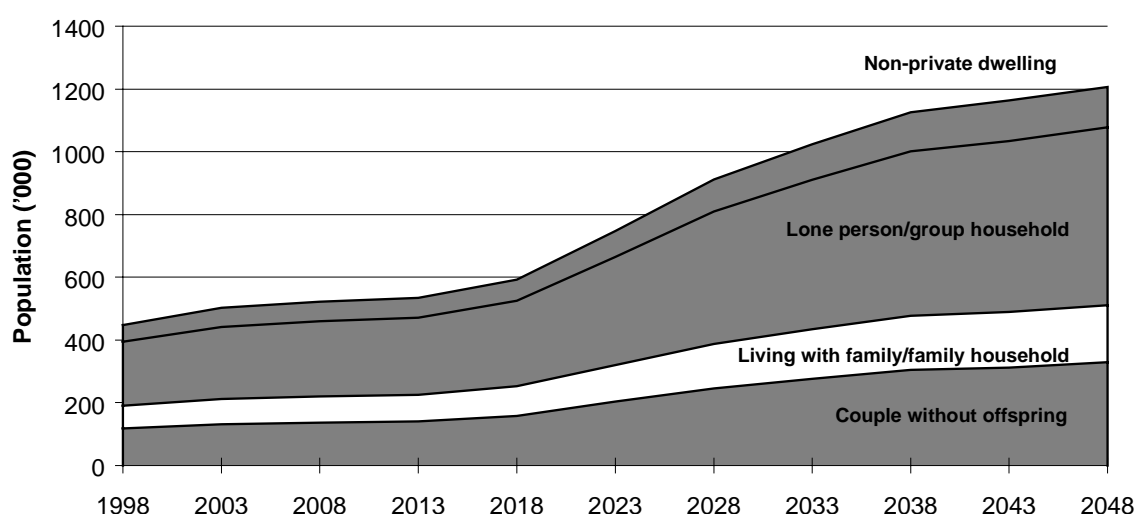


account in the provision of public support. There will be a need for language skills within nursing homes, or nursing homes specific to some of the larger ethnic groups in this category. The delivery of home support services will also need to take language into account. This is an issue that has a particular geographic focus (Melbourne and Sydney in particular) and the future local needs for language-specific services should be investigated.

The geography of ageing is an absolutely vital matter. There are high concentrations of older people in declining country areas. These include small towns where services are being withdrawn and mining towns where mining activity is receding. Younger people in these towns move out, but comparative housing prices and a lifetime of living in one place are obstacles to the mobility of older people. With services being withdrawn, particularly health services, and children moving long distances away, this is a major issue now and is deserving of more intensive investigation.

Other places with high concentrations of older people include coastal retirement towns and some older parts of big cities, increasingly the outer parts of the city rather than the gentrifying inner parts (AURDR 1995). In the latter circumstance, there is an issue of the future availability of appropriate housing, enabling older people to remain in their own neighbourhoods but in housing more appropriate to their capabilities (AURDR 1994).

Figure 4.9 Projected population of , females aged 75-84, by living arrangement, Australia, 1998–2048



Finally, we can expect that our concept of the older person will change. Older people, like women over the past 40 years, will wish to change their roles and their image. Older people will claim a greater part in the nation's affairs and will reject the premature application to them of the dependent label. This once-in-history transition will be not merely a transition in the age structure of the population but a transition in our concept of ageing. Active ageing and aged liberation movements will also be part of the transition (Day 1991; Laslett 1989).

Figure 4.10 **Projected population of males aged 85+, by living arrangement, Australia, 1998–2048**

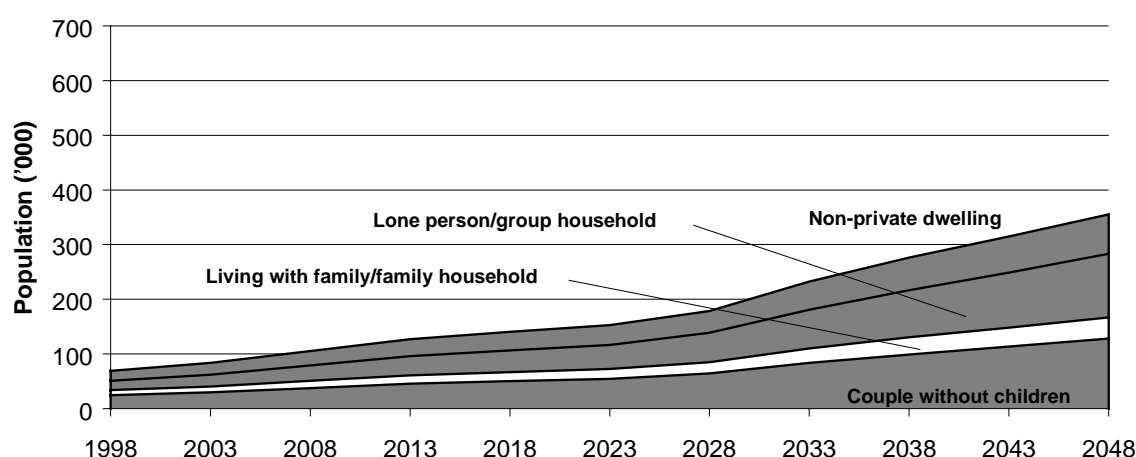
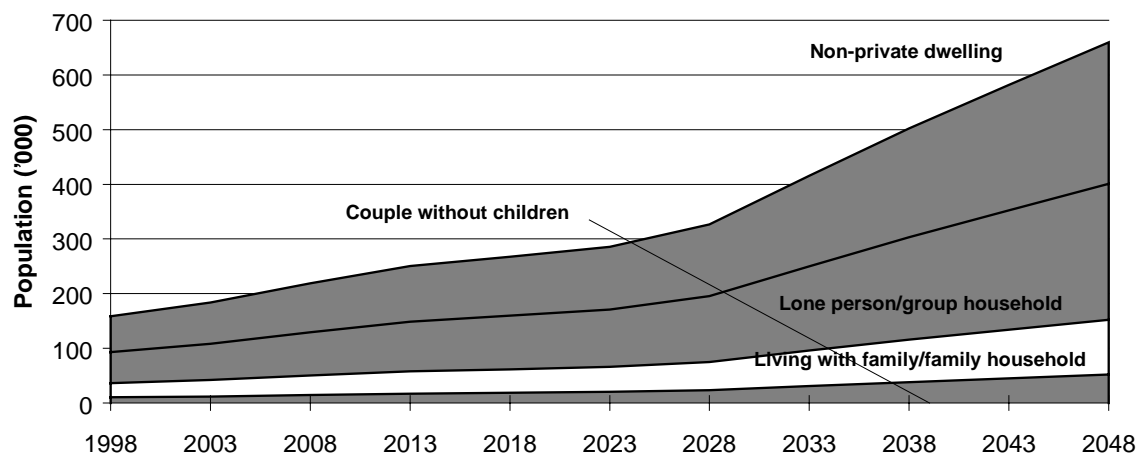


Figure 4.11 **Projected population of females aged 85+, by living arrangement, Australia, 1998–2048**



4.6 Conclusion

Given that ageing has risen to prominence as an issue because of rapid falls in fertility and mortality, it is remarkable how little attention is paid to future levels of fertility and mortality in discussions of ageing. Levels of fertility and mortality are usually seen as being beyond the control of the policy lever and, therefore, exogenous to models of the economic impact of ageing. Most studies of the future impact of ageing simply take the latest official population projections from the Australian Bureau of Statistics as a fixed input to the model. The demographer sees this differently and examines aspects of society or of its economic organisation which contribute to changes in levels of fertility and mortality. If we can seek reasons for changes in past fertility levels or for differences in fertility across countries, then logically we can examine whether this knowledge can be used to influence the path of future fertility. For the past 40 years, socio-demographic research has been very successfully employed in assisting to reduce high levels of fertility in developing countries. If fertility in developing countries had been presumed simply to be exogenous to any socioeconomic model of the future, it would still be high. Likewise, mortality rates have fallen because of research and policy.

Thus, it is important that we do not take a reactive or passive approach to ageing. By this, we mean that we should be actively seeking to modify our ageing future and not simply assessing how much income support we will need and how much the health bill will be. Policies that promote active and healthy ageing are important as is reversal of the trend towards early retirement. We have shown that reversing early retirement could make a very considerable contribution to the alleviation of the additional costs of ageing, and this is now a policy strongly recommended by the OECD. It is important also that we do not force our birth rate down to the levels that now apply in many countries of Europe and east Asia. Here, again, the bean counters take the wrong approach. The National Commission of Audit (1996, p. 123) has recommended that, in order to deal with the demands on revenue of the future ageing of our population, we should withdraw all support from families with children, except those that are poor. The National Commission of Audit seems to take the view that reproduction is exogenous to the economic system; that couples, in making their reproductive decisions, pay no heed to the economic and institutional settings that face them (see McDonald 1997b for the details of this argument). The result of this policy approach will be to force the birth rate down, leaving us with the legacy of a coffin-shaped age structure — that is, a much bigger ageing problem in the longer term.

We have demonstrated that immigration has an important role to play in reducing the extent of future ageing. Australia is in a more fortunate position in this regard

than many other industrialised countries. Our combination of fertility at only a moderately low level with current immigration levels has us set on the path to a beehive-shaped age structure. This is a much more favourable age structure from the perspective of ageing than the coffin-shaped age structure facing many other countries. At the same time, it is important to quash the notion that much larger scale immigration than we have at present will alleviate problems associated with the ageing of the population. Immigration levels beyond about 100 000 net per year make little difference to the age structure of our future population while, at the same time, leading to much larger numbers at older ages. Immigration at much larger levels than at present is not required to create the favourable beehive-shaped age structure; it simply creates a hive with more bees.

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General discussion

The discussion covered a wide range of issues, including:

- whether there is a population ageing crisis;
- retirement incomes;
- economic incentives and fertility;
- immigration; and
- work and health after age 65.

Whether there is a population ageing crisis

A participant concurred with the view expressed in Johnson's paper that there really was no population ageing 'crisis'. Rather, there is a 'problem' in the area of pensions, particularly if it is assumed that the increase in longevity adds to retirement rather than to working years. However, the breakdown between the two is largely a policy choice.

Another participant questioned this optimistic view, while agreeing that the term 'crisis' may not be the best one. His reading of the evidence — combined with a number of assumptions — did not rule out the emergence of serious problems as a result of ageing. These may not arise in the area of pension incomes, which would remain manageable, but could well affect the health care area.

Retirement incomes

The paper presented by Johnson triggered a wide ranging and comprehensive discussion on retirement incomes.

A participant questioned Johnson's view that Australian superannuation arrangements were paternalistic and choice restrictive. He noted that both traits, while true of some funds, were not true of the majority and were largely the legacy of outmoded practices (for example, defined benefits schemes). Modern superannuation instruments, he argued, offered a great deal of choice to consumers.

In reply, Johnson acknowledged the existence of some degree of choice, and the need for the superannuation industry to act in a prudent manner at all times. However, he maintained the view that current options are not nearly as diverse as

they should be, only offering different levels of risk rather than a choice of industries, firms and ethics.

A participant, while agreeing with Johnson on the need for some choice, cautioned against giving consumers too much choice in their retirement investments. Given the highly technical and complex nature of those investments, options available to investors should be restricted somewhat, in the interest of consumers.

Johnson acknowledged that a strong and coherent regulatory regime was needed, alongside greater information, to prevent the kinds of problems affecting some personal pension schemes in Great Britain. However, he reiterated the contradiction inherent in promoting greater personal responsibility while simultaneously restricting choice. In response to another question, he elaborated on the legal and prudential framework needed for the sound operation of pension plans, mentioning the negative experience of the Pension Benefit Guaranty Corporation in the US. This public organisation, created to underwrite private company pension funds, is now facing a US\$60 billion dollar unfunded liability following the bankruptcy of many companies. While recognising the scope for policy intervention, Johnson cautioned against badly targeted action by policy makers.

Finally, a participant argued that Johnson's paper took an overly pessimistic view of the capacity of superannuation to make a significant difference to the reliance of retirees on public transfers. The power of compound interest means that superannuation in Australia is already having a sizeable impact: he quoted figures from the RIMU suggesting that superannuation, even if entered into at age 50 only, could add 20 per cent to the aged pension of a person retiring at age 60.

Economic incentives and fertility

A discussion centred on the theory, mentioned in Dowrick's paper, that declines in fertility (leading to population ageing) were a rational response to economic signals such as the growing opportunity cost of children. Peter McDonald agreed that opportunity costs were the key to influencing fertility and ageing. These costs, he argued, need to be addressed in a way that is sympathetic to the increase in employment opportunities for females, not through a return to the 'male breadwinner' ideal. The experience of some southern European and Asian countries (for example, Japan) has shown the latter approach to be counterproductive. An inescapable component of any sensible approach should be gender equity in household tasks, so that the cost of child rearing to females is lessened.

A participant questioned the validity of some of the models mentioned in Dowrick's paper, which assumed that persons of working age both cared about their children

and expected them, in turn, to care for them in old age. He cited research undertaken by his organisation, which indicated a prevailing SKIN ('Spend Kids' Inheritance Now') mentality in persons about to retire, coupled with a belief that governments would provide the necessary safety net in old age. If proven, such an attitude would have profound implications for both consumption, saving and pensions. Dowrick agreed.

However, Peter McDonald stressed the need to distinguish between financial and emotional support. Studies indicate that financial transfers, until the age of 75, still flow from old to young overall. Nonetheless, children still provide a considerable amount of care to their parents.

Immigration

The ubiquity of population ageing around the world raised the question of whether immigration could represent a solution to the ageing 'problem'. Peter McDonald suggested that there would be substantial international competition for immigrants (especially skilled migrants) in future, so immigration could play only a minor role in stabilising populations. This outcome, he argued, would only be achieved by maintaining fertility levels at above 1.65 or 1.6 births per woman.

Work and health after age 65

In view of the projected increase in longevity, a participant asked whether anything was known about the balance between healthy (and possibly productive) life and life requiring medical care for ill health during the extra years. Peter McDonald answered that most of these years would be healthy, with the ill health component taking up no more time than it does at present (the final two or three years). This would help restrain the cost of health and aged care.

Little was known, he added, about how the labour force participation of persons aged 65 and over may alter as a result of a long and healthy old age. Population ageing alone would ensure that more people in that age bracket would be working, although they would still amount to a small number.

5 Ageing in Australia: some modelling results and research issues

Bruce Bacon

Much of the literature on ageing has addressed issues associated with the implications for public programs — specifically for their cost to government — with relatively little attention focusing on some of the broader economic and social consequences of ageing at both the individual and societal level. Attention has thus been directed primarily to establishing whether the country can afford to age, and if not what needs to be done about it, with rather little discussion of what ageing will mean for the nature of Australian society itself. The issue of population ageing has thus become a focus of attention in Australia as in many other countries around the world, not so much as a trend which should be studied and understood, but more as an issue about which something needs to be done. (Saunders 1996, p. 2)

5.1 Introduction

The economic implications of population ageing are diverse and complex with many linkages back through the whole economy.¹ At the macroeconomic level, the channels through which the effects of ageing operate include behavioural changes to:

- labour force participation rates and retirement decisions;
- aggregate consumption-saving behaviour across the life cycle;
- productivity; and
- public expenditure and revenue.

¹ Single country analysis is necessarily problematic. Nearly all major economies are experiencing significant ageing although starting at different times and at different rates. The resulting reduction in world labour force will produce a general decline in the potential global output. The effect on Australia via movements in interest rates, exchange rates and international capital flows is difficult to assess. Attempts to address these issues are usually conducted in a general equilibrium, multi-country framework (see Masson and Tryon 1990; Turner et al. 1998).

Börsch-Supan (1996) notes that at the micro level, many economic variables vary by age — participation rate, productivity, consumption, saving and so on. This implies that, even without changes in underlying economic behaviour, macroeconomic aggregates will shift as the population ages.

He goes on to remind us that ‘while there is little debate of the basic economic mechanisms of ageing *per se*, their quantification, however, is a matter of heated debate’ (p. 103).

With this in mind, the paper contributes to the debate by drawing on modelling developed by the Retirement and Income Modelling Unit (RIM) in an attempt to unravel some parts of the story and provide some numerical estimates. In particular, the paper identifies tensions that may occur by the middle of the next century. The paper gives an overview of the RIM models used for ageing analysis and explores issues arising out of RIM’s modelling approach. Some important methodological and research issues are raised, and avenues for future possible research are flagged.

5.2 RIM modelling

The Retirement Income Modelling Task Force² was established in 1992 to provide government with ‘the capacity for modelling the impact of retirement policies over the next half century and provide advice to departments and ministers as required on policy options effecting retirement incomes’ (Gallagher 1995, p. 23).

The Task Force was charged with developing dynamic simulation modelling of the interaction of superannuation, labour markets, social security and taxation over a 60 year time horizon at both an aggregate and individual-based level.

To address its charter, RIM chose to develop four types of models:³

1. *demographic cohort models* which project each age/sex cohort in the population by labour force structure, retirement behaviour, lifetime earning profiles and wealth accumulation;
2. *hypothetical tax benefit models* which take a hypothetical individual or couple from workforce entry to death, capturing all relevant life events, taxes, benefits and retirement income decisions;

² The Retirement Income Modelling Task Force became the Retirement and Income Modelling Unit in 1998.

³ RIM decided not to build a macroeconomic model but simply has macroeconomic linkages exogenously imposed.

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3. *static micro-simulation models* which are used for short to medium term costing and distributional exercises; and
 4. *group tax benefit projection models* which are cell based micro-simulation models that disaggregate the population into a number of groups or cohorts. These models accumulate and project for each cohort a wide range of economic variables for the whole population. Because they are whole economy models they can project a range of aggregate measures and costings as well as provide distributional detail.

5.3 Modelling the ageing process

RIM analysis of the effects of ageing on the economy utilises RIM's demographic models and the group model RIMGROUP. The modelling is done by gender, age and earnings decile (GAD) and attempts to capture possible behavioural shifts that may occur over the next half century. Development of models of the interaction between superannuation, labour markets, social security and taxation over a 50 year time horizon, at both an aggregate and individual-based level is subject to considerable uncertainty. In this respect the results should not be considered as forecasts, but as plausible, consistent and defensible long run scenarios.

RIM has not attempted to develop models to explain the socioeconomic shifts we have observed in recent times. Many of these behaviour shifts are poorly understood by the economics profession. For example, the shift to part time work and other working life decisions is not well understood. Consequently, we have adopted a non-parametric approach⁴ which looks for, and estimates, stable long run relationships in the historic data and methodologies to project them in a consistent framework.

The traditional approach to group models defines cohorts by age, sex and birth date but does not split the groups by income rank and assumes that all members of each broad cohort earn the average earnings of that cohort. This approach has two serious limitations for appropriate modelling of ageing and its interaction with superannuation and the taxation and social security systems.

1. It does not permit the modelling of policy rules that operate at income margins.
2. It produces pooling within each cohort — that is, all members of each broad cohort share equally the characteristics of that cohort.

⁴ RIM has developed a range of tools for univariate and bivariate smoothing, interpolation and profiling.

These limitations are addressed in RIMGROUP by estimating career earning deciles. The RIMGROUP model assumes that we can place each person in the population into an career earning decile in which they remain throughout their life. Detailed discussion on how career earning deciles are estimated is given below.

RIMGROUP is a comprehensive⁵ cohort projection model of the Australian population which starts with population and labour force projections, and tracks for each cohort the accumulation of superannuation for specified account types, estimates non-superannuation savings, and calculates tax payments and expenditures, social security payments (including pensions) and the generation of other retirement incomes (Rothman 1996 and 1997).

The main advantage of RIMGROUP over earlier models is its ability to model policies which vary by income and asset amounts (such as social security income and asset tests), as well as modelling fine detail such as tax expenditures and rebates for superannuation contributions. The modelling of accumulations within income deciles, which allow for different probabilities of changing labour force status (becoming unemployed, for example), will reduce the major pooling bias found in earlier models.

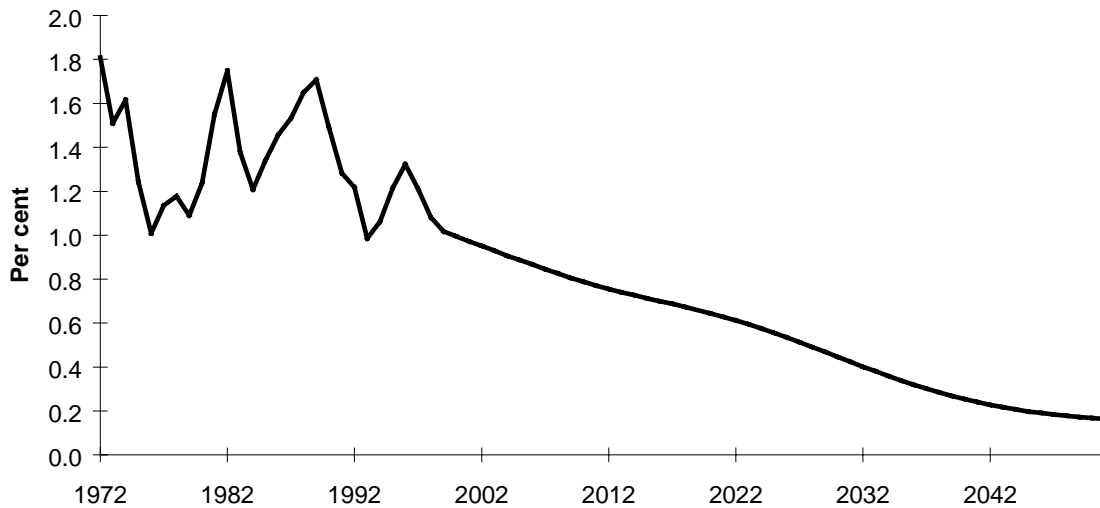
The demographic variables required by RIMGROUP include population totals, sex and age structure, fertility, deaths, migration, labour force status by full time/part time and public/private categories, disability, retirement, pensions and career earning profiles by deciles. These projections are produced by a set of annual demographic models for Australia to the year 2059. The models include a migration model (MIGMOD), a population model (POPMOD), a life expectancy model (LIFE), a labour force status model (LFSMOD), a retirement model (RETMOD) and a set of career earning models (CEPROC) (see appendix 5A). These demographic models are complemented by further modelling of the structure and distribution of superannuation assets and rates (as reported by Rothman 1995) and the structure of retirement investments.

5.4 Ageing and population growth

Due to a rapid decline in birth rates along with the ageing of the ‘baby boom’ cohort, Australia will experience a largely unavoidable ageing of the population over the next half century. It is unavoidable in the sense that almost all the ageing can be attributed to the fall in fertility.

⁵ Much of the strength of RIMGROUP comes from the detailed modelling of the legislative provisions on taxation, superannuation and social security.

Figure 5.1 **Historic and projected population growth rates**



Data source: RIM.

Increases in life expectancy along with the ‘baby boomer’ generation moving through to retirement will produce a marked ageing of the population over the next half century. Australia’s population was 18.5 million people as at June 1997 and is projected to grow to around 24.9 million by 2051. Population growth has trended down from around 1.6 per cent in 1971 to around 1.2 per cent in 1997, and is predicted to fall to 0.16 per cent by 2051 (figure 5.1). To illustrate the degree of ageing occurring in the Australian population, the elderly dependency ratio⁶ — which rose from around 14 per cent in 1971 to 18 per cent in 1997 — is projected to rise to 40 per cent by the year 2051.

5.5 Ageing and the supply of labour

These shifts in the population size and structure are occurring in conjunction with major changes in the labour force participation for both males and females, including: a general decrease in the male participation rate; a general increase in the female participation rate; a move from full time to part time employment; an ageing of females having their first child; longer periods spent in education by the young; and early retirement.

Increasing life expectancy, along with a trend towards early retirement, means that males in the next century will spend an increasing proportion of their lives in retirement. Females, on the other hand, will spend more time in the workforce — as

⁶ Ratio of population aged 65 and over to population aged 15–64

more re-enter the workforce after child raising and stay in the workforce longer — at least for the foreseeable future.

The total participation rate in Australia have been rising over the past two decades. These movements are driven by a long run increase in female participation which has been offset, to a lesser extent, by a falling male participation rate. Movements in the participation rates can be explained by both demand and supply effects. On the labour demand side there have been: attitudinal shifts by employers with regard to employing women, growth of industries which favour female employment and increased use of part time (and casual) employment. On the supply side: the relative pay gap has narrowed between males and females, there is increased access to child care, along with smaller families, delay in marriage, delay in child raising and changes in marriage rates. Further, the increased level of education of women has made them more competitive in the labour market. In total, these factors have significantly increased the benefits to women who enter the labour force, which is directly reflected in their increasing participation rate.

Aggregate data can, however, mask the differences between males and females which are reflected in the changes that have occurred between full time and part time employment. In particular, male part time employment has been increasing (admittedly from a low base) but only partly offsetting the significant falls in full time participation for males. Females have increased their participation rates for both full time and part time work.

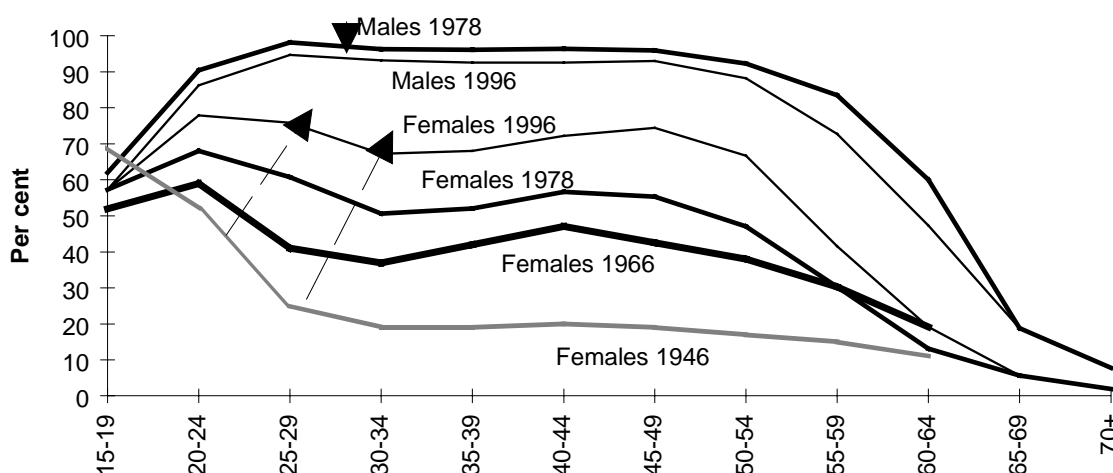
There appear to be four underlying mechanisms driving the observed labour force participation patterns which we classify as:

- gender shifting — more female employment at the expense of male employment;
- part time/casual — the growth in part time and casual employment;
- early retirement — cohorts which would normally retire at pension age now retiring before hand; and
- female re-entry — more females re-entering the workforce after child bearing/raising.

In general, these trends appear to be producing a convergence of male and female labour market behaviour. In particular, unmarried women are behaving more and more like men and married women are converging (albeit very slowly) towards unmarried women.

The convergence in labour force behaviour can be seen in figure 5.2 which shows the age-specific participation rates of males and females over the past fifty years. Over this period female labour force participation has been, and will continue to be,

Figure 5.2 Labour force participation by age group



Data source: ABS cat. no. 6203.0, various years); Young (1994).

dominated by child bearing/raising responsibilities, which currently accounts for over 50 per cent of the spells out of the workforce (Rimmer and Rimmer 1994).

Using plausible gender convergence criteria, we project the labour force status of males and females down to full time/part time, public/private sector wage and salary components. Of particular interest are the age-specific participation rates used to construct the aggregate participation rate (figure 5.3).

Even though female participation rates are projected to rise for all age groups (except 15-19 year olds), because of compositional effects, total female participation rate eventually falls. The resulting aggregate participation rate rises to 64 per cent before falling to 54 per cent in 2059.

Modelling of aggregate ratios can be misleading if the underlying compositional effects are not taken into account.

Analysis of cross-country Organisation for Economic Cooperation and Development (OECD) tables of employment rates (table 5.1) can help put Australia's participation rate movements into perspective. In particular, for males aged 55-59 years, Australia have shown the greatest fall in employment rate than any other OECD country.

Figure 5.3 Participation rates for males and females, annual, smooth projection

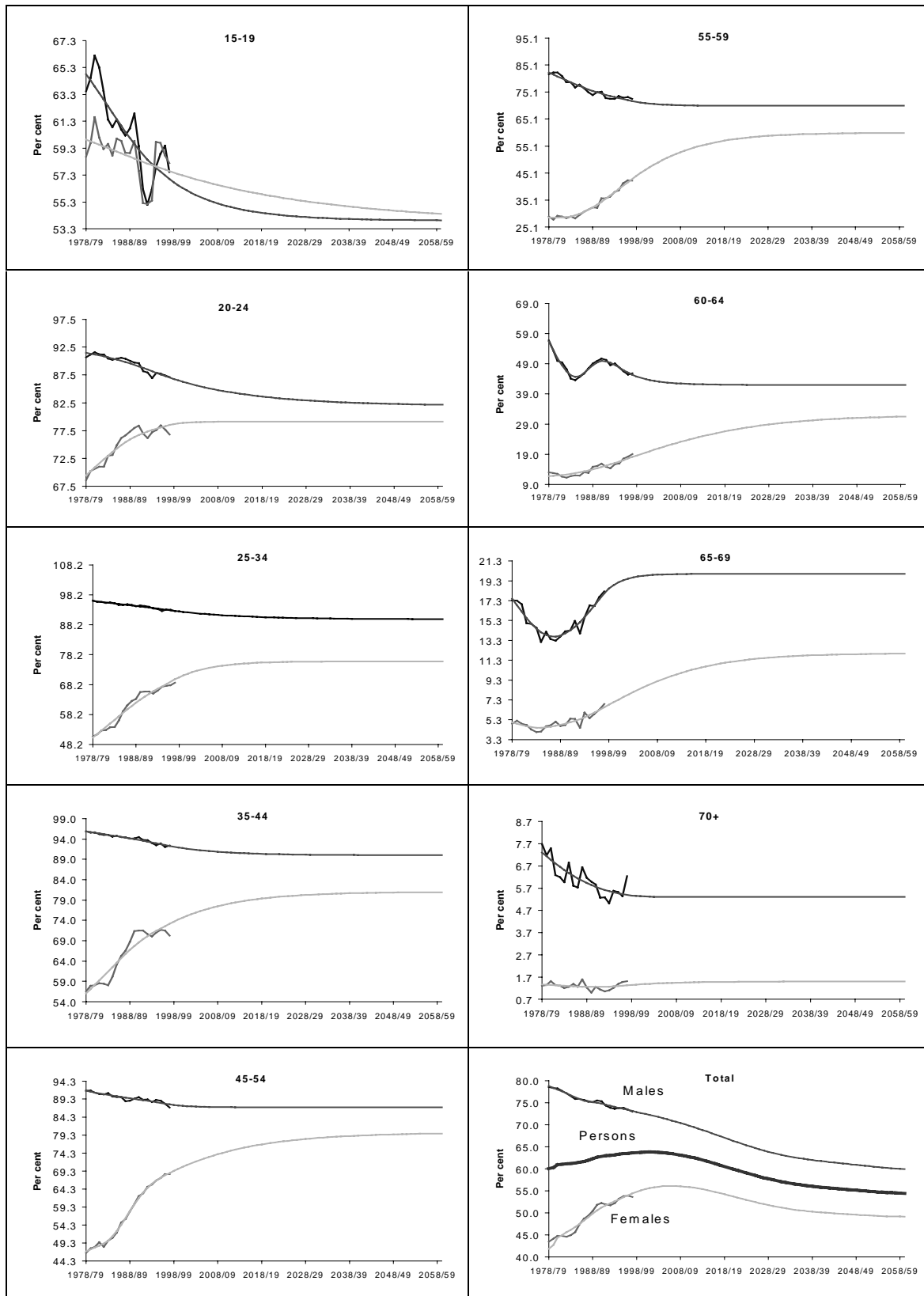


Table 5.1 **Percentage point change in employment rates, by age, 1975–91^a**

	<i>Males (per cent)</i>			<i>Females (per cent)</i>		
	<i>55–59</i>	<i>60–64</i>	<i>65+</i>	<i>55–59</i>	<i>60–64</i>	<i>65+</i>
Australia	–20.2	–22.7	–7.6	+3.1	–1.0	–1.5
Canada	–14.2	–23.6	–6.8	+8.5	–0.9	–1.6
Finland	–16.8	–27.1	–22.3	–0.9	–8.1	–5.6
France	–17.1	–36.0	–10.1	–0.7	–13.6	–4.2
Germany	–12.5	–23.3	–6.2	–2.0	–5.4	–2.4
Ireland	na.	–15.9	–10.9	na.	–0.8	–3.8
Italy	na.	–7.7	–2.1	na.	+1.4	0.0
Japan	+2.4	–6.2	–6.0	+6.4	+2.6	+1.3
Netherlands	–16.2	–41.5	na.	+4.8	–2.9	na.
New Zealand	na.	na.	na.	na.	na.	na.
Norway	–5.3	–14.6	–18.3	+13.4	+7.5	–0.9
Portugal	–6.5	–19.6	–13.8	+5.2	+0.8	–2.2
Spain	–14.5	–25.6	–15.0	–5.3	–4.4	–4.9
Sweden	–3.9	–9.4	–4.4	+18.3	+15.8	–0.9
United Kingdom	–18.1	–23.6	–7.2	+0.2	–4.5	na.
United States	–5.4	–9.6	–4.8	+7.3	+2.3	+0.3

^a For cross-country comparisons employment rates are more appropriate than participation rates.

Source: OECD (1995, pp. 18–19).

5.6 Ageing and early retirement

Most analysis of early retirement, both in Australia and overseas, treats the changes in participation rate as a measure of early retirement. This is conceptually incorrect and in some circumstances totally misleading. First, being classified as not in the labour force does not necessarily mean retired. Our estimates indicate that the retired only make up some 60 per cent of those classified as not in the labour force. Second, but more importantly, the movements in participation rates and retirement rates can be in the opposite directions. This is particularly true for females. In general, age-specific participation rates for females are rising at the same time as age-specific retirement rates are also rising.

To be more specific, RIM estimates that, since 1978, around 25 per cent of the fall in participation rate for males aged 45–54 was due to early retirement. Similarly, for males aged 55–59, early retirement accounts for around 75 per cent of the fall in their participation rate. Further, we estimate that the increase in participation rate of females aged 45–54 was reduced some 5 per cent by early retirement and reduced by around 25 per cent for females aged 55–59.

Analysis of early retirement has shown that it is a real phenomena for both males and females. The results suggest, however, that the increases in early retirement have slowed and might even have stabilised (Bacon 1997).

Participation rates should not be used as an indicator of early retirement as they capture other labour force phenomena.

5.7 Ageing and economic growth

It is a simple exercise to decomposes the growth of gross domestic product (GDP) into growth components:

$$GDP = \frac{GDP}{Hours} \circ \frac{Hours}{Emp} \circ \frac{Emp}{LF} \circ \frac{LF}{Pop} \circ Pop$$

where: Hours = total hours worked
 Emp = employed
 LF = labour force
 Pop = population aged 15+

or

$$\% \Delta GDP = \% \Delta Productivity + \% \Delta Average Hours Growth + \% \Delta Employment Rate + \% \Delta Participation Rate + \% \Delta Population$$

If we compare the past 15 years with the middle of next century we have using the above demographic and labour force projections (table 5.2).

As noted above, ageing of the population and the consequential decline in population growth are largely unavoidable. The reduced population growth component of some 1.4 percentage points, means that there will be significant downward pressure on the long run GDP growth unless there is compensation in other growth components. Assuming that our projected population and labour force dynamics are of the right order, this leaves productivity as the component which must take up much of the slack.⁷

Table 5.2 GDP decomposition (per cent)

<i>Growth component</i>	<i>Annual growth, 1983–98</i>	<i>Annual growth, 2044–59</i>
Population	1.7	0.3
Participation rate	0.1	–0.1
Employment rate	0.2	0.0 (stable unemployment rate)
Average hours	0.3	0.0
Productivity	1.6	1.6 (assumed constant)
GDP growth	3.9	1.8

⁷ Sources: RIM.
 Reversing all the falls in male participation rates back to 1978 values still results in an aggregate participation with negative growth in 2059.

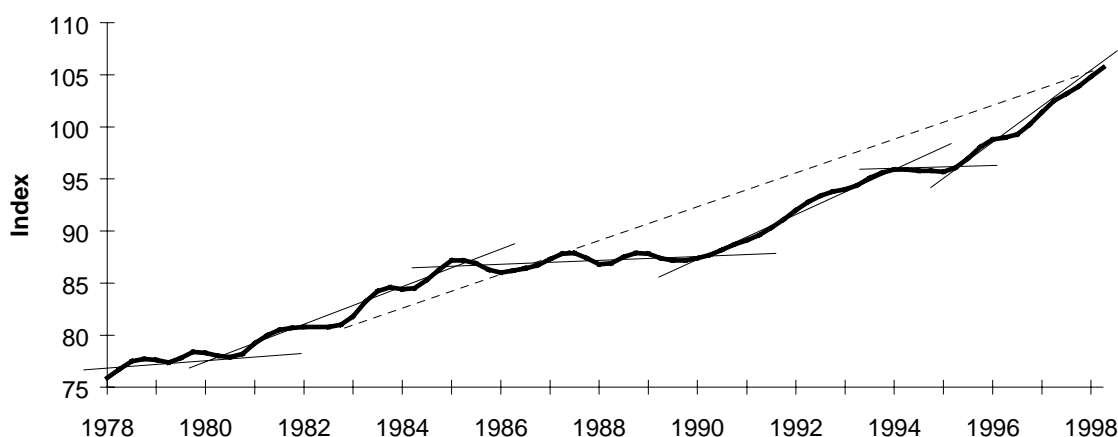
5.8 Ageing and productivity

Figure 5.4 shows productivity defined as trend GDP (chain volume measure) per hour worked from 1971 to 1998. Annual growth in this measure of productivity from 1983 to 1998 was 1.6 per cent (represented by the dotted line). This measure of productivity reflects the combined effect of labour, capital and other factors such as managerial efficiency and economies of scale.⁸

There is a widely held view that during the working life of an individual productivity peaks around mid-life and then declines as one ages. Actual estimates of the age–productivity relationship are difficult and at best only show a weak relationship. There is a question of whether work performance (or potential work performance) does diminish as one approaches retirement age or whether the relationship simply reflects institutional age discrimination (Disney 1996; Jackson 1998; Johnson and Zimmermann)? Answers to this question would give some insight into how increased labour demand flowing from ageing might influence the productivity growth path.

This is important because if productivity does decline with age, then with an ageing population average aggregate productivity would fall, exacerbating the pressure on

Figure 5.4 Productivity index (GDP to hours worked)



Data source: ABS (Australian National Accounts, Cat. no. 5206.0, from AUSSTATS)

economic growth. However, it is exceedingly difficult to directly measure age-specific productivity discrimination (Disney 1996; Jackson 1998; Johnson and Zimmermann).

⁸ Using a production function approach to separate the effects is an important research issue, but does not affect the growth story.

An alternative approach is to use age-earning profiles as a proxy for the age-productivity profiles on the assumption that labour earns its marginal product. However, it is also difficult to assess whether workers are receiving their marginal product or if older workers are receiving wages above their marginal product (Jackson 1998).

Sarel (1995), estimates an explicit age-productivity profile from a macroeconomic cross-country growth model using data on population structure and growth rates of income per person (figure 5.5). This compelling result, however, rests on a number of restrictive assumptions and on the use of income as a proxy for productivity, the latter needing careful consideration.

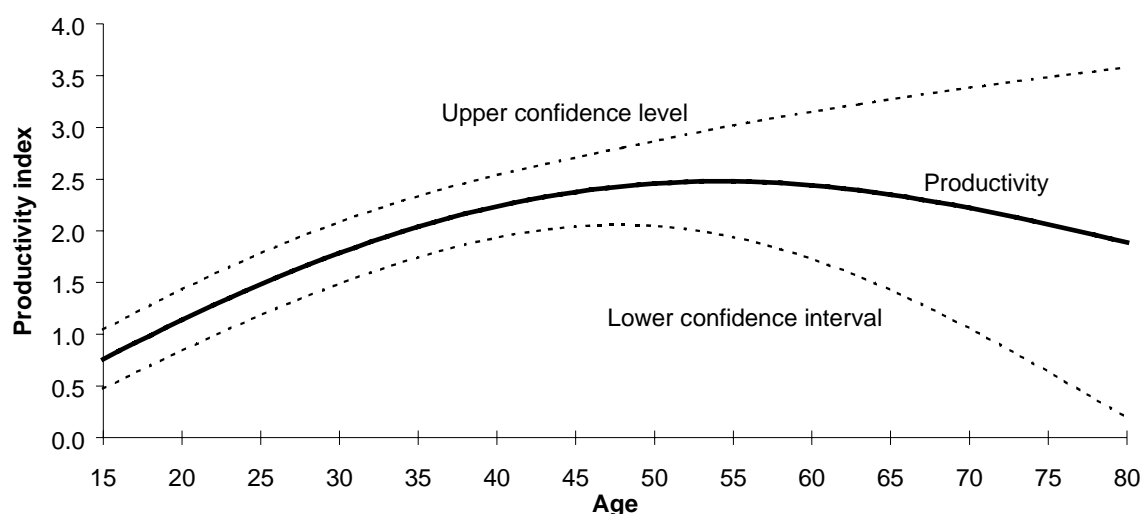
Some important research questions are:

- What factors drive the labour supply decisions of the elderly?
- What factors influence the retirement decision — both for early and later retirement?
- Will the shape of the profile change under demand/supply pressures?
- How is total productivity affected by the ageing process?

5.9 Ageing and earning profiles

Cross-sectional analysis shows that for both men and women workers, average

Figure 5.5 **Productivity, by age**



Data source: Sarel (1995)

earnings follow an inverted U-profile with age (see Borland and Wilkins 1996). Casual inspection of the age-earning profile would suggest further support for a humped productivity profile (figure 5.6).

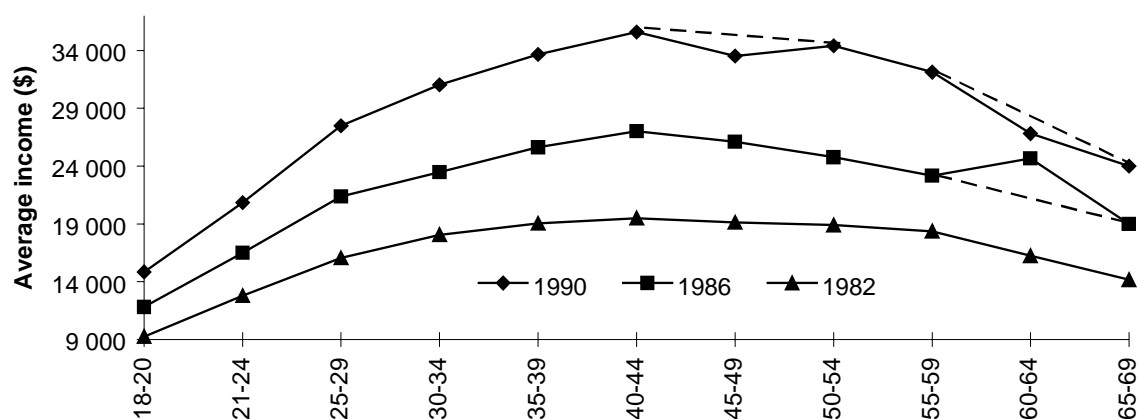
These earning profiles, however, represent average earnings for each age group of those still working. If the characteristics of those working vary systematically with income say, then these profiles will not reflect compatible cohorts for productivity analysis. For example, if people on high incomes with accumulated wealth retire early, then those left in the labour force will necessarily have lower earnings on average. Under this scenario estimates of the earning profile will suffer from selection bias and the average earnings profile would turn down at higher ages.

Apart from estimating productivity profiles, the measurement of the age-earning profile is central to modelling income and expenditure effects of ageing, superannuation and other wealth accumulations.

Previous studies have highlighted the difference in age-earning profiles from cross-sectional and longitudinal data. For example, Irvine (1981, p. 303) notes that where 'age earning profiles estimated from cross-sectional data are hump shaped ...the use of longitudinal data, however, yields a contrary result [in that] earnings never fall even though the rate of increase may slow down'. Longitudinal data from the United States demonstrates this difference in figure 5.7 (Ruggles and Ruggles 1977).

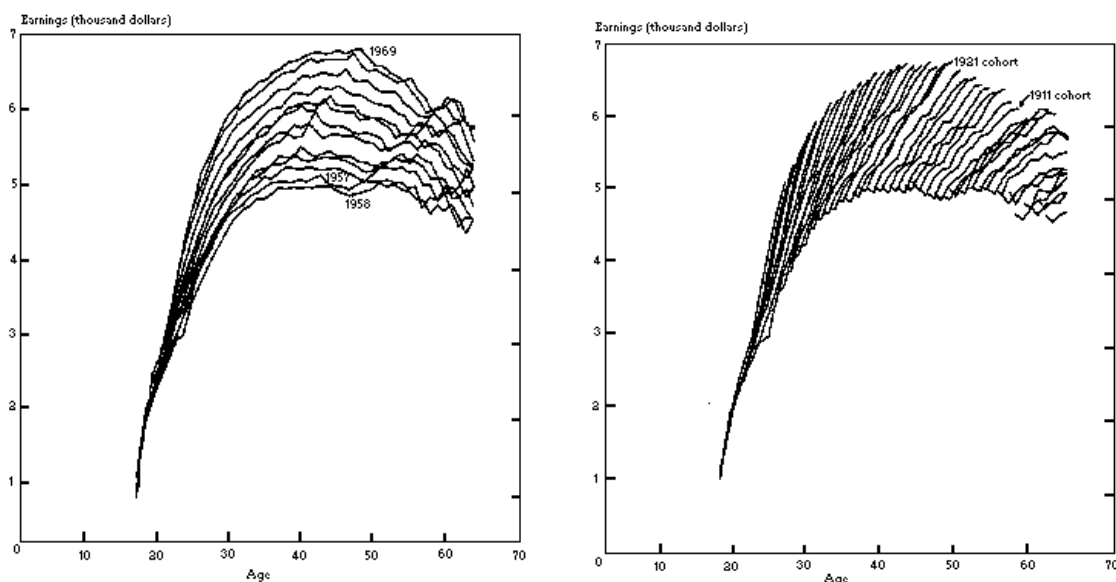
The general pattern is that while longitudinal data have age-earning profiles increasing through time in real terms, the corresponding cross-sectional data decreases in later life. It is clear that directly using cross-sectional data to capture longitudinal effects can be misleading. Unfortunately Australia has little

Figure 5.6 Male wage and salary income



Data source: ABS income distribution surveys

Figure 5.7 Age-earning profiles in the United States, 1957–69
1957 dollars



Data source: Ruggles and Ruggles (1977).

longitudinal data to address this issue and we must resort to using cross-sectional data.⁹

Cross-sectional earning profiles do not reflect the earning profile of the average individual.

Economic analysis employing a typical individual with a humped earnings profile may give misleading results.

5.10 Ageing and career earnings

RIMGROUP ages cohorts through time on the basis that there is no swapping of individuals between cohorts. That is, superannuation is accumulated within a cohort and is dissipated by that cohort. The approach adopted for RIMGROUP is to use wage and salary earnings (and business income) as a proxy for lifetime career earnings and uprate these age-specific earnings to capture longitudinal behaviour. Conceptually, one would like to group the population into career earning deciles such that the top decile contained wage earners who will accumulate the greatest

⁹ RIM has developed techniques for estimating consistent single year of age longitudinal profiles from group cross-sectional data.

superannuation over their lifetime and the bottom decile those who will accumulate the least.

Constructing age-specific deciles based on ranking wage and salary directly from an Income Distribution Survey (IDS) would result in full time workers being placed in the top deciles, part time workers in the middle deciles and those who are unemployed, students or NILF (not in the labour force) in the bottom deciles.

The approach we have adopted allocates every person in the population to one of ten earnings profiles based on their expected lifetime career earnings. That is, a ‘decile’ will contain full time, part time, unemployed and those not in the labour force, such that individuals may move between these labour status but maintain the average income profiles (full time or part time) for the decile over their lifetime.

Using cross-sectional data from three IDSs to estimate career earning profiles by decile, the allocation procedures consist of two main objectives:

- to remove selection bias and place full time workers into their correct decile; and
- to allocate all other individuals to one of these career earning deciles.

The first objective is addressed by estimating the number of individuals who have left full time wage and salary employment and putting them back into the sample.¹⁰ If appropriate incomes can be allocated to each pseudo person, then ranking will force the real people into their correct decile. Using the three IDSs, observations were stochastically sampled for each cohort based on education and occupation profiles to construct pseudo populations along with their likely incomes. Particular attention was paid to occupational reclassification, as many individuals change their occupation with age.

Studies which use occupation as an explanatory variable (or regressor), and which do not adjust for occupation reclassification, may introduce significant bias into their estimates.

Fortunately the IDS carries both current and period labour force information. To capture labour force movements, we map individuals who are working part time, self-employed or not in the labour force to respective full time deciles by estimating transition probability matrices.

The transition probability matrices from current to period labour force status may be particularly noisy, with many age-specific matrices having a small number of

¹⁰ Thanks to Bruce Chapman for suggesting this as a possible approach.

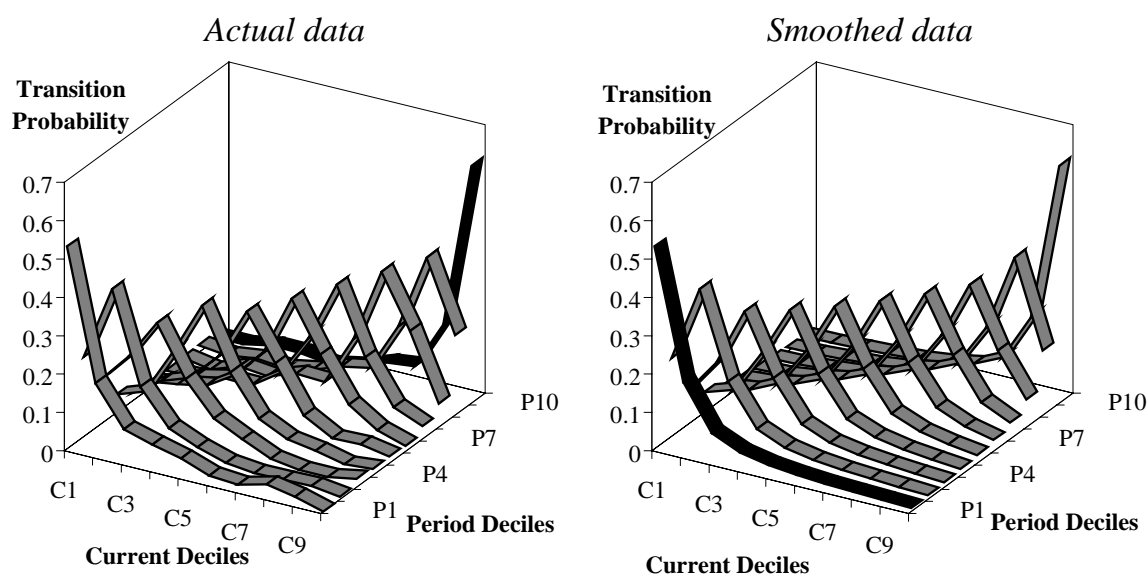
observations. We have employed a regression analysis using an inverted quadratic to smooth these data.

Two examples illustrate these estimated transition probability matrices and the small sample problem. An example demonstrating results with a reasonable sample is the transition probability matrix for females in full time employment in both current and period terms (figure 5.8). The chart indicates how well the model fits the data.

At the other end of the spectrum we have, however, an example with a small number of observations. This example shows how the model extracts the underlying signal from noisy data (figure 5.9).

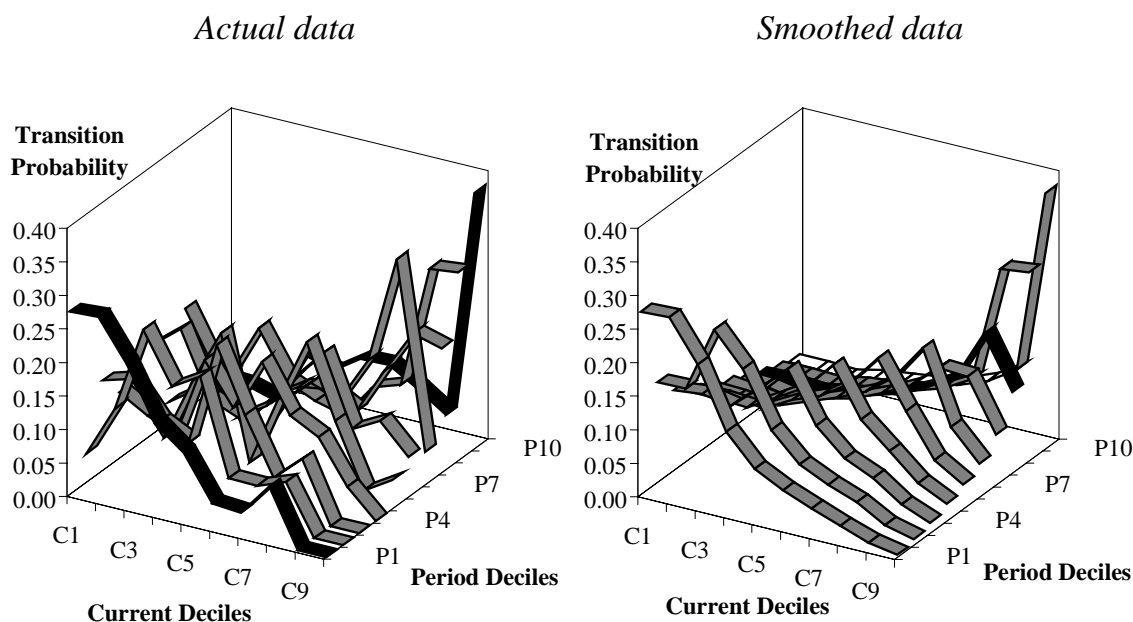
By placing full time wage and salary earners into their correct career earning decile, and allocating all other individuals to one of these deciles via appropriate transition probability matrices, total career earning profiles are estimated for each decile. Figure 5.10 shows the estimated total career earnings profile for each decile for males.

Figure 5.8 Female full time current wage and salary to full time period wage and salary



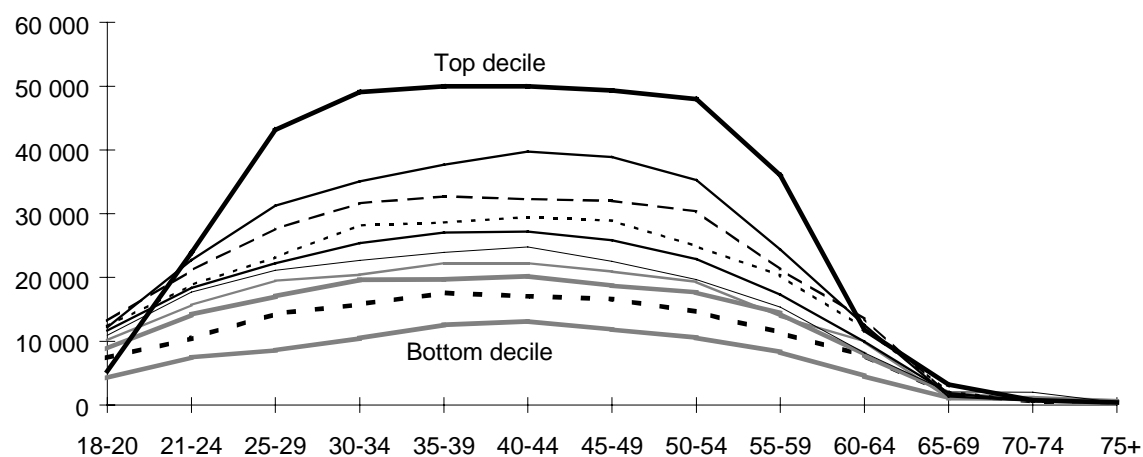
Data source: RIM

Figure 5.9 **Female part time current wage and salary to full time period wage and salary**



Data source: RIM

Figure 5.10 **Total male career earning deciles, by age, 1990**
Dollars per year



Data source: RIM

5.11 Ageing and public expenditure

A major issue associated with ageing is the pressures it may place on the public purse. RIMGROUP is designed to answer ageing questions like: the sustainability of

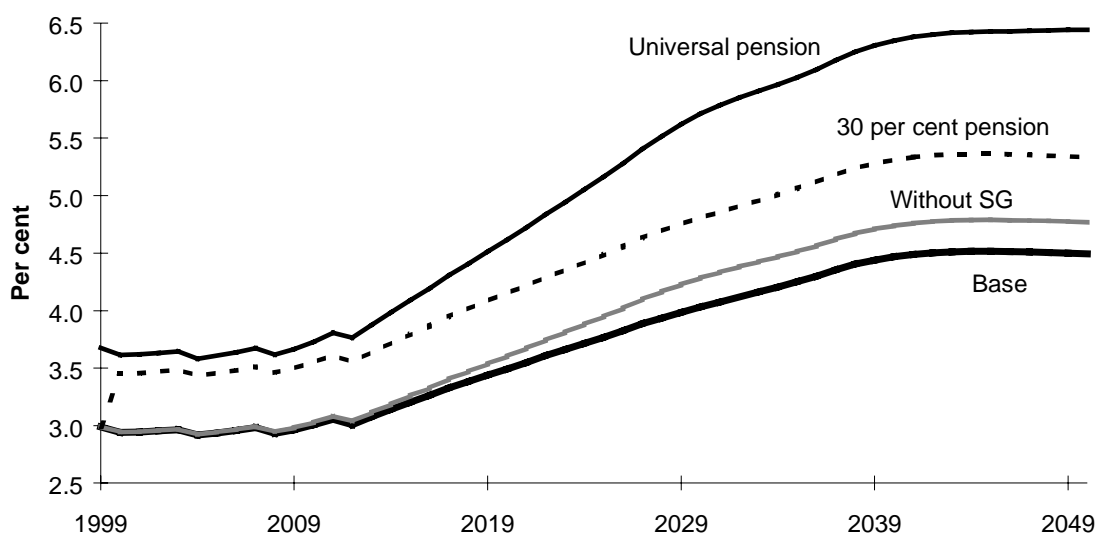
age pensions, the impact of compulsory superannuation and the proportion of aged that is expected to receive some pension. Further, the comprehensiveness structure of RIMGROUP means that it can serve as a framework for other longer term modelling such as projecting dependency ratios and the longer term costs of the health system. Two concrete examples using RIMGROUP (from Rothman 1998, and used by the OECD 1999 special feature on population ageing) are instructive.

5.11.1 Pensions

The first example looks at the long term costs of age and veterans pensions, under different policy settings. The base RIMGROUP scenario is the continuation of voluntary superannuation saving and the Superannuation Guarantee Charge, with pensions indexed to average weekly ordinary time earnings but with threshold levels for income and assets tests indexed to the consume price index.

Figure 5.11 shows that the estimated costs of aged and veterans pensions will rise as a proportion of GDP. The base case has the percentage of GDP increasing by 1.5 percentage points in 2050 compared to a universal pension which increases public outlays by an extra 3.5 percentage points of GDP. Two other scenarios — namely, no Superannuation Guarantee system and a rise in the full age pension from its current benchmark of 25 per cent of average male wages to 30 per cent — are also shown for comparison.

Figure 5.11 Pension costs as a percentage of GDP



Data source: RIM

5.11.2 Health

The second example is that of health expenditures. RIM have produced projections of health outlays consistent with our GDP projections as input to the Government's Commission of Audit (1996).

The RIM projections are of total public plus private health costs for the years 2031–41. The basic methodology is to apply age-specific health expenditure per person to the projected numbers in that age (an extension of the methodology used by EPAC 1994).

Over the 14 years to 1997 health expenditure per capita increased by 2.8 per cent in real terms. Ageing contributed some 0.6 per cent, and technology and demand contributed 2.2 per cent. That is 2.2 per cent in age-specific terms, and on the assumption that this trend continues, rounded to 10 per cent, health costs as a proportion of GDP would range between 15–19 per cent by 2041, depending on the productivity assumption¹¹ (table 5.3).

With total health costs currently about 8.5 per cent of GDP, and using the lower projection associated with productivity growth of 1.5 per cent, the increase of 6.6 percentage points of GDP by 2041 could be compared with the projected base case increase in pension costs of 1.5 percentage points.¹² The difference in scale of the rise in health costs *vis a vis* pension costs is reasonably easy to understand in broad terms. As noted by Rothman (1998, p. 17):

These comparisons, however, must be made with care. On the one hand, there are a number of other social security costs which have seen significant growth in recent

Table 5.3 **Projected health costs as a proportion of GDP**

<i>Technology and demand</i>	<i>2031</i>		<i>2041</i>	
	<i>1 per cent annual increase</i>	<i>2 per cent annual increase</i>	<i>1 per cent annual increase</i>	<i>2 per cent annual increase</i>
1 per cent productivity	10.7 per cent	15.9 per cent	11.7 per cent	19.1 per cent
1.25 per cent productivity	9.8 per cent	14.5 per cent	10.4 per cent	17.0 per cent
1.5 per cent productivity	8.9 per cent	13.2 per cent	9.3 per cent	15.1 per cent

Source: RIM

¹¹ The Commonwealth's share of total health expenditure is currently around 45 per cent. However, Commonwealth health expenditure per capita has been rising on average at 4.1 per cent in real terms over the five years to 1997.

years which could be modelled,¹³ and on the other hand, the above health projections capture total health expenditures¹⁴ not just government outlays.

5.12 Ageing and saving

The life cycle hypothesis suggests that wealth should decline after retirement. In fact rational behaviour implies that retirees should run down their assets to zero at the end of their lives. The hypothesis leads to the conclusion that individuals dissave in retirement and as the population ages the increasing proportion of retired households implies that aggregate saving will fall. Cross-sectional studies, however, suggest that the life cycle model does not reflect reality and in fact the retired save as high a proportion of their income as the rest of the population.

A recent paper by Banks, Blundell and Tanner (1998) used data from the UK Family Expenditure Surveys over the past 25 years to investigate consumption, income and employment status across retirement years. They observe that:

One reason for the large fall in consumption is that many of the expenditure items are employment related and that there is a large reduction in the consumption of these work-related goods at retirement.

The resolution of the retirement puzzle rests to some extent on the definition of saving. Miles (1999, p. 34) argues that ‘saving rates that are normally constructed from micro data sets do not properly account for the declining value of pensions assets in retirement ... the impact of this can be very substantial’.

RIMGROUP models the asset accumulation on an accruing accounts basis which not only captures the rundown in superannuation accounts in retirement, but captures valuation effects throughout the accumulation process.

5.13 Ageing and wealth

RIM has made estimates of the net wealth of households (Bacon 1998). These imply an average annual growth rate since 1971 of some 11 per cent in nominal terms or 9.7 per cent per capita.

¹² Around 60 per cent of health costs flow from persons aged over 65 in 2041.

¹³ Disability support pension, Newstart allowance, sole parent allowance, family payments.

¹⁴ Public sector outlays on health for those aged over 65 increases by around 3.5 percentage points by 2041.

Dwellings are the most significant component of wealth for most Australians at around 50–56 per cent of total wealth. Financial assets have grown as a proportion from around 22 per cent in 1981 to some 35 per cent in 1996, with households increasingly holding wealth as superannuation and as equities (figure 5.12).

5.13.1 Savings functions

In this case we are interested in how asset values are related to income. To get a handle on savings elasticities, we estimated smoothed age-specific savings functions from the 1989-90 income distribution survey using a log-linear model specification. The results show how the value of asset held and the elasticity vary with income and age, and how they vary with the type of asset.

Dwelling elasticities, for example, are relatively flat and constant across age groups (figure 5.13). The value of the dwelling asset increases dramatically with age as the housing mortgage is paid off.

Savings elasticities for interest bearing assets show greater growth with income (figure 5.14). The functions are tightly bunched at younger ages and only show significant growth after 55 years of age, possibly reflecting greater liquidity as homes are paid off and/or mortgage repayments decrease.

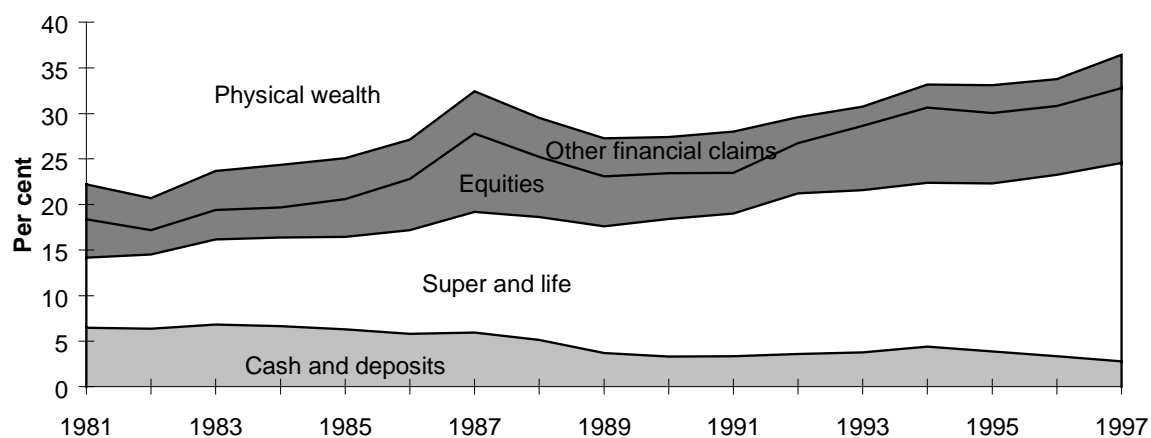
Lastly we see that the savings elasticities for equities grow exponentially at around an annual income of 60 000 dollars (figure 5.15). Again, the effect is more pronounced at higher ages but the income effect is more sensitive than the effect with age.

The significant observation to make from these charts is the amount of assets held by those over 65 years of age. RIM estimates that, for these three assets, people over 65, who made up some 14 per cent of the population, held some 27 per cent of wealth in 1990.

These estimates give a static picture and do not address the dynamics of saving and wealth. To fully understand the savings behaviour of the retired, detailed dynamic analysis is required.

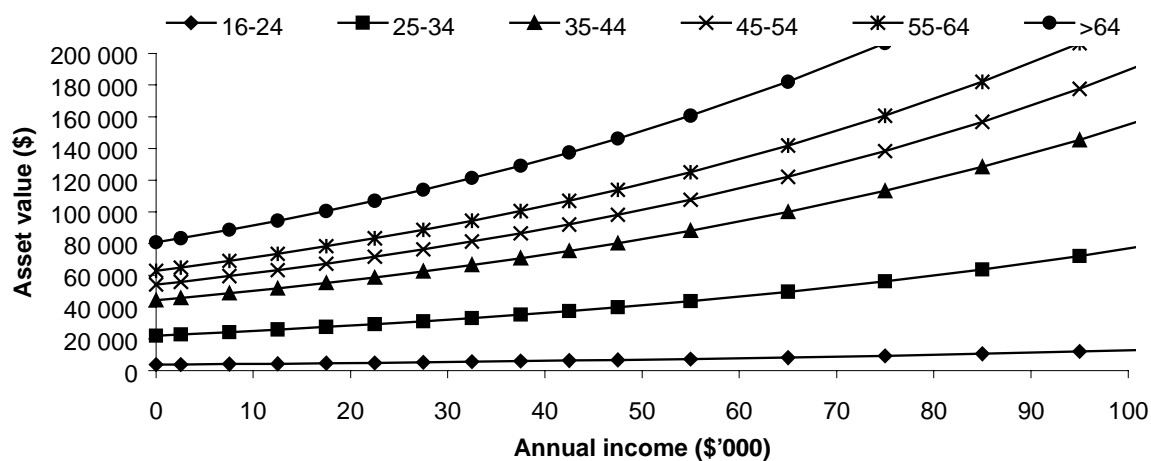
Figure 5.12 Household financial assets

Proportion of total wealth



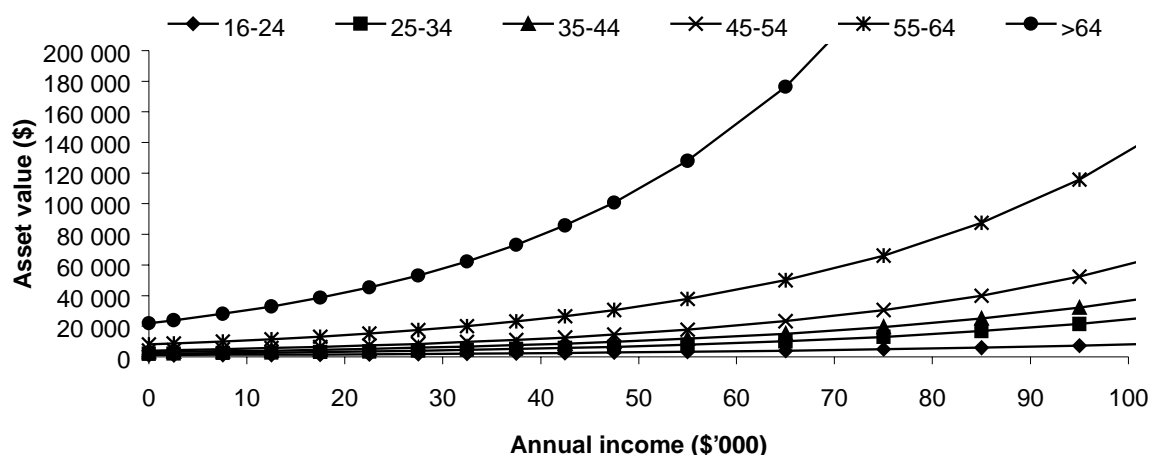
Data source: RIM

Figure 5.13 Dwelling assets



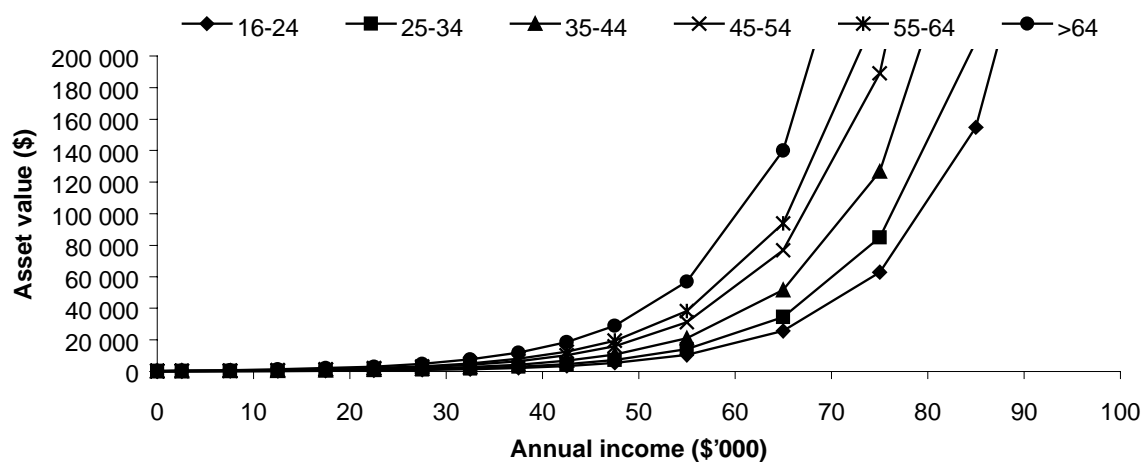
Data source: RIM

Figure 5.14 Interest bearing assets



Data source: RIM

Figure 5.15 Equities



Data source: RIM

5.14 Ageing and bequests

There is some indirect evidence that the desire to leave a bequest is an important motive for saving throughout a person's life. On the other side of the coin, if the young anticipate receiving bequests they might undersave (Jackson 1998). The resultant aggregate saving outcome is then not clear.

Unfortunately, Australia only has limited data to analyse bequest motives. Anecdotal evidence suggests that although Australians, might be prepared to run down

financial assets in retirement, they do not, and will not, run down their capital assets (housing). This is often explained by the desire of Australians to leave their wealth, which is primarily held as housing, to their children and by their aversion to longevity risk.

To make RIMGROUP balance and hit external benchmarks, however, the model must assume that retirees run down their financial assets at a slower rate than that implied by an annuity pattern. Although not based on quality data, this does suggest that Australians do not dissave at anywhere near the rate implied by the life cycle hypothesis.

The Survey of Families in Australia 1992 records some quantitative information on the incidence of inheritance and support for home and land purchase over the 10 years before the survey for amounts over \$10 000. Four per cent of the population received a money inheritance and 3 per cent received a housing inheritance, with 20 per cent of these receiving both. This implies that some 5.5 per cent of the population reported receiving some form of inheritance over \$10 000 over a 10 year period. Given a life expectancy of 74 years for males and 80 years for females (assuming this rate to be constant and ignoring age-specific information), this rate implies that around 40 per cent of the population receive an inheritance of over \$10 000 over their lifetime. That is, 60 per cent of the population do not receive an inheritance of \$10 000 or more.

In 1990, 56 per cent of families owned or were purchasing a home, 34 per cent rented and 10 per cent lived rent free. On the assumption that parents pass their housing assets on to their children, and given that roughly 80 per cent of the population aged 45 are home owners or purchasers, the estimate of 40 per cent receiving an inheritance at some time in their lives would, on the face of it, appear to be a lower limit.

A more detailed analysis of the micro data may provide more insight into the inheritance process. In particular, a full cohort model of saving and bequests might give considerable insight into the distributional effects.

5.15 Pulling it all together

Although the analysis presented above only represents part of the story, it is instructive to pull these results together to identify tensions which might develop by the middle of next century.

As noted above, household wealth per capita has been growing at almost 10 per cent per year. Falling fertility and the consequential decline in the number of children per

family, implies that these children will be receiving larger bequests/inheritances. This increasing individual wealth should lower labour supply through the work/leisure tradeoff.

At the same time, the ageing population is reducing the potential size of the workforce, creating excess demand for labour which should manifest itself as a reduction in unemployment and pressure on wage outcomes. The latter would of course increase the incentive to enter or stay in the workforce.

Further, the pressure on the public purse, which the paper suggests will come more from health expenditures than from the age pension, will create tension between raising tax revenues and reducing other government outlays.

Only considerable more quality data and research, particularly longitudinal data and analysis, will enable quantification of these interacting tensions

5.16 Summary

This paper raises some broader economic issues of how Australian society might look like in say sixty years time based on plausible assumptions underlying RIM's demographic, labour force, earning and asset accumulation modelling. Sixty years is a long time horizon and any projections will be subject to considerable uncertainty. There are, however, a number of strong underlying long run trends which might give us a handle on the economics of the ageing process and the possible economic environment Australia might face in the next century. This paper, through a discussion of the modelling of these forces, highlights a number of tensions that could come into play.

The paper illustrates the potential of RIMGROUP to provide a useful general analysis tool for a range of longer term studies, drawing on the strength of the population and labour force projections, the extensive study of retirement, the inclusion of superannuation and other savings, and the wide coverage of government payments to beneficiaries and pensioners, all within a strong distributional framework distinguished by age, income and gender.

Appendix 5A: Summary of RIM demographic models

MIGMOD — Migration model

The overseas migration model projects annual and quarterly profiles of permanent and long term arrivals and departures by age and sex from exogenous aggregate projections.

POPMOD — Population model

POPMOD provides annual projections of Australia's population for males and females by single year of age up to 100 plus years. The model is driven by parameter matrices for fertility, mortality and overseas migration (Bacon 1994).

LIFE — Life expectancy model

The life expectancy model calculates survival rates, survivors to age x , deaths at age x to $x+n$, life table populations and life expectancy for males and females by single year of age up to 100 plus years. The estimates are constructed from the mortality parameters used in POPMOD.

LFSMOD — Labour force status model

The long run version of this model is an annual model of the Australian labour force to capture structural (trend) behaviour at fine detail. The model projects persons by labour force status, age, gender and income decile. (Marital status of females is possible but not currently in use.) Labour force status is split into employed/unemployed, full time/part time, public/private, and wage and salary earners/employers/self-employed groups. Persons not in the labour force are split into retired/never in labour force/permanently disabled/temporarily not in the labour force groups. There is no short run behavioural response in LFSMOD; the model simply runs off the observed underlying long run movements of key, and hopefully stable parameters, which are estimated as nonlinear trends with consistent asymptotic values. Apart from these time-varying parameter matrices, the model's only exogenous inputs are population projections from a population model, such as POPMOD, and a user-supplied aggregate unemployment rate. The model is available in EXCEL.

RETMOD — Retirement model

This model provides annual projections of retirement by gender, age and income decile. More details of this model can be found in Bacon (1997).

Superannuation models

RIMHYPO — Retirement income modelling hypothetical model

This is a very detailed life cycle projection model of working life incomes, superannuation, other savings and retirement incomes for hypothetical individuals and couples.

MEMSUPER — Member superannuation model

This is a static micro-simulation model of employee personal superannuation based on a highly disaggregated summary file from the ABS Superannuation Survey 1993.

SEMSUPER — Self employed member superannuation model

This is a static micro-simulation model of self-employed personal superannuation based on a sample file of personal income tax returns from 1995-96.

RIMGROUP — Retirement income modelling group superannuation model

RIM's aggregate projection model, RIMGROUP projects the superannuation, other savings and retirement incomes of age, gender, career income decile groups of the population by tracking mortality, labour force status, sector of employment, income and type of superannuation fund across every year of a group's working life. Calculations are done at the average for the group and accumulated assets are pooled. The approach is hence to aggregate at a level above unit records but below age-gender cohorts. The model gives projections on both the 'quantum and distribution' of taxation, saving, social security payments and tax concessions.

RIM modified STINMOD out-years model

RIM has substantially modified STINMOD, the static micro-simulation model of personal incomes developed by NATSEM. The two major modifications are its conversion to an out-years model running each year to 2001-02, based on RIM's projection models, and the inclusion of superannuation contributions.

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6 The effect of later retirement on optimal national saving in Australia

Ross Guest and Ian McDonald

6.1 Introduction

Australia faces a significant ageing of its population in the next three decades. This ageing of the population profile will put significant pressure on resources because the number of people in the workforce will decrease relative to the number of people demanding consumption goods and services. In anticipation of this pressure, commentators in Australia have called for a significant increase in the level of saving. Higher saving in the near term will add to the consumption potential of Australia in the future through enhancing the accumulation of the capital stock and of overseas assets.¹ For example, FitzGerald (1993) recommended an increase in the rate of national saving of 5 percentage points of gross domestic product (GDP), partly to meet the increased pressure on resources from the prospective ageing of the Australian population. In an earlier paper (Guest and McDonald 1999a), calculations of the socially optimal level of national saving, investment and the current account balance for Australia that allow for the effects of ageing on consumption demands and labour productivity tend to support the view that the economic welfare of Australia would be improved by an increase in the rate of saving. Guest and McDonald (1998a) show that the prospective ageing of the population in Australia implies that the socially optimal level of national saving is 8.5 per cent of GDP greater than the current rate of national saving. There would appear to be a saving gap. This implies that there would be welfare gains from government policy that increased the actual rate of saving in Australia.² A strategy

¹ A larger capital stock will increase labour productivity and thus output, enabling more consumption. A larger amount of overseas assets (or a smaller amount of overseas debt) will enable consumption to be augmented by income from overseas and sales of overseas assets (or by less income paid and less debt repaid to overseas residents).

² It should be noted that calculations in Guest and McDonald (1999a) suggest that the gains from moving from the current rate of saving to the optimal rate, although positive, may not be very large. Furthermore the continuation of the current saving rate is sustainable, in that it would not

to reduce the saving gap is to raise the retirement age³ in the future.⁴ There have been many calls for an increase in the age of retirement as a way of reducing the burden of the ageing population (for example, OECD 1996). If the retirement age is increased in the future then the gap between the current rate of national saving and the optimum rate is smaller. In this paper we calculate how far increasing the age of retirement in the future would close the gap between optimal national saving and actual national saving.

The focus of this paper is on the socially optimal rate of national saving. The following points should be born in mind. First, we are not predicting the actual rate of national saving. We are doing a normative exercise, not a positive exercise. Only in as far as people's actual behaviour follows the socially optimal behaviour are our projections a prediction of what will happen. There are many distortions which may be argued to prevent socially optimal outcomes occurring, such as the taxation treatment of saving, the shortsightedness of some individuals and the incompleteness of annuity markets, to name just three. Second we do not address the issues arising from the projected increase in government outlays caused by an ageing population. These increases are often projected to be significant, for example in Guest and McDonald (1999b) government outlays are projected to increase by 5.2 per cent of GDP from 1997 to 2031. To finance such a large increase in government outlays may cause a significant increase in the tax distortion on economic activity. Many papers in the literature argue for an increase in the retirement age to reduce this financing burden (for example, OECD 1996). Our projections in this paper do not allow for the tax distortion effect.⁵

This paper is structured as follows. Section 6.2 describes projections of the retirement age. Section 6.3 briefly describes the model of optimal national saving in Guest and McDonald (1998a and 1999a), along with the data and calibration used to apply this model empirically to Australia. Section 6.4 explains the results of simulations of the base case in which the age of retirement is unchanged throughout the projection period. Section 6.5 discusses the impact of alternative projections in which the retirement age increases over the projection period. Section 6.6 concludes the paper.

cause a dramatic rundown in wealth, even when allowance is made for the effect of ageing on the supply and demand for output. We discuss this further below.

³ The age of eligibility for the government pension

⁴ Of course, raising the retirement age is not costless because of the disutility suffered from the extra work. However, as discussed below, if the retirement age is increased with life expectancy, then the net effect on utility of the additional work and the additional consumption is positive.

⁵ In Guest and McDonald (1999b), we calculate that the tax distortion effect is not large. For example, for the year 2031, allowing for a tax distortion on labour supply increases the projected share of government outlays in GDP by 0.4 percentage points.

6.2 Projections of the optimal retirement age for Australia

In recent history the retirement age in Australia and many other OECD economies has been decreasing. This trend has been argued to have been caused to some extent by social security arrangements and a lack of job opportunities. However, there are signs that this trend is coming to an end (Commonwealth Department of Family and Community Services 1998). For the US, Quinn (1998), and for Japan, Yashiro (1997), have argued that there are signs that the trend of a decreasing age of retirement has reversed. However in contrast to the trend of the actual age of retirement in the recent past, in this paper we are interested in the socially optimal age of retirement in the future. This is because our purpose is to calculate the socially optimal rate of national saving, a magnitude predicated on retirement being at the socially optimal level.

Unfortunately, our model of optimal national saving has not yet been extended to incorporate the choice of retirement age. However, it is reasonable to assume that the socially optimal age of retirement can be linked to life expectancy, such that the proportion of life spent in retirement does not change. Using this rule to determine the age of retirement, if life expectancy increases then the extra disutility from work will be more than compensated for by the extra utility from the consumption gains from the extra earnings. An additional argument is that of Kurz (1984), who argues that on distributive grounds there is a case for increasing the retirement age with life expectancy. Kurz' argument is that people who live longer should not be an increasing burden on those financing public pensions. On this basis, to construct a socially optimal age of retirement, we assume that the proportion of life spent in retirement is constant.⁶ Given that the trend of the various projections is for life expectancy to increase, the assumption of a constant proportion of life spent in retirement yields an increasing retirement age over the projection period. We also consider the impact on the optimal rate of national saving of current government policy to increase the retirement age of females to 65 years by 2014 and the OECD proposal to increase the retirement age for both gender groups, starting after 2005, by 0.5 each year to reach 70 years of age (OECD 1997, p. 37).

The retirement ages in Australia in 1997 — the base year of the simulations reported in this paper — were 65 years for males and 60.5 years for females. For our

⁶ This assumption presupposes that the increase in life expectancy is not associated with an increase in the proportion of time spent in ill health. For a discussion of trends in ill health suffered by aged people see Rowland (1991) and Tulpule and Johnston (1993). Tulpule and Johnston report that OECD estimates suggest that the proportion of life expected disability free for Australia has fallen from 82.9 per cent in 1981 to 79.7 per cent in 1988.

simulations of optimal national saving an assumption about the retirement age over the 200 year projection period, (1997–2197) has to be made. For what we call the base case we assume no change over the entire projection period in the retirement age from the 1997 levels. We compare that base case with four alternatives which assume various patterns of increasing age of retirement.⁷

The first alternative, the CGP case, captures current government policy. Under existing legislation, the age of pension eligibility for women increases linearly from 60.5 for females born between 1 July 1935 and 31 December 1936, to 65 for females born after 1 January 1949. This means that the retirement age for females increases linearly from 60.5 years in 1997 to 65 years in 2014.

The next two of our alternative cases can be regarded as approximating changes in the socially optimal age of retirement. These cases are based on the assumption that the proportion of life spent in retirement is constant over the projection period. Under this assumption, retirement age increases with life expectancy. One of these alternatives is based on the projections of life expectancy in ABS (1998). These projections of life expectancies are at selected ages for males and females for 1994–96, 2005, 2041 and 2051 (table 6.1). We assume that in planning retirement, future cohorts of private agents, and government agents in setting pension eligibility, will maintain a constant proportion of expected life in retirement. This proportion is the ratio of expected life at age 65 in 1996 to the total length of life.⁸ The latter is 65 years plus the expected life at age 65. Thus, for males who retire in 1996 at age 65 years, the proportion of life in retirement is equal to $15.82/(15.82 + 65) = 0.196$. (From table 6.1, the life expectancy of a 65-year-old male in 1996 was 15.82 years.) Under our assumption, this proportion is held constant from 1996 to 2051, implying a retirement age for males of 65.84 in 2005, 67.43 in 2041 and 67.84 in 2051. Applying this principle for females is complicated by existing legislation under which pension eligibility increases up to the year 2014. For females, we adopt these legislated retirement ages up to 2014, after which we apply the principle based on life expectancy as described for males. The proportion of life expected in retirement is calculated from the retirement age of 65 years and the life expectancy for the year

⁷ In another attempt to calculate a ‘reasonable’ pattern for the future retirement age, Yashiro and Oishi (1997) calculate for Japan that if ‘elderly’ is defined as the age at which people reach the economic capability of a 65 year old in 1955, then elderly begins at 67 in 1990 and at 70 in 2025. This reduces the ratio of elderly people in the Japanese population for 2025 from 25.8 per cent to 20.6 per cent.

⁸ By using life expectancy at 65 years, we are assuming implicitly that people in planning their retirement decide that they will only retire if they reach the age of 65. The possibility of dying earlier is ignored. Changing this assumption, by for example using life expectancy at 20 years, would not be an improvement and anyway would probably have an insignificant effect on the results.

Table 6.1 **Expectation of life, by selected ages**

	1994–96	2005	2041	2051
Males				
0	75.22	77.42	81.14	81.97
1	74.70	76.77	80.21	81.01
20	56.15	58.12	61.35	62.12
65	15.82	16.86	18.84	19.35
85	5.15	5.31	5.91	6.07
Females				
0	81.05	82.44	85.41	86.11
1	80.46	81.71	84.47	85.15
20	61.76	62.95	65.56	66.22
65	19.61	20.33	22.17	22.67
85	6.38	6.55	7.57	7.85

Source: ABS (Cat. no. 3222.0, p. 29).

2014. The resulting retirement ages for females, after 2014, are 66.05 in 2041 and 66.42 in 2051. We label this case MLE (for medium life expectancy).

Higgins (1998) shows that the life expectancy of 65 year olds increased at a slow rate from the 1880s to the 1960s, and thereafter at a fast rate. This pattern suggests that it is not unreasonable to expect life expectancy in the future to increase at the fast rate of recent experience. At least, this assumption may be thought to give an upper estimate of the trend of life expectancy in the future. Higgins (1998) constructs a new series⁹ of annual mortality improvement rates for each gender based on the average rate of increase of life expectancy from 1976 to 1995. This series (table 6.2) gives significantly longer life expectancies than the ABS life expectancies in table 6.1. Applying the principle of constant expected retirement as a proportion of life, as described above, implies retirement ages 68.62 for males and 67.27 for females in 2030 for the case of longer life expectancies. We label this case HLE. (for high life expectancy)

The OECD (1996, p. 30) advocates policies to increase the contribution of the existing old to the cost of pensions in order to reduce the burden of government outlays. One policy they consider is an increase in the retirement age. In some of their projections of public pension outlays they use a late retirement scenario. They assume that, starting after 2005, the retirement age is raised by 0.5 each year to

⁹ Higgins also constructs a series of annual mortality improvement rates for each gender based on the average rate of increase of life expectancy from 1881–90 to 1995 (Higgins 1998, pp. 3–4). This series yields life expectancies very close to the ABS life expectancies in table 6.1.

reach 70 years of age by 2015 (OECD 1996, pp. 32, 37). They do not state the basis for this assumption.¹⁰ We label this case OECD.

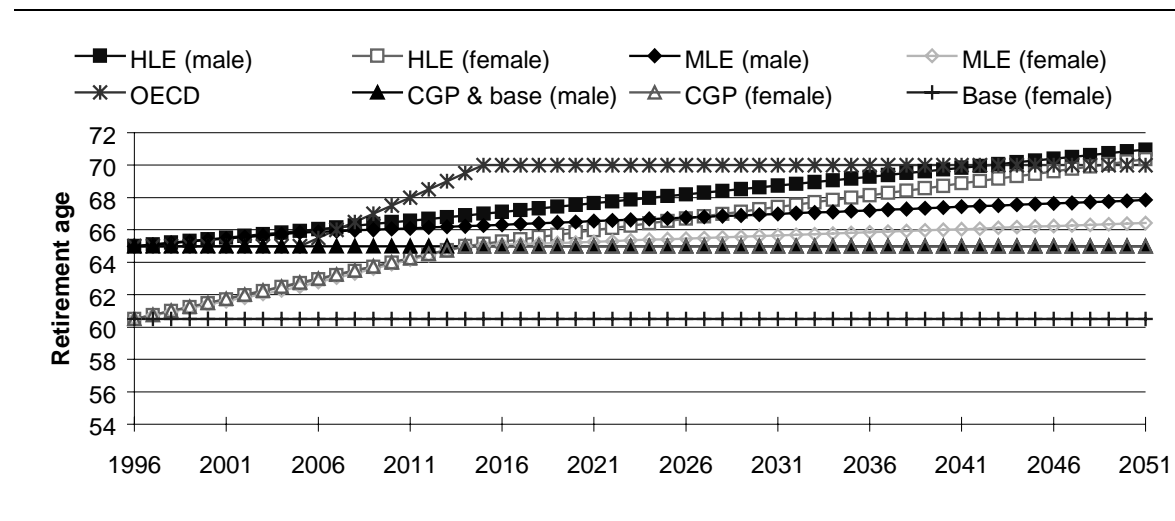
Figure 6.1 plots the projected retirement ages for the five cases — that is, base case, CGP, MLE, HLE and OECD. The kink in the series for CGP, MLE and HLE for females at the year 2014 reflects the influence of the adjustment of the statutory retirement ages for women for the period 1996–2014 under current government policy.

Table 6.2 **Expectation of life**

	1994–96	2030
Males		
0	75.2	82.6
65	15.8	20.3
Females		
0	81	87.1
65	19.6	23.7

Source: Higgins (1998, p. 6).

Figure 6.1 **Projected retirement ages**



6.3 Model of socially optimal level of national saving

Our simulations of the optimal level and composition of national saving are based on the model of optimal national saving used in Guest and McDonald (1999a). (The

¹⁰ Although OECD (1997) gives life expectancy assumptions on which their population projections are based, it is not clear to what extent their later retirement scenario is based on these life expectancies.

equations of the model are in that paper.) In this section we will describe the key features of the model and the assumed values for the exogenous variables.

The model is of a small open economy. A social planner is assumed to maximise a social welfare function. That function is the sum of the utility levels generated from a concave utility function for a representative consumer running up to h periods in the future and from the level of wealth at the end of the h periods. The utility function has a constant elasticity form and is additive over time periods. The rate of time preference is assumed constant over the planning period. The representative consumer in the model is a ‘composite’ individual who reflects the relative demands for private and government consumption of people in nine age groups, discussed below. The economy faces an exogenously determined world rate of interest. The economy produces one type of output. The production function is putty clay. The capital–labour ratio of new capital is chosen from a range of possibilities described by a Cobb Douglas production function. Once installed, capital has a fixed capital–labour ratio and depreciates physically at a fixed exogenously determined rate. The age at which capital is scrapped is determined optimally. The capital is operated by an exogenously determined number of ‘representative’ employees who reflect the relative labour productivities of 16 age–gender groups.

The set of parameter values used for all the simulations is listed in table 6.3. They were chosen as follows. The planning horizon, h , is chosen to be long enough so that the path of optimal national saving to output, S/Y , for the period up to the year 2050 is sufficiently close to the path that would obtain for an infinite horizon. The criterion for ‘sufficiently close’ is that a further extension of the horizon would change the value of S/Y in the year 2050 by less a level of tolerance specified as 0.1 percentage points. The resulting value of h is 200 years. The values of α , the elasticity of output with respect to capital, β , the reciprocal of the elasticity of intertemporal substitution, ψ , the reciprocal of the elasticity of substitution between terminal consumption and terminal wealth, and δ , the rate of depreciation, are based on typical empirical estimates. In particular, the values of α , δ and r are the same as those used by Barro and Sala-i-Martin (1995).

Powell (1974) estimates β to lie between 1.6 and 2.8 using Australian data. On this basis we adopt a value of 2.0 which is also consistent with more recent estimates in Skinner (1985). The value of a is calculated from fitting the production function to Australian data over the period 1960-61 to 1995-96. The value of m , the proportion of debt to be repaid in each year, is set at 0.15 to approximate a 10 year loan. ω is set to generate a terminal value of wealth to consumption equal to the exogenously

given initial value of 2.65. The value of the rate of time preference, ρ , is chosen so that the asymptotic growth rates of consumption and output are equal.¹¹

The simulations in this paper are based on a projection of Australia's population which assumes over the projection period a rate of fertility of 1.75 and a rate of net immigration of 0.54 per cent of population per year. This implies a net immigration flow of about 97 000 people in 1997 and 164 000 in 2051. Under this population projection, the population of Australia reaches 29.3 million in 2051.¹² For years beyond 2051, population and employment are assumed to grow at their average projected growth rates over the decade 2041–50.

Demands for both private and public consumption vary across age groups. For example, young people consume less private consumption but more education. Older people consume more health services. To capture these relative demands for consumption we constructed a representative consumer. The representative consumer is based on the relative demands for consumption of private and government provided goods of different age groups. (We assumed no differences by gender.) This procedure yielded the consumption weights given in table 6.4 (see Guest and McDonald 1999a for details).

Table 6.3 Consumption weights, by age group

	0–15	16–24	25–39	40–49	50–59	60–64	65–69	70–74	75+
Consumption weight	0.68	0.89	1.00	0.98	1.00	1.05	0.87	0.95	1.19

Table 6.4 Values of parameters and exogenous variables

h , the planning horizon	200 years
α , the partial elasticity of output with respect to capital	0.3
β , the reciprocal of the elasticity of intertemporal substitution	2.00
ψ , the reciprocal of the elasticity of substitution between W_h and C_h	2.00
δ , the depreciation rate	0.05
m , the proportion of debt to be repaid in each year	0.15
r , the interest rate	0.06
a , the rate of technical progress	0.007683
ρ , the rate of time preference	0.03686

Increased life expectancy and later retirement will affect consumption demands. Our consumption weight for 60–64 year olds (there is no distinction between males and

¹¹ For discussion of this condition see Blanchard and Fischer (1989), Barro and Sala-i-Martin (1995) and Guest and McDonald (1998b).

¹² In Guest and McDonald (1999a and 1999b), the impact on optimal saving and government outlays of two other immigration assumptions (in addition to the one used in this paper) are considered.

females) is 1.05 and for 65-69 year olds is 0.87. This difference reflects differences in private and public consumption. We assume that the difference in private consumption largely reflects the transition from work to retirement that occurs between these age groups, and that the difference in public consumption reflects differences in health expenditures between the two groups. Therefore, as the retirement age increases, the private consumption patterns of the 65-69 age group will increasingly resemble those of the 60-64 age group.

Also, if we assume that increases in life expectancy do not alter the proportion of life spent in ill health — in other words, we stay healthy for longer — then the level of public health expenditure on 60-64 year olds will become closer to that of the 65-69 age group as life expectancy increases. Therefore, increases in the retirement age, which reflect increases in life expectancy, imply that both private and public expenditure patterns of the 65-69 age group will approach those of the 60-64 age group. To capture these effects, we adjust the consumption weights for the 65-69 age group with the increase in the retirement age.¹³ The adjustments are given in table 6.5.

Multiplying the consumption weights derived from table 6.4 and table 6.5 by the population by age group yields an aggregate population measured in consumption units.

Labour productivity varies across age and gender groups in the population. To allow for this we constructed productivity weights on the assumption that the age distribution of earnings reflects the age distribution of labour productivity (see Guest and McDonald 1999a for details). These are shown in table 6.6.

Employment levels by age and gender in natural units were calculated by multiplying, for each age and gender group, population by employment–population ratios. To generate employment levels in efficiency units, these levels in natural units were multiplied by the productivity weights. For all age groups except the 60-64 and the 65-69 year olds, the employment–population ratios (L/N) were assumed unchanged from their 1997 values throughout the projection period. For the 60-64 and 65-69 age groups, the employment population ratios were adjusted in the following way to allow for the increasing retirement age. For males, the adjusted value of $(L/N)_{65-69}$ is found by linearly interpolating between the value of $(L/N)_{60-64}$

¹³ A complication is that the retirement ages for males and females increase from different starting points. In 1996 the age for pension eligibility was 65 for males and 60.5 for females. This suggests that for females the adjustment to consumption weights ought to be applied to the 60–64 age group based on that for the 55–59 age group. However, the consumption weight for the 60–64 age group (1.05) is very close to that for the 55–59 age group (1.0). So, as an approximation, we adjust only the 65-69 consumption weight based on the change in the average retirement age of males and females from the base year, 1997.

and the unadjusted value of $(L/N)_{65-69}$. The interpolating factor is the increase in the retirement age above 65 divided by 5, the number of years from age 65 to 69 inclusive. This method implies that if the retirement age for males has increased to 70, the adjusted value of $(L/N)_{65-69}$ is equal to the value of $(L/N)_{60-64}$. For females, the values of both $(L/N)_{60-64}$ and $(L/N)_{65-69}$ are adjusted, using the same method, to account for the increase in the retirement age for females from 60.5 in 1997 to, for the MLE and HLE retirement assumptions, above 65. The interpolated value of $(L/N)_{60-64}$ for females is found by reference to the value of $(L/N)_{55-59}$.

An inverse measure of the burden of the dependents on society is the support ratio, which is the ratio of employment to total population. This concept was used by Cutler et al. (1990). We use this concept, in preference to the commonly used dependency ratio,¹⁴ because its two components are direct inputs into our calculation of optimal national saving. Employment is an important determinant of the output produced by an economy, and total population is an important determinant of consumption demands. Figure 6.2 shows the ‘raw’ support ratio — that is, assuming labour productivity and consumption demands are the same across age and gender groups — for Australia for the period 1971–2051. The raw support ratio also assumes that the age of retirement is unchanged from the year 1997 onwards. An increase (decrease) in the support ratio implies a decreased (increased) burden of dependents. Thus, ‘down’ implies an increased pressure on resources. It can be seen from figure 6.2 that the raw support ratio increases from 1971 to a peak in 2001 (ignoring the cyclical peak in 1990)¹⁵ and then decreases for the rest of the period to 2051. Figure 6.2 also shows the support ratio for Australia (allowing for

Table 6.5 Labour force productivity weights, by age group, 1997

	0–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65+
Males	0.475	0.784	1.024	1.024	1.2	1.2	1.235	1.235	1.225	1.057	1.057
Females	0.587	0.878	1.13	1.13	1.164	1.164	1.16	1.16	1.192	0.889	0.889

Table 6.6 Adjusted consumption weights^a

	MLE	HLE	OECD
1997	0.87	0.87	0.87
2001	0.89	0.87	0.87
2006	0.93	0.88	0.90
2011	0.95	0.94	1.04
2021	0.98	1.02	1.05
2031	1.00	1.05	1.05
2041	1.00	1.05	1.05

^a Data are rounded to two digit levels.
¹⁴ The dependency ratio is the ratio of people of non-working age to people of working age.

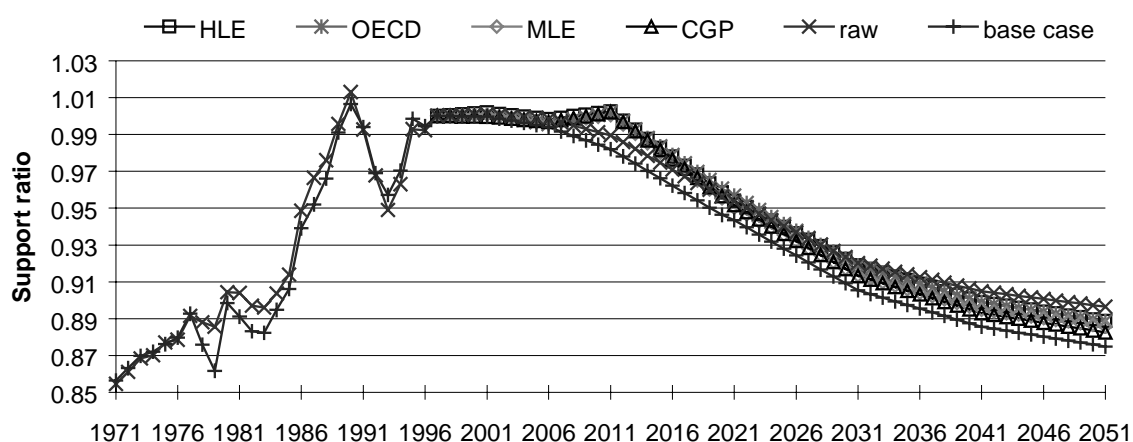
¹⁵ For the years before 1997 the support ratio shows fluctuations. These reflect cyclical fluctuations in employment.

the weighting across age and gender groups as described above), labelled base case. It can be seen that this adjustment makes little difference to pre-1997 data, but following 1997 the weighted support ratio decreases relative to the raw support ratio. The weight adjustment to the support ratio reflects two effects. The productivity weighting increases the support ratio in an ageing workforce because older workers tend to have higher marginal products. However, the weighting of consumption demands reduces the support ratio in an ageing population because people aged over 75 demand significantly more health services. This later effect dominates from 1997 onwards.

The other four support ratios shown in figure 6.2 incorporate the various patterns of an increasing retirement age discussed in section 6.2. As would be expected all the later retirement assumptions increase the support ratio, reducing the burden of the ageing society. However, the effect is not great.

The projections of the support ratios in figure 6.2 assume that the consumption weights, productivity weights and, for some groups, the employment–population ratios will not change over time. These are strong assumptions. They ignore the possibility that in as far as the decline in the support ratio places a pressure on resources there will be some adjustments to expenditure patterns, productivity or employment–population ratios. A pressure on resources may, by opening up jobs, increase the employment–population ratios of all age groups, not just the old. On the other hand, trends in health expenditures in the US suggest that our measures of the

Figure 6.2 **Support ratios^a**



^a 'Raw' is unweighted; retirement ages as at 1997. 'Base case' is weighted; retirement ages as at 1997. The other series refer to alternative retirement assumptions.

support ratio in figure 6.2 underestimate the prospective consumption demands of the aged. It is argued in some papers that health expenditures may increase faster than labour productivity if recent trends continue into the future. For example Hurd

(1997) points out that for the US from 1970 to 1990 health expenditures per person (private plus government) have been increasing by 4–5 per cent per year. In as far as health expenditures on the aged in Australia are expected to increase faster than the growth of labour productivity, the support ratios in figure 6.2 underestimate the prospective burden of the aged. Over the projection period the productivity weights would not be expected to stay constant, because of, among other things, changes in human capital and demand and supply for particular groups. However because of the difficulty in projecting such changes we assume the productivity weights are unchanged over the projection period.¹⁶

6.4 Simulation of optimal national saving for base case

In this section we report the simulation of optimal national saving for Australia, assuming that the current age of retirement does not change over the 200 years of the simulation. We call this the base case. We use the model and the parameter values described above.¹⁷ We emphasise that the simulations protect the initial level of wealth in that the terminal condition for all simulations requires a wealth–consumption ratio equal to the initial wealth–consumption ratio. Thus, the simulations do not run down wealth over the 200 year projection period.

The base case simulation (figure 6.3) shows a hump shape for the optimal rate of national saving (S/Y) over the period 1997–2051. There are four features of this hump shape.

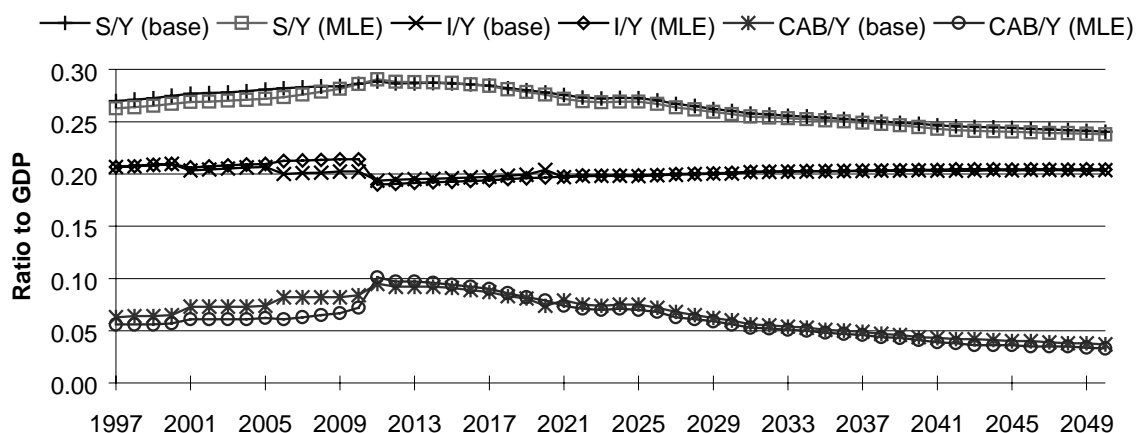
1. Timing of the hump peak — the hump peaks in year 2011.
2. Size of the hump relative to the initial year — the increase in optimal national saving from 1997 to the peak is equal to 1.9 per cent of GDP, which is an increase from 27 per cent of GDP in 1997 to 28.9 per cent of GDP in 2011.
3. The decline in optimal national saving after the peak from 2011 to 2051 is 4.9 per cent of GDP to 24 per cent of GDP. This pattern, being far in the future, is of less importance than the increase in the near future.
4. In year 2026 the optimal rate of national saving is the same as in 1997.

¹⁶ It is shown in Guest and McDonald (1999a) that the weights in fact have a small effect on the rate of optimal national saving.

¹⁷ Although the simulations reported in this section, and the others reported in later sections, assume a 200 year horizon, we focus on the results for the period up to 2051. We ignore the post-2051 period because, being so far in the future, it is of less interest.

The initial 30 years of the projection period, from 1997 to 2026, are years of high saving relative to the rest of the projection period. This high optimal rate of national saving reflects in part the anticipation of much lower support ratios in the future.¹⁸ By the year 2021, for example, the support ratio will have fallen by about 6 per cent from its 1997 level. By 2031 the support ratio will have fallen by about 10 per cent relative to 1997. The high rate of national saving in the initial years generates an increase in wealth from which consumption in the following years of relatively low support ratios can be financed. This is of course how increased saving can help to reduce the pressure on resources imposed by the ageing population. The simulation of the base case also shows (figure 6.3) that the optimal assets in which to store the increase in wealth are overseas assets rather than domestic capital stock. This can be seen by the increasing optimal current account balance as a share of GDP (CAB/Y) shown in figure 6.3.¹⁹ The optimal plan for Australia is to increase the current account surplus by 3.2 percentage points of GDP from 1997 to 2011. The optimal level of investment as a share of GDP (I/Y) exhibits small fluctuations around the level of 20 per cent of GDP from 1997 to 2051; the fluctuations being in response to changes in projected employment levels. The decrease in the optimal national saving rate after 2011 is associated with a decreasing optimal current account balance. The current account surplus decreases by 5.8 percentage points of GDP from 2011 to 2051.

Figure 6.3 Impact of later retirement (MLE case)



¹⁸ In simulations in which the support ratio is effectively assumed constant over the projection period the optimal rate of saving does not have a hump but instead decreases over the period 1997 – 2051 (Guest and McDonald 1999a).

¹⁹ The large current account surplus is partly due to the assumed value of the world rate of interest. Reducing the world rate of interest tends to reduce the optimal size of the current account balance and to increase the optimal size of the domestic capital stock, thus shifting the accumulation of wealth towards domestic assets.

The actual level of national saving in 1997 was equal to 18.5 per cent of GDP. Thus it would appear that in 1997 the actual level of national saving was 8.5 per cent of GDP below the optimal level. Furthermore the actual current account balance was a deficit of 3.2 per cent of GDP in 1996-97, which is 9.5 percentage points of GDP less than the optimal surplus of 6.3 per cent of GDP. The actual level of investment for 1996-97 was about equal to the optimal level of investment in 1997, which was 20.7 per cent of GDP.

How confident can we be that the Australian economy undersaved and overborrowed from overseas relative to the optimal levels by about 8 percentage points of GDP? This question is discussed in detail in Guest and McDonald (1999a). What follows here is a brief summary of that discussion. Note that the model ignores any adjustment costs that would be incurred in shifting resources to the export and import substitution sectors. In as far as there are costs of shifting resources, then the optimal plan would be a smaller shift than that required to increase the current account balance by 9.5 per cent of GDP. The model also ignores the disutility that people may suffer from adjusting to a lower level of current consumption. Thus, these two reasons suggest that our calculation of optimal national saving and the current account balance may overstate the true optimal levels.²⁰ For the functional forms of the model, it is not clear how more complicated functional forms would affect the optimal outcomes. For the parameter values, the simulations reported in Guest and McDonald (1999a) show that the level and shape of the optimal saving profile of the base case is fairly robust with respect to alternative parameter values. This increases our confidence in the conclusion that Australia's rate of national saving was below the optimal level, although probably by less than 8.5 per cent of GDP.

Even although the simulation of the base case suggests a fairly substantial saving gap for Australia equal to about 8.5 per cent of GDP, calculations in McDonald and Guest (1999a) suggest that the loss of economic welfare caused by a failure to close this saving gap may not be great. To make these calculations, in Guest and McDonald (1999a) a status quo simulation is created in which national saving as a proportion of Gross National Product (GNP) is fixed throughout the projection period at the 1997 level. The impact of population ageing on consumption demands and labour productivity is allowed for. From this status quo case the following conclusions can be drawn. First, if Australia continues to save at the current rate for the next 200 years, then the terminal value of wealth to consumption will be about equal to the current value. So the current rate of national saving is sustainable and

²⁰ This is because the actual levels are less than the optimal levels. If the actual levels were greater than the optimal levels, then our model would understate the optimal level of saving and the current account balance.

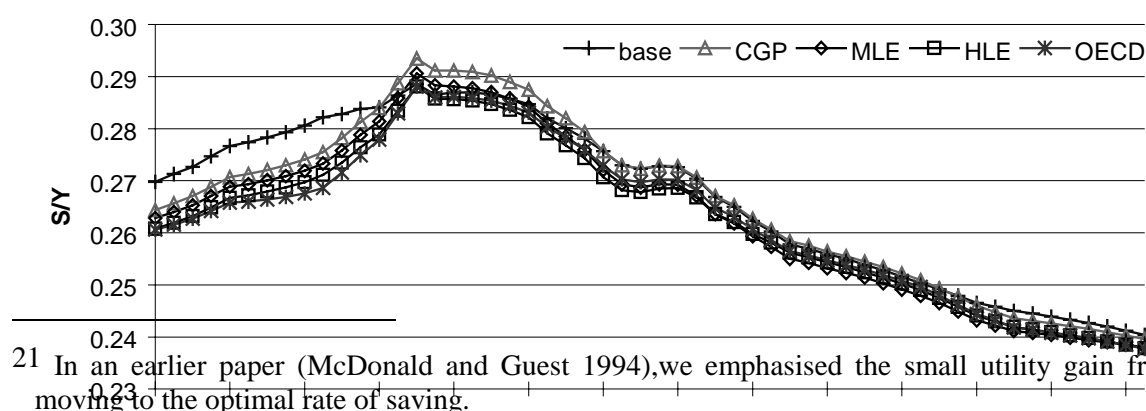
does not eat up Australia's wealth. Second, the gain in present discounted utility from changing the pattern of national saving from the status quo to the base case is 0.81 per cent. Thus, for Australia there would appear to be a small gain in terms of utility of 0.81 per cent from increasing national saving from its current rate to the optimal rate.²¹ However this gain depends crucially on the assumed value for β , the reciprocal of the intertemporal elasticity of substitution. In the base case, $\beta = 2$. If the higher value of $\beta = 3$ is specified, then the utility gain from moving from the status quo to the optimal outcome is 14.3 per cent, which is a significant gain.²² From this we conclude that the gains from moving to the base case are ambiguous. The case for increasing saving from current levels is not strong.

6.5 Size of the impact of later retirement on optimal national saving

In this section we consider the impact on the optimal rate of national saving of allowing for an increase in the future in the age of retirement. The four cases of later retirement discussed in section 6.2 are used. These are CGP, under which the female retirement age is increased gradually from 60.5 years in 1997 to 65 years in 2014, two cases where the proportion of retirement in expected life is held constant, HLE and MLE, and the case used by the OECD. The patterns of the optimal rate of national saving for the various assumptions about the age of retirement are reported in figure 6.4.

The CGP projection in figure 6.4 shows that the planned increase in the female retirement age to 65 years by 2014 does not change the hump shape of the path of optimal national saving or the year of the peak, which is 2011. However, the

Figure 6.4 **S/Y under alternative later retirement assumptions**



²¹ In an earlier paper (McDonald and Guest 1994), we emphasised the small utility gain from moving to the optimal rate of saving.

²² $\beta = 3$ is in the upper region of estimates of β , for example, the estimates in Skinner (1985) imply that the value of β ranges from 2 to 3.33.

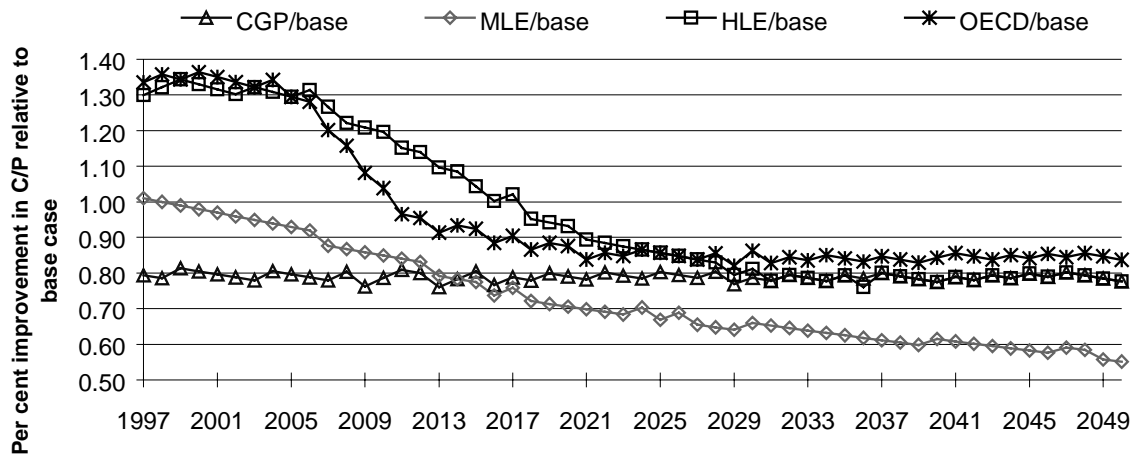
planned increase does make a significant difference to the shape of the hump. For 1997, the rate of optimal national saving is reduced by 0.6 per cent of GDP, from 27 per cent to 26.4 per cent. However, for the peak year, the rate of optimal national saving is increased by 0.5 per cent of GDP, from 28.9 per cent of GDP to 29.4 per cent of GDP. These changes are the result of two effects. The later retirement of women reduces the burden of the aged in the future, enabling people to enjoy a higher level of consumption. This tends to reduce the optimum rate of national saving. On the other hand, it is optimal to save a lot of the extra output produced by the higher level of employment in the 2010's. It is in the 2010's that the combination of the later retirement age for women and the baby boom generation would produce a large potential increase in employment. It is optimal to spread the output gain produced by this increase in employment over the future and thus to save a lot of it.

The impact on the optimal rate of national saving of moving to any of the other three late retirement cases can be seen to maintain the hump pattern with an unchanged peak year of 2011 (figure 6.4). Compared with the CGP case, for all three cases the optimal rate of national saving is lower throughout the period 1997–2051. This reflects the output gain from increasing the retirement age. The reduction in the optimum rate of national saving implied by moving from CGP to MLE is quite small. A larger reduction is attained from moving to HLE or the OECD, but HLE is somewhat speculative and OECD is somewhat draconian, in requiring an increase in the proportion of life spent working relative to 1997.

Figure 6.5 shows the impact of the later retirement scenarios on consumption per consumption unit (C/P) — that is, consumption per person where persons are measured in consumption units so a person aged 75 years or more is 1.19 people of working age. This impact is shown as an improvement relative to the base case. The later retirement scenarios allow an increase in C/P throughout the period 1997–2050 relative to the base case. For the move to CGP, the gain is about 0.8 per cent. The other retirement paths show a slightly larger gain, mainly in the earlier years.²³

²³ The profile over time of the consumption gain from increasing the retirement age is influenced by the exact specification of that increase (figure 6.5). However, this influence is of minor importance.

Figure 6.5 Consumption gain from later retirement



6.6 Conclusion

This paper has calculated, using a model of the optimal level of national saving in a small open economy, the levels of the optimal rate of national saving for Australia for the period from the middle 1990s to 2051. The calculations have focused on the implications of increasing the age of retirement. The simulations suggest that at unchanged age of retirement, Australia's current rate of national saving is well below the optimal level, in the order of 8.5 percentage points of GDP. However, if the age of retirement is assumed to increase in future years, then the gap between the current rate of national saving and the optimal rate is reduced by 0.5–1 per cent of GDP, depending on by how much the retirement age is increased. Furthermore for all patterns of retirement age considered, the pattern of optimal national saving for the Australian economy over the next 50 years is for national saving to increase up to the year 2011 and then to decline to the year 2051. The conclusion that Australia is undersaving at present relative to the optimal rate, and that the level of optimal national saving increases through the first decade of the twenty-first century, appears to be fairly robust to alternative values of the parameters. Raising the retirement age helps to reduce the saving gap but by only a little.

Although the level of undersaving in the Australian economy appears to be substantial, our calculations of the size of the gain in utility from increasing the current rate of national saving to the optimal rate are ambiguous. For reasonable parameter values, the size of this gain shows an uncomfortably large variation, from

0.81 per cent to 14.3 per cent.²⁴ Put another way, the utility loss from Australia continuing with its current rate of national saving of about 20 per cent of GDP is unclear.²⁵ However, the gain is positive. Furthermore, increasing the retirement age by the amounts usually recommended in the public debate will increase consumption per person by at least 0.8 per cent per year. Bearing in mind that increasing the retirement age with increases in life expectancy is probably desirable on distributive grounds alone, such a change is probably a sensible way to reduce the saving gap, albeit by only a small amount.

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²⁴ As noted above, this calculation assumes a measure of utility which is cardinal up to a linear transformation — that is, utility measure is independent of the units in which utility is measured.

²⁵ Furthermore, in as far as people would suffer adjustment costs from increasing saving — resulting from the costs of transferring resources to the traded goods sector and/or from the disutility of breaking habit in the adjustment to a lower level of current consumption — the gain from changing to the optimal pattern of saving is even lower. (Our model does not incorporate these adjustment costs.) So the calculations do not suggest an unambiguous case for increasing the rate of national saving, especially if the measures used to increase saving impose other costs on the economy.

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Discussant — *Vince FitzGerald*

The papers by Bruce Bacon and the paper by Ross Guest and Ian McDonald are discussed in turn below.

Ageing in Australia: some modelling results and research issues

Bacon was correct in saying that he had too much material in his paper to do justice to it all in his presentation. The paper is yet another example of the tremendous range of valuable material that has come out of the Commonwealth Government's investment in the Retirement Income Modelling Task Force, as it was called when set up in 1992 (now the Retirement Income Modelling Unit, RIM).

One of the admirable aspects of this paper, which needs to be read in its entirety, is that it does not simply focus on the more directly and obviously policy related issues such as the future costs of the age pension and the future cost of health care, important as those are. Much of the paper is taken up in looking, in an integrated way, at a variety of patterns which make up the ageing phenomenon. These societal patterns may well stimulate thought about what policy responses may be appropriate, but they are presented here primarily for their intrinsic interest. An example is retirement behaviour, on which RIM has done a great deal of work. This work nevertheless poses important questions — for example, whether it may be desirable for changes in policy to work on retirement behaviour, so as to have people stay longer in the workforce, with obvious consequences for needs for income support.

Some of the material that I found most interesting was that on ageing and saving. As Paul Johnson's paper pointed out, there is not much support for the life cycle saving hypothesis in actual data. That is not surprising to me. It becomes less surprising the more I talk to self-funded retirees. They tend to maintain, not run down, their capital — not because they want to leave bequests to their children, although that follows as a result, but more because they are risk averse. They do not want to run out of assets and fall below a minimum acceptable living standard in their retirement. Some other implications come out of this — for example, Johnson's observation that the relatively high wealth holdings of Australians in retirement present (when they are bequeathed) are an obvious source of tax revenue to meet some of the future budgetary pressures. That is, society might receive a contribution from these assets on the way between these risk averse retirees and the children who might otherwise

receive them as inheritances. I discussed something along these lines in FitzGerald (1993).

This general area is, I think, a fertile one for more research. We need to understand better consumption versus saving behaviour in retirement, and the relatively high holdings of wealth that older people in this country have, particularly in the form of housing. Australian retirees tend to be relatively ‘asset rich, income poor’.

Some of the other more interesting results include the issues about productivity over the age range and workforce participation behaviour. They seem to me also to deserve close focus.

Indeed, the primary subject of Guest and McDonald’s paper was what might follow, in terms of provision for retirement through saving, from different scenarios on the age of retirement. Of course retirement is a richer issue, not simply a matter of an age at which people retire entirely from work. Questions include how you might, for example, bring about gradual disengagement from the workforce. Possible incentives to influence behaviour in this area include actuarially based adjustments to the pension, depending on when you take it.

Returning to Bacon’s paper, there is a wealth of material to provoke thought, much of it simply of interest in improving our understanding of what the patterns and relationships are, but also of potential policy interest. The one thing that I would encourage the RIM to move on to is to bring into its analyses some of the macroeconomic linkages that Guest and McDonald’s paper considers. What happens in the macroeconomy as a result of the savings that are being built up is at present largely exogenous to the RIMGROUP model. A richer range of issues opens up when you can see where all of that saving goes — whether into foreign assets or into more physical capital invested here in Australia — and in turn the consequences for growth, income levels, consumption, saving and other outcomes relevant to the ageing issue.

The effect of later retirement on optimal national saving in Australia

Moving on to Guest and McDonald’s paper, like them, I think the more interesting part of it is actually the base case rather than the fairly mild results that come out of changing retirement age. Probably they did not realise this in advance, and I would not have either. One of the reasons why I like this paper is a personal one. It comes more rigorously and carefully, and more theoretically, to a fairly similar conclusion to the one that I did in my report *National Saving: A Report to the Treasurer* back in 1993! The conclusion was that we, as a nation, are undersaving to a significant extent relative to an optimal level, in some sense. My estimate was arrived at in

more broad brush ways, suggesting the gap was 6–7 per cent of gross domestic product (as at 1993). It will have closed a bit since, but I would still come to a qualitatively similar conclusion, as do Guest and McDonald.

On reflection, the findings of this paper on the various alternative policies it considers are not terribly surprising. Relative to current government policies, ‘natural’ variants of policies for later retirement — that is, having retirement age move up broadly in proportion to life expectancy — should not (to a first order approximation) change optimal saving very much. Under those policies, people would in effect balance their accumulation over a longer working period against their needs for income over a proportionately longer retirement period. Factors like rising health care costs with age tend to increase needs as the retirement period lengthens, but you would not expect that this would greatly change the optimal saving *rate* if the period of work and accumulation lengthens as well. After all, pay is also typically higher towards the end of the working period. So the results here did not really surprise me, and I do not want to talk very much more about that part of the paper but rather to say a little more about the base case itself.

One of the things that was pleasing to see is how the authors have represented in their model ‘inefficient Benthamite producers of utility’ using up substantial resources on health care in retirement. It is obviously very important to pick up such significant phenomena in a model like this, and to broadly capture the nature of the demands concerned. We may become more sedentary and have less interest in consuming in other ways in retirement, but — either on our own account or, more likely, on public account— we are certainly going to consume (on average) more health services.

One thing I really must query in the paper is the low end of the range of estimates of the utility lost due to our saving being sub-optimal. It seems to me that, quite apart from the bulk of studies that are quoted tending to support this, my own observation would be a that relatively high β parameter is more plausible than a low one (implying that the low end of the range of estimates of the utility loss, as presented, is too low). The β parameter captures how much we want to smooth our consumption — or how unwilling we are to give up a lot of consumption in one part of our life to augment consumption in an other. I think we reveal by our behaviour that we are not very willing at all. We are creatures of habit, it seems to me, and it would be my view that a higher value of that parameter best describes that habitual behaviour. I can not say any more than that, because I have not studied the empirical evidence in detail, but my feeling is that on the face of it, the utility loss is somewhere well above the low end of the range of estimates given.

I suppose that any model such as this, which is designed to elucidate some ‘big picture’ relationships, must have some small ‘wrinkles’. One that seems to me to be

odd — different to the real world — is an outcome in which all of any extra saving goes into foreign assets. I do not think that capital markets are as close to perfect as this result assumes. The weight of evidence (albeit in an area of some controversy) seems still to favour the finding of Feldstein and Horioka (1980) and others that a significant proportion of an increase in saving will be invested in domestic assets — that is, capital is less than perfectly mobile internationally.

Whether net extra savings are invested at home or abroad is not a matter of indifference. Depending on (among other things) the shape of the production function, a more capital intensive economy can generate higher real labour incomes and, at least for a time, higher growth in overall incomes than the same capital invested abroad.

In conclusion, I very much like the series of papers from Guest and McDonald, of which this is the latest. It is one of only a small number of contributions to this general issue of ageing that have actually analysed the ‘macroeconomic loop’ — that is, made it endogenous. There is some such work being done by people at National Bureau of Economic Research, but on the whole it is a fairly relatively neglected aspect.

While the work being done in this area does tend to confirm that there is not an ageing ‘crisis’, it does give us a very useful overall grasp of the scale of the task of providing for those needs in the optimal way — by raising our saving in advance instead of leaving the whole bill to the future taxpayer. And we begin to see that these savings are not just book entries; they raise the capital stock and the capital intensity of production (at least somewhere in the world). These are valuable insights.

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Discussant — *Chris Foster*

Introduction

The paper by Bruce Bacon and that by Ross Guest and Ian McDonald are very technical papers. I propose to summarise what I think are the definitive policy conclusions of the two papers, then outline a couple of the key policy issues (which I think are worthwhile when thinking about a range of scenarios). Lastly, I will say that we need more research using longitudinal data.

First, I think the big conclusion of Guest and McDonald's paper is that policy makers considering raising retirement age in Australia would be very courageous if the only criteria for success is that it reduces the optimal required level of national savings. Clearly, it does not do much of that. I think the clear conclusion of Bacon's paper is that the age pension is sustainable. Australia has no problems, but health funding, on the other hand, is more of a worry.

Some policy issues

Returning to some key policy issues, Guest and McDonald's paper indicates that we ought to ponder two other criteria for judging the success or value of policies aimed at raising the retirement age.

Government funding

First, there is the redistributive issue referred to in their paper which says that raising the retirement age is a good thing because the public purse should not have to bear the increasing cost of people living longer. The second criterion, which is hinted at in their paper, is that any measures which reduce the tax financing task could significantly reduce the distortions likely to occur in financing large increases in government outlays. I do not think we should underestimate this issue. If you look at figure 5.11 in Bacon's paper, we can see that while the percentage increase in GDP in pension outlays is only 1.5 percentage points, the financing task implies a 50 per cent increase in government outlays.

It is worth remembering that in Australia we spend a relatively low proportion of GDP on welfare, and that it is often thought that this means we could easily increase that proportion if the political will were there. We have this low proportion because

we have a well targeted, heavily means-tested system. Those means tests interact with taxes to produce high effective marginal tax rates to place a significant constraint on expanding the taxes to raise more revenue to finance more social security. We are currently witnessing this in the area of low income families, where there is a lot of debate about the best way of reducing high effective marginal tax rates. In the future we may face a similar issue in the pension area as an increasing proportion of middle income earners with more superannuation are caught in the pension income test because superannuation contributions for most will not be large enough to take them beyond the pension. At the same time, if average tax rates were rising, people could face even higher effective marginal tax rates.

Early retirement

Early retirement is an area where policy action can be justified, on the grounds that it reduces overall outlays, makes the tax financing tasks easier in the longer term and improves labour market efficiency.

Early retirement trends appear to have plateaued in Australia. However, there is an immediate issue because of the large number of baby boomers now moving into the 50–55 year age group which could potentially increase the number of income support recipients. The dependency rate in that group is already quite high. In fact, 34 per cent of the total group aged 50–64 receive some form of government pension or benefit and the most important of those is the disability support pension followed by the age pension for women.

A paper by David Ingles (1998) looked at several ways of addressing financing pressures. Each would involve considerable political difficulty. One of these broad options is raising the age of age pension entitlement, but as we have seen in Guest and McDonald's paper, that is a very blunt instrument. The average age of retirement of males from full time work, for example, is 58 and some 57 per cent of people claiming the age pension move from some other income support payment. In other words, the relationship between the statutory pension and actual retirement age is not strong, and there is likely to be much more action in addressing early retirement in other ways.

In dealing with early retirement we obviously need to look at other issues.

Returning to Johnson's paper, dealing with early retirement probably makes sense in a wide range of future policy scenarios. Figure 5.3 in Bacon's paper shows that the percentage of the population in the labour force grows quite strongly to about 2003–05, then falls over the next 50 or so years. So I think there are issues about labour supply and measures which might reduce the cost of people moving into the labour

force. Improving workforce incentives among people over age 50 may have efficiency gains over the long term by containing wages growth as well as improving retirement income adequacy. This is because not all early retirement decisions are voluntary and not everybody is well-off when they retire early.

In Australia I think we have taken quite a benign view of early retirement in the past, because of labour demand problems and because it has facilitated labour market restructuring. However, we have to start changing that attitude and look at the issue more broadly. I do not think there are simple solutions; society is a complex system of institutional and attitudinal arrangements. However, it is probably best if all policy levers are pointing in the same direction. On the institutional front, issues like raising the compulsory preservation age could be looked at, as well as lump sum access, or eligibility for disability support pension.

None of those are easy, nor are they the answer to the broader problem. I think we have to start looking at other measures as well, including employer attitudes to older workers, training programs for older workers, and also broader community attitudes. The government is formulating a National Strategy for an Ageing Australia, and I think one of the main benefits of this National Strategy will be promoting more positive attitudes to ageing and older workers in the broader community.

Conclusion

In conclusion I think the issue of early retirement is one worth looking at in the context of adjusting to an ageing population as I believe it will be where the scope is greatest. I think early retirement issues are also worth looking at for redistributive and labour market efficiency reasons.

I would like to conclude by returning to Bacon's paper. As all researchers do, he asks for more research and more and better data. I think one of the main things we do know in this whole area is that people do value leisure; what I do not think we understand a lot about is the actual decisions people make in reaching retirement and the role of employers. I think in Australia we are not going to achieve any great insights into these things unless we move into collecting longitudinal data. I think the US and other countries are miles ahead of us in having long standing longitudinal data sets which allow some insights into these issues. As Bacon concludes, I think we definitely need to move down that path in Australia as well.

Reference

Ingles, D. 1998, Income support, labour markets and behaviour: a research agenda, Paper presented at the Family and Community Services Conference, Canberra, 24–25 November.

General discussion

The discussion covered a wide range of issues, including:

- the life cycle hypothesis;
- health expenditure;
- labour market issues;
- optimum saving and the national saving shortfall; and
- retirement age and life expectancy.

Life cycle hypothesis

In the light of Bacon and FitzGerald's comments about the life cycle hypothesis, one participant remarked that available expenditure data indicated that the aged were the only age group to live 'within their means'. This appears to contradict the hypothesis' prediction that older persons tend to dissave, on the whole.

Health expenditure

Most participants agreed that the financing of health expenditure was likely to be a more pressing problem than pensions in future. However, the role played by ageing in increasing this expenditure appears secondary compared with that of technological improvements and increases in the price of drugs. One participant's estimates indicated that ageing alone would add \$1 billion dollars by 2020 to the current cost of the government subsidised drugs scheme. In contrast, drug price increases could add \$9 billion dollars to that bill (a fivefold increase). Bacon concurred, pointing out that ageing had only contributed, over the 14 years to 1997, 0.6 percentage points to the 2.8 per cent annual real increase in health expenditure per capita, with the remainder attributable to technology and demand factors. The future differential between the growth rate of health expenditure and that of productivity would be crucial in determining the ratio of health costs to gross domestic product.

On this topic, another participant pointed out that the ratio would most likely be a function of public policy and consumption choices rather than of ageing.

Labour market issues

The labour market implications of ageing were also discussed. While it seems possible to predict that labour supply growth will decline with the ageing of the population, much less is known about how labour demand would change. This would ultimately be affected by the balance of output and consumption in the economy. The structure and size of unemployment in decades to come are therefore difficult to predict. A simplifying assumption of time-invariant employment-to-population ratios in each age group, is unlikely to be verified. These ratios may in fact rise, McDonald suggested, if later retirement and female labour force participation rates increase.

Optimal saving and the national saving shortfall

A wide ranging discussion centred on the meaning of, reasons for, and implications of the results presented in Guest and McDonald's paper, showing that Australia's saving performance was sub-optimal at present and likely to remain so over the next 50 years. A social planner would therefore recommend an increase in saving performance to maximise welfare now and in future. Based on this criterion, today's savers save approximately 30 per cent less than they should. How could they be so wrong, one participant asked? Another participant replied that it was primarily public saving that was sub-optimal, so the answer lay with government having a short time horizon, concentrating on maximising the gains to voters within one political cycle. Another concern with optimal saving calculations was expressed in respect of their variability from one year to the next; this seemed at odds with one of the traditional roles of saving, which is to smooth out consumption over a lifetime.

The reasons for saving sub-optimality were unclear, McDonald noted. Separate periods can be distinguished in actual saving behaviour, but what sets them apart is unknown. One possible factor is financial deregulation.

Regarding the implications of saving sub-optimality, several participants remarked that it appeared to make little difference in terms of consumer welfare. One reason offered was that welfare improvements are dominated by productivity growth, so more or less saving is of little consequence. In addition, the welfare consequences of achieving optimal saving depend on the value of the elasticity of intertemporal substitution used in the modelling.

The implications of striving for optimal saving were also discussed, in terms of the adjustments required and their costs. Increasing saving to its optimal level would require the achievement of a sizeable current account surplus; such a drastic structural change would carry some costs, because resources would have to be

reallocated between sectors. It is conceivable, therefore, that the advantages assigned to greater saving in terms of intertemporal consumption possibilities may not be as large as suggested by the calculations presented. In addition, significant policy action would be required to raise saving to its optimal level.

Retirement age and life expectancy

Finally, it was suggested that increasing retirement age in line with life expectancy, all else being equal, would improve the saving outlook, which would in turn improve consumption possibilities and welfare. Whether the retirement age does in fact increase would depend on the contradictory effects of efforts to maximise lifetime consumption and the distortions generated by the welfare system.

7 Australia's retirement income system: an example of sustainable cost-effective coverage

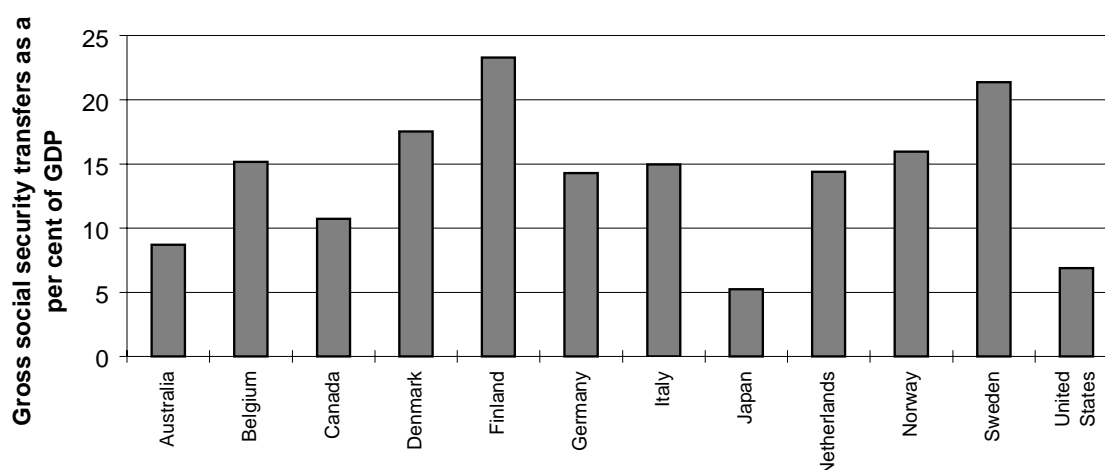
Qaiser Khan

7.1 Overview

The increased ageing of the population has led to major problems for most OECD countries' retirement income systems, which were developed at a time when the populations were relatively young. Many countries have had to make fundamental changes in their retirement income systems to cope with these changes. The World Bank (1994) issued a report recommending a three-pillar retirement income system. Many countries are rapidly adopting this system. Australia had no need to adjust as it had, through a series of historic events, developed the three-pillar retirement income system recommended by the World Bank.

In addition, the Australian Social Protection System (of which retirement incomes is the largest component) has been relatively more successful than other OECD systems in adapting to social and economic changes of the past few decades. It has provided full protection at the lowest cost (as a share of gross domestic product (GDP)) of any OECD country. Figure 7.1 shows that Australia spends the lowest share of GDP in income transfers (pensions, unemployment payments, family allowances and cash welfare payments) compared with other OECD countries except the US and Japan. However, when one adds in the fact that Australia's family allowances are included in cash transfer payments while countries such as the US use tax deductions, Australia's cost would be lower than the US and Japan as well. The system should do relatively well in the future in comparison to many other OECD systems from both the fiscal sustainability and social protection perspectives due to a variety of factors inherent in its design.

Figure 7.1 **Australian transfer costs compared with costs of other OECD countries**



Data source: Khan (1999), based on Whiteford, Jackson and Morrow (1998).

7.2 The Australian retirement income system — a fully functioning three-pillar model

7.2.1 The three pillars of Australian system

Among OECD systems, the Australian retirement incomes system most closely represents the three-pillar model described in the World Bank (1994) publication *Averting the Old Age Crisis*. The three pillars effectively separate two somewhat conflicting objectives of most social insurance systems — that is, the dichotomy between providing social protection and income replacement. In the multi-pillar approach, the first pillar has the objective of providing a minimum level of post-retirement income and it is recommended that this pillar be provided by the state and should be a defined benefit, Pay As You Go (PAYG) pillar. The second pillar has the objective of income replacement (that is, maintaining pre-retirement living standards), and should be compulsory. This pillar is preferably a defined contribution¹ to allow portability. The final pillar is one of voluntary retirement savings, which may or may not get a tax advantage. The level of this is a matter of personal choice.

¹ There is no financial reason why it cannot be defined benefit as long as it is fully funded and provided there is a degree of portability. A defined contribution is, however, more portable and may better meet the needs of a flexible modern workforce. Defined contributions are by definition fully funded.

The Australian system combines a general revenue funded first pillar which provides a fairly respectable minimum threshold of income support.² The second pillar is guaranteed superannuation which is a publicly mandated, privately managed and delivered defined contribution. The primary objective of this pillar is income replacement. The third pillar is entirely voluntary and receives to a large extent the same favourable tax treatment as the second pillar.

7.2.2 First pillar: targeted age pensions

Age pensions in Australia go back to the beginning of the twentieth century, and from the very beginning these pensions have been asset and/or means-tested. Despite this strict targeting, over 80 per cent of the pension-age population receives either a partial or a full rate pension. Partial pensions are paid to about one third of the recipients, while the rest receive a full pension. The high rate of coverage despite means testing and targeting effectively helps remove the stigma attached to means-tested retirement incomes in other OECD countries such as the UK.

7.2.3 Second and third pillars: superannuation

The second pillar: guaranteed superannuation

The Superannuation Guarantee was developed as a way to provide income maintenance for those on pensions without increasing the costs to the public exchequer. It built on the already existing occupational superannuation schemes, which generally covered white collared workers. The Superannuation Guarantee covers all workers except employees earning less than \$450 per month (which may be increased to \$900 per month), part time employees aged under 18, employees aged over 65, members of the Defence Reserve Forces, and certain non-resident employees and employees of certain non-resident employers. Employer contributions are currently 6 per cent and scheduled to rise to 9 per cent by 2002. Also, a 3 per cent employee contribution is planned by 2002. The Superannuation Guarantee is provided in terms of individual, fully vested, portable defined contribution accounts, although defined benefit plans can satisfy the Superannuation Guarantee by providing actuarial certification that the required level of superannuation support is implied.

² Pegged to 25 per cent of male total average weekly earnings for single people and 40 per cent for couples

The third pillar: voluntary superannuation and retirement savings

Many employers and employees put in voluntary contributions to superannuation funds over and above the mandatory level of the Superannuation Guarantee. Over 50 per cent of full time employees and over 25 per cent of part time employees made voluntary contributions. These contributions average 5.5–6.0 per cent. Voluntary occupational superannuation is the only way of accumulating tax preferred retirement savings in Australia. In addition, some people make voluntary non-tax preferred savings, but generally these are not meant for retirement.

Tax treatment of superannuation

Tax treatment of superannuation is very complex. Instead of being fully taxed at withdrawal, such as in the US, it is concessionally taxed at different stages. This complexity makes it difficult for anyone to work out the tax implications. Treasury estimates that it loses A\$8 billion in revenues due to the concessionary tax treatment of superannuation, while the superannuation industry estimates that it overpays by close to A\$1 billion (Clare 1998b). Ultimately, the findings depend on the framework and the approach chosen in the models. As people tend to look for the most favourable opportunities, it is unlikely that the same volume of resources would be flowing to superannuation if the superannuation tax rules changed. Treasury's estimates are probably overstated while the superannuation industry figures are probably overstated in the opposite direction. On balance, it is likely that there is some tax expenditure³ though the level is probably significantly smaller than the Treasury estimate.

7.3 Key features of the Australian retirement income system

7.3.1 Sources of cost-effectiveness of Australia's retirement income system

Australia is the only OECD country to have a fully developed three-pillar retirement income model as recommended by the World Bank (1994). It has the lowest cost in retirement incomes as a share of GDP and future projections show a very small increase even with population ageing. The low cost of the public retirement pillar is due to the following two elements: (a) Australia provides an income floor and does

³ Tax expenditures is the term used for 'public expenditures' through concessionary tax treatment; in this, it means losses in revenues because of the concessionary tax treatment of superannuation.

not try to replace past income; and (b) Australia uses means testing. Less than 20 per cent of the savings are due to means testing; the rest is due to lower income replacement. Figure 7.2 illustrates Australia's current retirement income, and what they would have been if Australia used 70 per cent income replacement (as is common in social insurance models and the savings from targeting). Income replacement in Australia is left to the privately managed, fully funded superannuation system.

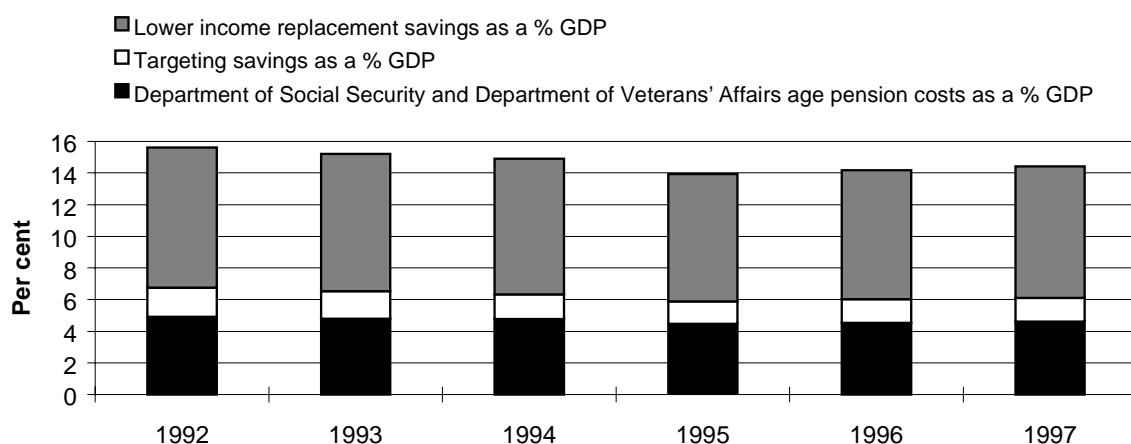
The savings from means testing age pensions are relatively minor compared to the savings from relying on a basic flat rate minimum benefit. The Australian age pensions means tests are very generous⁴ and almost 80 per cent of the population qualify for the age-pension, of whom over 70 per cent receive full pensions.

7.3.2 Australian system's adaptability to social and economic change

The past few decades have seen major changes on the economic and social front. Economic changes having a potential impact on social protection include:

- the fact that labour market attachments are no longer lifelong;
- more part time workers;
- more intermittent workers;
- a more competitive environment, meaning that employers no longer keep on

Figure 7.2 Sources of savings for Australian age pensions (first pillar)



Data source: Khan (1999).

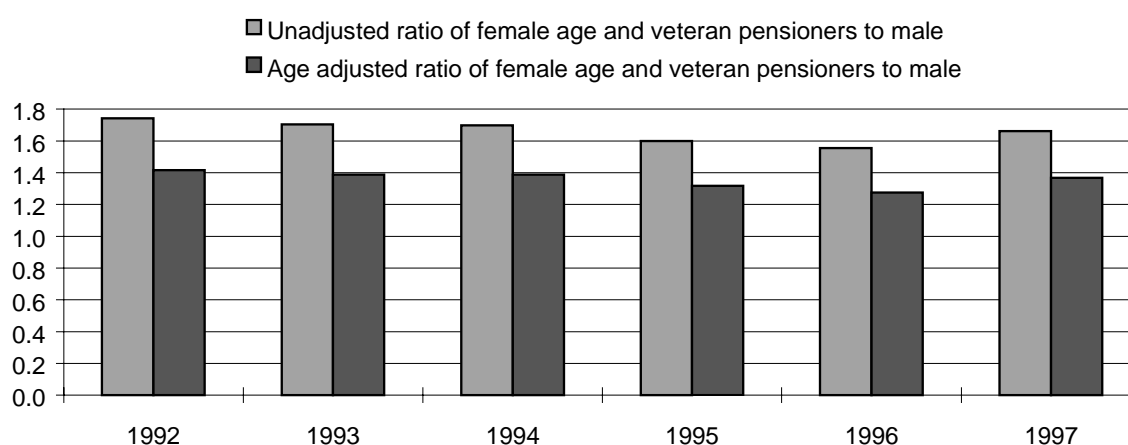
⁴ This generosity means that there is no stigma associated with means-tested pensions, as is the case in many other countries, for example the UK or the US.

workers who are not fully operational;

- the decline of the male breadwinner headed family;
- increased divorce and decreased lifetime relationships;
- an increase in the number of sole parent headed families;
- more couples in non-formal, more transient relationships; and
- an increase in the number of homeless children/young people.

The only response for countries with a social insurance model to these changes is by building on additional welfare programs over and above the social insurance program. The costs of doing so can be quite high. The other alternative of letting those outside the social insurance framework fall by the wayside may be even less palatable. The Australian model, which is general revenue financed, does not link payments to past contributions, and it is able to adjust to these major shifts in economic and social patterns. One example, is in the area of age pensions which, allowing for age–sex adjustment⁵ of the size of the retirement population, are earned more by men than by women in social insurance systems. (Some of this bias may be reduced by means-tested supplements which may sometimes carry a stigma.) Figure 7.3 shows that in Australia, even including veteran pensioners, the gender balances after age sex adjustment favours women).

Figure 7.3 Gender balance for Australian age and veterans pensions



Data source: Khan (1999).

The other elements explaining the Australian system's success in helping the losers from economic and social change has been means-tested targeting and providing a

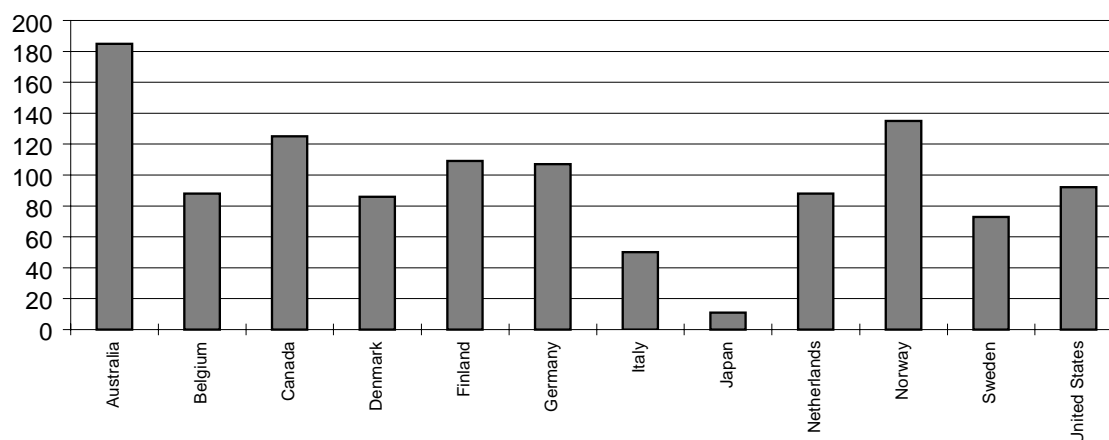
⁵ Most populations have more women than men at retirement age.

benefit floor rather than replicating past incomes. Targeting is done in two ways, first through asset and income tests and second through specifically tailored programs for specific needs. Examples of the latter are rental allowance and health cards. Even these targeted payments are means tested, except for some disability related payments. The positive impact of all of this has been that Australia's income transfers system on a net after tax basis is the most effective in reaching the poor among major OECD countries. Figure 7.4 illustrates this very clearly. The poverty reduction effectiveness index shown in this figure is based on the proportion of after tax transfers going to the bottom three deciles as a percentage of total transfers. An index value of 100 would mean that 30 per cent, of net transfers are going to the bottom 30 per cent while a number greater than 100 means that relatively more transfers are going to the bottom 30 per cent and vice versa. Thus, the higher the number, the more effective the country is in using transfers to combat poverty.

7.3.3 High effective marginal tax rates

The flexibility that comes from the financing base and targeting does create some significant problems on the flip side. There are many programs with differing requirements, many of which have developed in response to particular economic or social needs. These programs have a variety of overlapping means tests. The variety of programs and means tests tends to confuse service delivery staff, not to mention the clients. Furthermore, the tight targeting means that when someone on income support payments finds a job, benefits are cut in proportion to income. The loss of benefits interacts with tax rates to create high effective marginal income tax rates (EMTRS). Some studies show that this generates EMTRs greater than 100 per cent

Figure 7.4 Poverty reduction effectiveness index



Data source: Khan (1999) based on Whiteford, Jackson, and Morrow (1998).

at some levels of income. These EMTRs are particularly high for those earning between \$400 per week and again for those earning about \$600 per week — a result of different means tests — even though high EMTRs are present through a wide range of the income distribution.

Those at higher incomes are not really affected because the basic benefits for unemployment, sole parent pensions and so on are significantly lower than the minimum wage. Thus, job offers above a certain level would dominate the effect of high EMTRs. Also, those on who are on a career path and expect to have significant future incomes are probably unaffected even if they receive new job offers at the above high EMTR range. Thus, the effects of these high EMTRs is limited to those at low incomes and with little prospects and they have been called low-income poverty traps. The EMTRs need to be reduced, but a cost-neutral reduction in EMTRs will not be easy as it is the natural byproduct of the highly targeted system, which has allowed Australia to provide high levels of protection at a relatively low cost in terms of GDP. But despite the difficulties, a reduction in EMTRs will be necessary even if it is not cost neutral. Another labour market issue concerns older workers in the labour force, and incentives for early retirement need to be reduced through actuarially fair reductions or increases in age pensions.

7.4 Conclusions and issues to consider

It is unlikely that given its three-pillar structure, the Australian retirement income system will become a burden on the state in future. Thus, Australia is ready to address the effects of aging on retirement income outlay by the Treasury. Nevertheless, it is useful to consider some changes which may make the retirement system more cost-effective.

7.4.1 Means testing

A cornerstone of the Australian system is means testing, yet we noted earlier in this paper that means testing accounts for about 30 per cent of the reason why the Australian retirement income system is cost-effective. The Treasury (Rothman 1998) estimates that the savings due to means testing will increase as the value of superannuation savings increases.

7.4.2 Potential distortions in life cycle savings and investment patterns

The estimates of age pension savings brought about by the interaction of means testing and superannuation savings do not take into account potential distortions in

people's life cycle savings and investment brought about by means-tested age pensions. Some retirement income investment analysts argue that people spend their superannuation savings rapidly or they make investment savings decisions which are not fully in line with their financial and economic situation, just to qualify for the age pension; that is, they view the pension as a right acquired through a lifetime of tax payments. This problem affects people higher up the income distribution.

7.4.3 Regressive impact

Other analysts point to a regressive effect on people at the lower end of the income distribution who are forced to make superannuation contributions (whether paid by the employer or employee — they come out of the total pay package). Eventually these superannuation savings will interact with their age pension, and the interaction of implied age pension cuts may lead to negative or sub-optimal returns on the money invested in guaranteed superannuation. This effect will primarily affect lower income groups; for the better off, the value of tax concessions will dominate the effect of pension cuts.

7.4.4 Does means testing really reduce net expenditures?

A final issue regarding savings from means testing age pensions may be the fact that with Australia's highly progressive tax system, the pensions paid to richer people may be clawed back through the tax system. Thus, even if wealthier people become eligible for age pensions, they would lose much of the benefit through income taxes clawing back the money. (However, this latter point would not apply to those who lose pensions through deemed returns on assets.) These factors means that Australia may need to re-examine the issue of means testing age pensions, so as to avoid distorted investment decisions at the higher end of the income distribution and inequitable effects through the interaction of guaranteed superannuation and age pension means testing. In July 1996, the Institute of Actuaries of Australia (1996) submitted a proposal for a cost-neutral elimination of the age pension means test to the Senate Select Committee on Superannuation.

7.4.5 Removal of early retirement incentives

Incentives for early retirement are major factor driving OECD countries' retirement income outlays. Gruber and Wise (1998) looked at the effects of retirement benefit accessibility on labour force participation in eleven OECD countries and found that the availability of retirement benefits determines decisions to stop working. In Belgium, almost no-one works after age 65, given the interaction of generous

retirement benefits with potential taxes on earned income (the effective tax rates may be well over 100 per cent). In Japan, the labour force participation rates of males aged over 65 is very high. This can be explained by the actuarially fair increases in retirement benefits for those retiring at ages higher than 65. A Japanese worker retiring at age 70 instead of 65 may receive almost double the retirement benefits on a monthly basis.

The Australian worker (except for those at very high incomes) has an incentive to retire early, live off superannuation savings and then claim an unreduced age pension at age 65. It is indeed surprising that more do not do so. Even for those without significant superannuation savings, the EMTRs generated by the interaction of taxes and pension reductions discourage even those who are able from continuing to work. Australia has recently introduced a program to give a one-time flat rate bonus of 9 per cent of the value of pension for every year that retirement is delayed past age 65 up to five years. This is not actuarially fair and may not constitute a strong enough financial incentive to delay retirement. Actuarially fair approaches such as Japan are likely to work better. Gruber and Wise (1998) present estimates of potential losses to economic output from early retirement using a measure called unused productive capacity (which sums up the area above the labor force participation curve). In Japan the unused capacity measure of males aged 50-69 is 22 per cent whereas this rises to 61 per cent for Belgium. In Belgium, where retirement benefits are good, almost no-one above age 65 is working, whereas in Japan, where retirement benefits increases in an actuarially fair manner with later retirement, 60 per cent are working at age 65 and almost 50 per cent are working at age 69.

Some have raised the point that continuing older workers may increase unemployment, particularly among younger workers. This assumes that the economy is not dynamic and is a 'zero sum' game. It could be argued that additional older workers may create incremental employment opportunities for younger workers. The Australian economy has experienced problems of high unemployment as it moved from a sheltered economy living off natural resource rents to a more open economy, this is unlikely to persist but recent trends show an improvement in the unemployment situation. This improvement is likely to continue as the working age population ages since unemployment is always highest among the youngest workers. Thus, Australia has to seriously consider incentives to keep older workers in the workforce.

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8 Work incentives and retirement incomes

Richard Disney, Alan Duncan and Edward Whitehouse¹

8.1 Introduction

A decline in the labour force participation of older females and older males (in particular) is common to most industrialised countries. The reasons for this are complex, but probably involve both a demand effect — high and persistent unemployment, especially in Europe — and a supply effect — pension benefits and the value of other savings have increased.

With an ageing population, some policy commentators argue that it is desirable to encourage people to retire later. Chand and Jaeger (1999) maintain that this can be achieved with parametric reforms', tinkering with the rules of existing defined benefit (DB) schemes. Many countries, however, have introduced or proposed more radical reforms, switching to defined contribution (DC) pensions. An obvious question is how these regimes are likely to effect retirement behaviour.

We begin by modelling a simple retirement saving plan and looking at the optimal retirement date. This simple plan looks very similar to a DC scheme. Optimal retirement depends on prospective earnings and the evolution of the accumulated fund, which, in principle, are separable. We then move on to DB pension schemes, which are the norm in public and much private provision. Here there are significant interactions and complications. The pension formula is often nonlinear, with accrual rates which vary with the number of years of contributions and formulae which depend on a limited number of 'best' or 'final' years of earnings. There are also 'spikes' where early retirement is first permitted, at the standard retirement age, and so on. Pensions can be actuarially adjusted, depending on the year at which benefits are first drawn. We show that the incentives in a DB scheme are very different from the DC retirement saving plan.

¹ We are grateful to participants at a Learning and Leadership Centre seminar at the World Bank, and particularly Estelle James, Robert Palacios, Anita Schwarz and Pat Wiese, for useful comments and suggestions. The usual disclaimer applies.

Most of the existing literature on retirement focuses on public sector, DB schemes.² Another strand looks at the effect of private DB schemes, commonly provided by employers.³ DC schemes, however, are playing a bigger part in pension systems throughout the world. In the United States, employer-based DC plans, known as 401(k)s, have tended to substitute for traditional DB schemes.⁴ The trend to DC among employer plans is less pronounced in the UK, but many employers expect to change their provision in this direction in the future (Disney 1995). Most of the growth of DC has been in individual pension accounts, known as personal pensions, which have mainly substituted for the public sector, DB scheme. They now cover more than one quarter of employees. But the new stakeholder pensions, announced in November 1998, will be group DC plans. In the new pension systems of Latin America and eastern Europe, DC schemes are also a substitute for the public plan. Since all of these schemes are recent, few people have retired with substantial DC pensions, so it is not surprising that the issue of retirement incentives in these plans has not yet been addressed.

8.2 Measuring work incentives

A number of structural models of optimal retirement have been proposed, each of which could in principle be adapted to study the work incentive impact of alternative retirement pension schemes. The literature in this area principally distinguishes between dynamic programming models (Rust 1990) or the so-called ‘option value’ model (Stock and Wise 1990). The option value approach models the decision to retire at some age t by comparing the expected present value of retiring at that age with the value of retiring at all subsequent ages through to statutory retirement age and beyond. The maximum of the expected present values of retiring at future ages less the value of immediate retirement is called the ‘option value’ of delaying retirement, and the individual is modelled to work until the option value turns negative. The dynamic programming approach also compares current with future retirement options, and is, despite some analytical differences, broadly similar

² Recent international comparative studies include one of 11 OECD countries coordinated by Gruber and Wise (1997) and Blondal and Scarpetta (1998). Other notable studies include Boskin and Hurd (1978), Burtless (1996), Hurd and Boskin (1984) on the United States, and Meghir and Whitehouse (1997) on the United Kingdom.

³ Examples on the United States include Kotlikoff and Wise (1985, 1987), Lumsdaine, Stock and Wise (1990, 1994), Stock and Wise (1990) on the United States, Disney, Meghir and Whitehouse (1994) on the United Kingdom, Palme and Svensson (1997) on Sweden, and Seike (1997) on Japan.

⁴ See Gustman and Steinmeier (1992), Ippolito (1995), and Kruse (1995) on the growth of DC schemes and the reason for this trend.

in structure to the option value model. Simpler binary choice models also exist, but the ease of computation for such models is bought at the cost of predictive accuracy.

Despite the existence of this literature on work incentives and retirement incomes, econometric analysis is nevertheless complex and constrained by limitations in available data. For this paper we examine the impact of hypothetical plans on an ‘imaginary’ individual, and defer the extension to full econometric analysis for future research. Our analysis of work incentives focuses on the calculation of replacement rates or average/effective marginal tax rates, whereby the income to be enjoyed in retirement is compared with income from work. Of course, this mode of analysis falls short of a full consideration of the economic incentives surrounding work and retirement. Nevertheless, we find the method to be a useful and instructive demonstration of how structures of pensions can affect the decision to retire.

8.2.1 Replacement rates

The replacement rate is often used in static studies, such as the Organisation for Economic Cooperation and Development (OECD) analysis of the effect of tax and benefit systems on work incentives of prime-age workers (OECD 1996 and 1997). The gross replacement rate may be calculated as a ratio of pension to gross earnings at any point in time. We can adjust the static, gross replacement rates to take account of the effects of working on pension contributions and the pension value. The replacement rate becomes:

$$RR = \frac{\text{pension}}{\text{gross earnings} + \text{change in pension wealth}}$$

8.2.2 Effective tax rates

A second measure of work incentives is the effective tax rate. This was used in the international study, led by Gruber and Wise (1997), of the impact of social security programs on retirement behaviour. In the simplest cases, this measure is the same as the replacement rate.⁵ However, taking account of the effect of continued working on pension wealth, this becomes:

⁵ Ignoring taxation and changes in pension wealth, for example, the effective tax rate is 1–(earnings – pension)/earnings, which can be simplified to pension/earnings. See OECD (1997, Annex B) for a discussion.

$$1 - \frac{\text{gross earnings} + \text{change in pension wealth} - \text{pension on}}{\text{gross earnings}}$$

These effective tax rates are the same as average effective tax rates in a static model. But when considering a dynamic labour supply problem, such as retirement, they are best thought of as the marginal effective tax rate on an additional year's work.

8.2.3 'True' age-earnings profiles

Simple cross-section analysis of age-earnings profiles generally shows an inverted U-shape, with real earnings falling at older ages.⁶ However, the cross-section profile conflates age and cohort effects. Following the same cohort over time, other studies have found that age-earnings profiles are close to linear.⁷ The problem is that earnings are endogenous to the retirement decision, and there is a sample selection problem as the people working at older ages are not representative of the whole cohort.

In this simulation study we consider two alternative forms for the earnings schedule. In both cases, the worker is assumed to earn \$10 000 at age 20. The first hypothetical schedule assumes a simple linear growth in earnings of 3 per cent per year. The second scenario assumes a quadratic age-earnings schedule, parameterised to yield the same value for a DC pension at age 65, when mandatory contributions are set at a rate of 10 per cent from age 20. Figure 8.1 compares the shape of the two profiles.

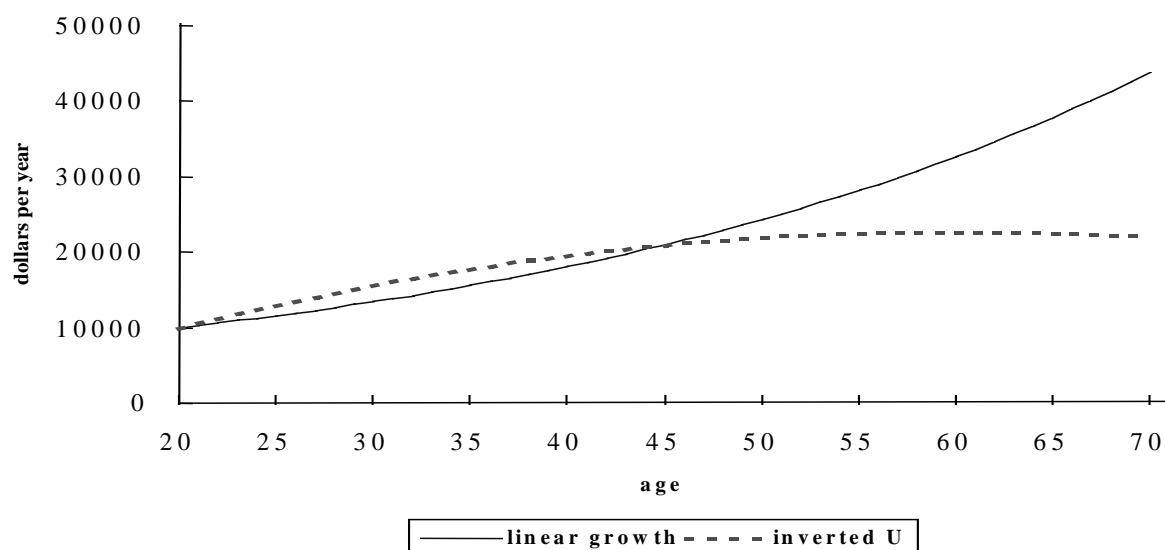
8.3 Pensions systems: alternative structures

In this study we apply simulation methods to examine how the structure of pensions scheme can impact on work incentives below statutory retirement age. We focus broadly on two styles of pensions; the DC scheme and the DB plan. More specifically, we examine how differential accrual structures and variations in the characteristics of the DB can affect the decision to retire.

⁶ See, for example, Disney and Whitehouse (1991) on the United Kingdom.

⁷ See, for example, Meghir and Whitehouse (1996) and Gosling, Machin and Meghir (1998). This issue is also explored in Freeman (1979, 1989), Berger (1983) and Disney (1996), Chapter 6.

Figure 8.1 Hypothetical age-earnings profiles: alternative scenarios



8.3.1 A simple defined contribution plan

Consider first a mandatory DC plan with a 10 per cent contribution rate, and assume that contributions earn an investment return of 5 per cent per year. When the individual retires, it is assumed that the individual must convert the fund to an annuity. The annuity rate calculation is based on the riskless interest rate, which we assume to be 2 per cent.

Figure 8.2 Earnings and defined contribution pension, by age

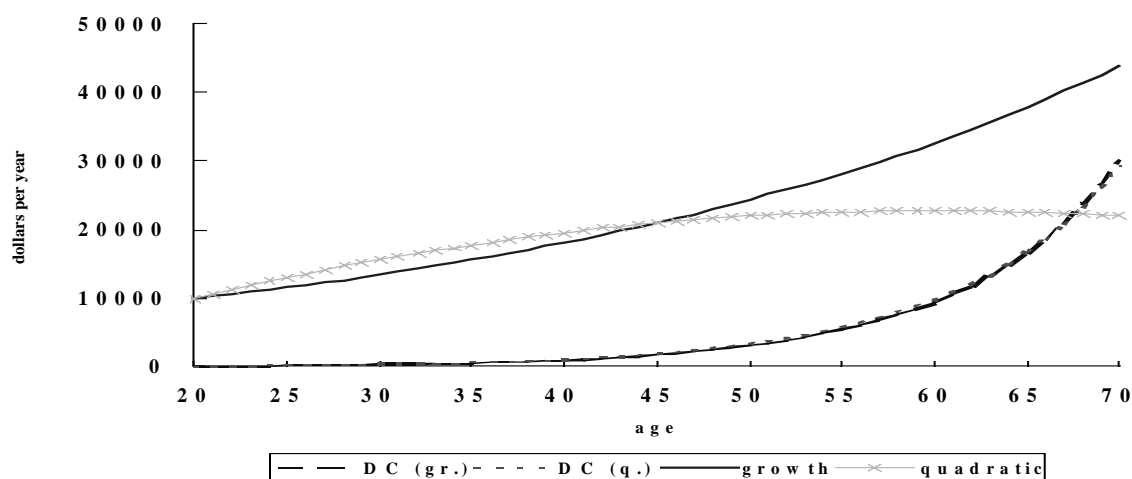
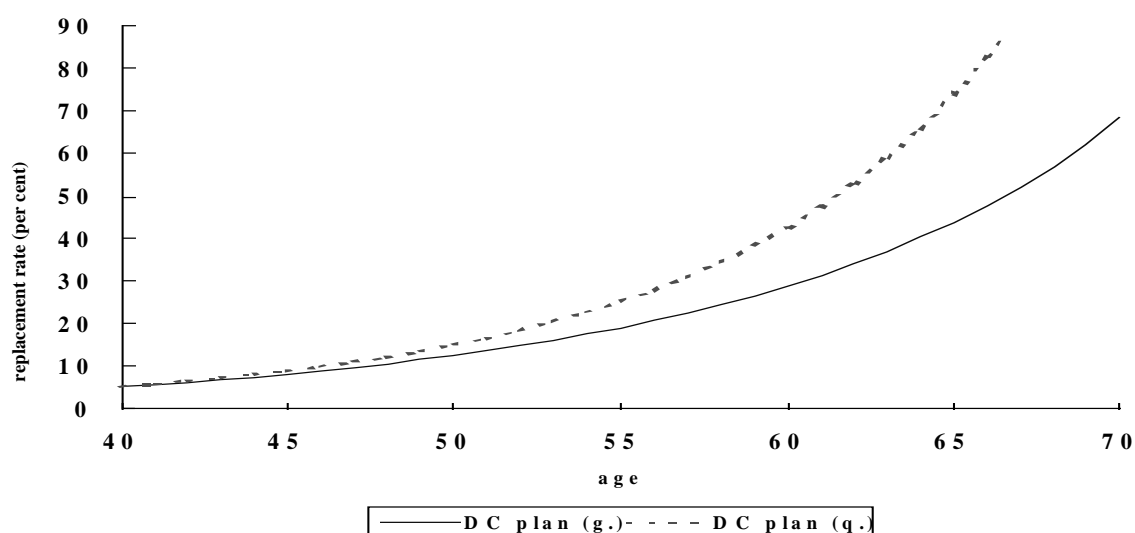


Figure 8.2 shows the level of pension benefits that can be expected from the simple DC plan of this form, based on the simple linear growth profile for earnings (with the individual making contributions from age 20). Figure 8.3 shows the gross replacement rate: the ratio of the annual pension to (current) earnings. The replacement rate at age 50 is very small: around 12 per cent. But the pension grows rapidly, at around 12 per cent per year. The two lines move closer together in figure 8.2, and the replacement rate in figure 8.3 rises quickly.

Each extra year of work adds to the accrued pension in three ways. First, an extra year's contributions are made. Second, the accumulated fund earns an additional year's investment returns (assumed to be 5 per cent). Third, the delay in annuitising the pension by a year means that the benefit increases with the annuity rates. These annuity rates are shown in figure 8.4, which is calculated using mortality data from Thailand.⁸ These are actuarial, not market annuity rates.⁹ We initially model pension benefits for males since they are most affected by early retirement.

Figure 8.3 Gross replacement rate, by age – defined contribution plan



⁸ The annuity rate is the inverse of the discounted present value of the product of one minus the mortality rate.

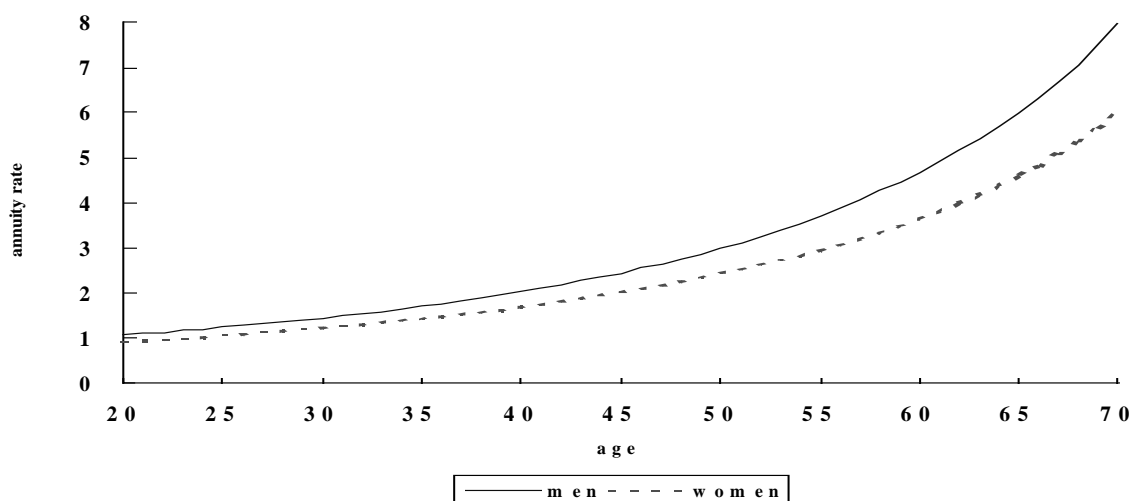
⁹ Market rates will tend to be lower, because of administrative charges and adverse selection. See Piggott and Doyle (1999), Friedman and Warshawsky (1988, 1990), Brugiavini (1993) and Dilnot et al. (1994, pp. 148–51) for a discussion.

8.3.2 A simple defined benefit plan

The initial DB scheme is based on average lifetime earnings.¹⁰ Early years earnings are uprated in line with prices. To allow direct, fair comparisons of retirement incentives between the DB and DC plans, we equalise the resulting pension value at age 65. This gives an accrual rate of 1.7 per cent in the basic DB scheme. Again, for equivalence with the DC plan, we assume a 10 per cent contribution rate to this plan.¹¹

The pension value by age is shown in figure 8.5 (which is comparable to figure 8.2). The DB pension is much flatter across age than the DC scheme, increasing by around 5 per cent per year compared with 12 per cent in the latter. Each additional year of work adds to the pension in two ways. First, an extra year's contributions adds to the number of years in the DB formula. Second, the base for the DB is increasing. Since we assume real earnings grow continuously by 3 per cent per year, average lifetime earnings are about 1.5 per cent higher after each extra year of work. Notice also the increased value of pensions in the DB plan when earnings follow a quadratic path. This stems from the higher level of contributions at lower ages, and the consequent increase in the value of the compulsory annuity at ages below 65. (Recall that we equalise all pensions values at 65 for comparability.)

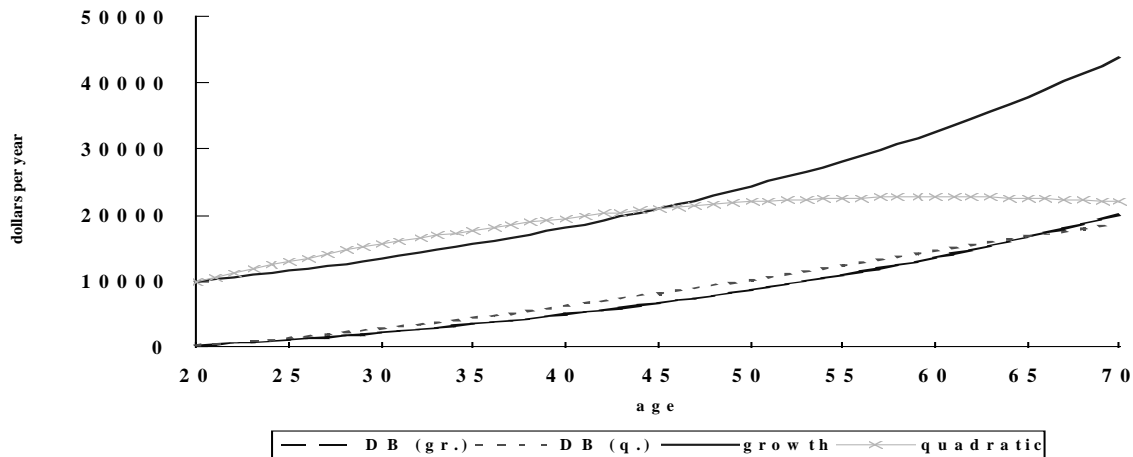
Figure 8.4 Annuity rates, by age and sex



¹⁰ Schemes based on fewer years of earnings (for example, final) are discussed below.

¹¹ This essentially assumes that the real return on individuals' contributions to the DB plan is equal to the funded DC plan. But revenues to the defined benefit scheme are the total wage bill multiplied by the contribution rate. If real returns exceed wage-bill growth, there will tend to be a deficit in the DB plan that must be financed from general revenues.

Figure 8.5 Earnings and defined benefit pension, by age



Figures 8.6 and 8.7 compare the gross replacement rate in the DC and DB baseline plans for each of two alternative earnings profiles. As noted above, we have ensured that the pensions are equally generous at age 65, so differences between the curves reflect only intrinsic structural differences between the two types of plan. The curves therefore intersect at age 65. The DB plan gives a much larger prospective replacement rate at early ages and is relatively flat. The DC pension increases exponentially with age. With quadratic profiles, the replacement rates for each pension plan (contribution and benefit) increase markedly as earnings fall on the approach to normal retirement.

8.4 Effect of the pension system on return to working

The gross replacement rates in figures 8.6 and 8.7 give some indication of retirement incentives. In a static framework, we would expect to see fewer people working the higher the replacement rate, both because of a substitution effect and an income effect (the higher the replacement rate, *ceteris paribus*, the higher lifetime income). However, this ignores the dynamic nature of the retirement problem because it fails to capture all of the financial returns to the choice of continued work versus retirement. Working an additional year not only brings in earnings, but will also alter the value of the pension. The pension system can be thought of as an implicit tax or subsidy to continued working, so the change in pension wealth needs to be added to earnings to show the true, total reward for working (Lazear 1986).

As noted above, working an additional year increases a DC pension in three different ways. We can ignore the contributions made in the year as a reward to work because they will be converted into an annuity in the next year. This is not the case in the DB plan, where contributions are not directly related to benefits. However, the other two sources of increased pension value — the additional year's investment returns and the higher annuity rate from delaying annuitisation for a year — do increase pension wealth. But the higher annuity rate in a year's time partly reflects the risk of dying within the year. This mortality risk (slightly) reduces the

Figure 8.6 Gross replacement rate, by pension type and age – linear growth profile

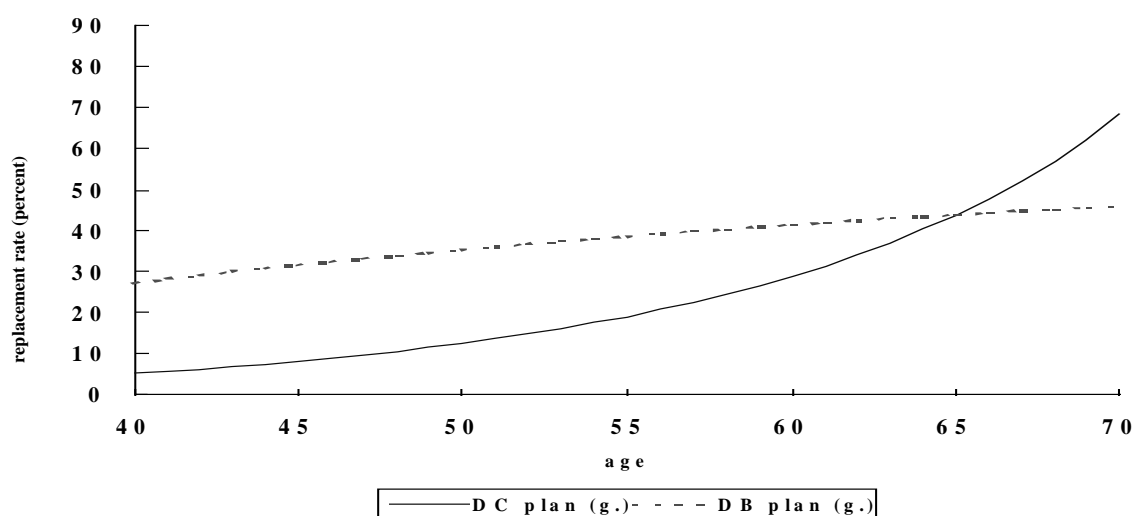
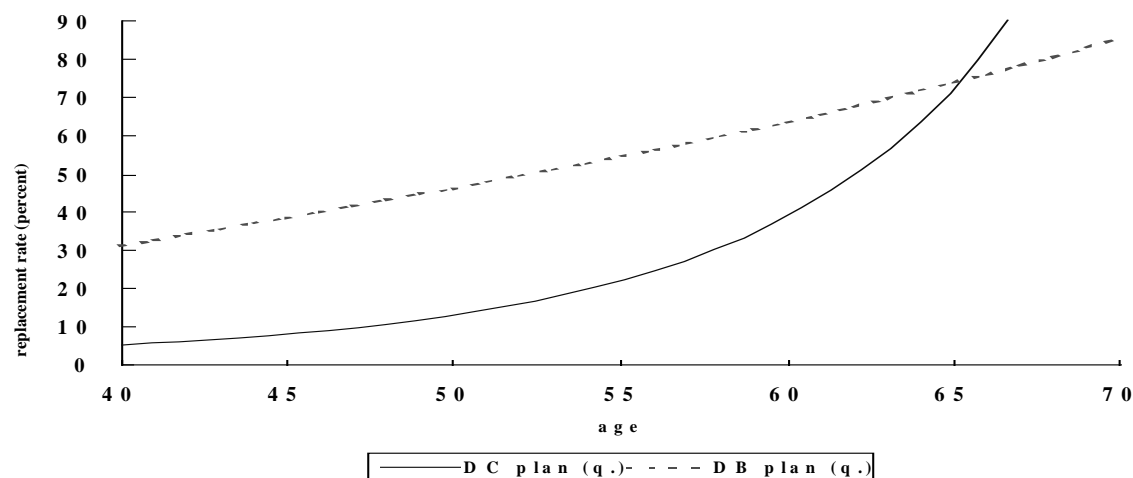


Figure 8.7 Gross replacement rate, by pension type and age – quadratic profile



value of continuing work and deferring the pension, reflecting the odds of dying before receiving any pension.¹²

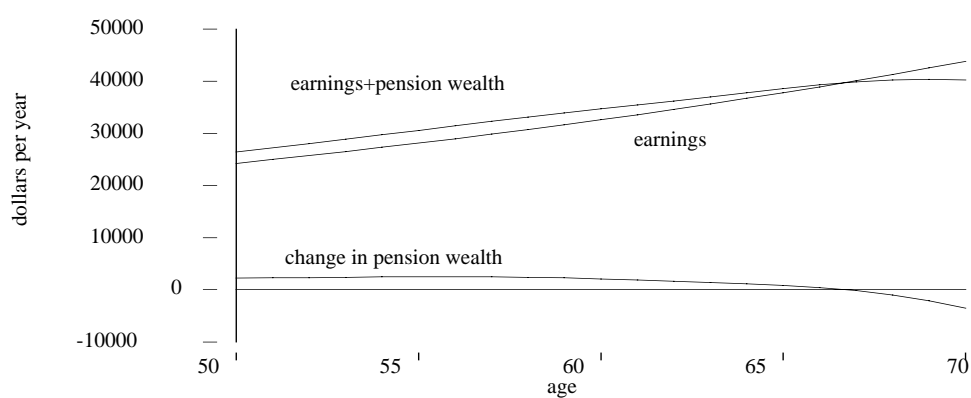
8.4.1 Effect of a defined contribution plan on return to working

Figure 8.8 shows how the change in pension wealth varies with age and, through the profile of earnings plus change in pension wealth, the impact on the return to working. At younger ages, the rate of growth of pension wealth is slightly increasing or flat, because the value of the fund increases with each extra year's contributions. But at older ages, this is overtaken by the mortality risk, and delaying retirement by a year reduces pension wealth. The top line of figure 8.8 shows the total reward to continued working: wages plus the increment to pension wealth.

8.4.2 Effect of a defined benefit plan on return to working

Figure 8.9 gives a similar picture for the stylised DB pension. Pension wealth is increased from an extra year's work through the additional year in the DB formula and through the increase in the earnings base (since real pay is assumed to grow each year). Working in the opposite direction, pension wealth is reduced by deferring the drawing of the benefit. Delaying the pension by one year also incurs mortality risk over the year, increasing the odds that the person might die without drawing any benefits. Finally, contributions are neutral in the DC scheme because the pension value equals contributions plus their associated investment return. In the DB plan, the pension benefit earned from a year's contributions can be greater or

Figure 8.8 **Earnings and change in pension wealth, by age –defined contribution plan**



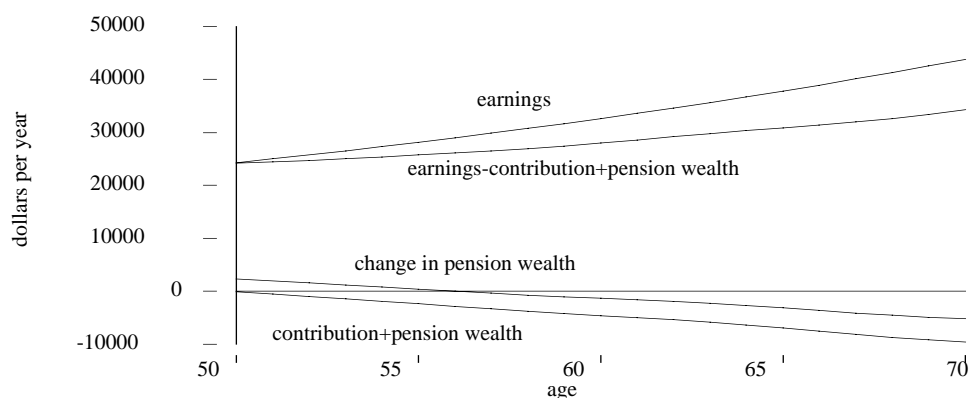
¹² We use mortality figures from Thailand in the hypothetical simulations that follow.

less than the value of the contributions paid (but is never equal). We therefore need to deduct contributions from the change in pension wealth and from earnings, to give the net return to working. These are the lower lines of each pair in figure 8.9.

8.4.3 Comparison of defined benefit and defined contribution plans

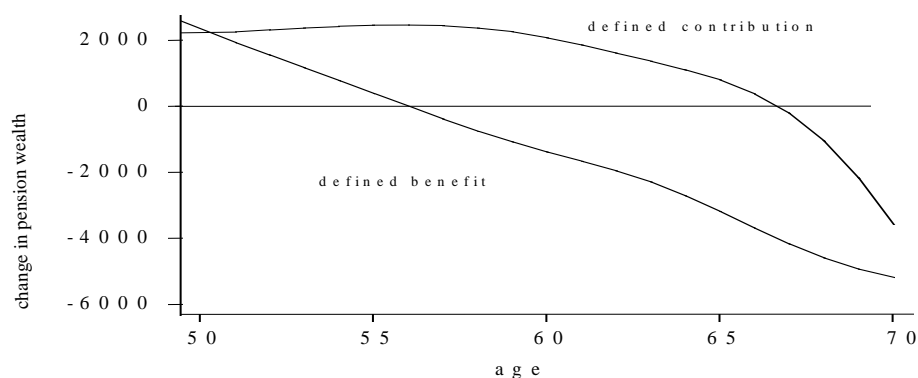
Figure 8.10 shows the change in pension wealth alone for the two types of scheme. The change in pension wealth is broadly linear and downward sloping for the DB scheme,¹³ while the DC scheme is at first flat and then falls exponentially. This implies a very different pattern of retirement incentives in the two plans. DB schemes give a substantial incentive to retire earlier, and the effective tax rate on continued work from the pension system is only higher in the DC plan after age 68. This pattern explains why governments need to impose minimum early retirement ages in DB plans, because workers have a sizable incentive to retire at the earliest possible date. DC schemes, in contrast, give a large incentive to continue working until quite advanced ages.

Figure 8.9 **Earnings and change in pension wealth, by age – defined benefit plan**



¹³ In line with other studies, such as those of Kotlikoff and Wise (1985, 1989).

Figure 8.10 **Change in pension wealth, by age and type of plan**



8.5 Extensions to the basic model: taxation

Gruber and Wise stress the importance of other elements of the tax and benefit system on retirement incentives. For instance, progressive personal income tax systems imply a higher average tax rate on (higher) earnings than on (lower) pensions. Thus, net earnings are lower relative to net pensions than gross.

Taxation can have a more complex effect. In some countries (the UK for example), pensioners are treated more generously than workers are by the tax system.¹⁴ The tax-free allowance applies to all income of those over state pensionable age, including earnings. In others countries, pensions are treated more generously than labour income. In the US, for example, 15 per cent of pension income is tax free.

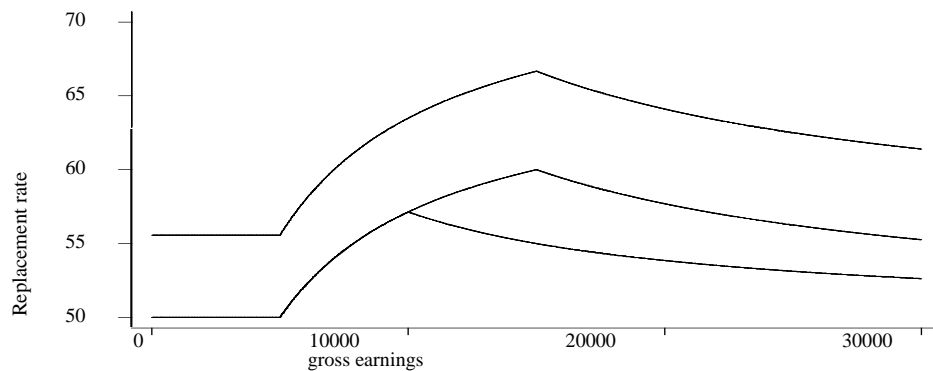
Account should also be taken of the impact of social security contributions for benefits other than pensions, such as disability, unemployment insurance and so on. Again, these are usually levied only on earnings and not on pension payments, although some countries (such as France and the Netherlands) have recently moved to broaden the base for social security contributions.¹⁵

We consider, first, a simple personal income tax system, with a zero rate band of \$5000 and a single rate of 25 per cent thereafter. The pension is assumed to give a

¹⁴ See Dilnot et al. (1994) and Hemming and Kay (1982) for a discussion of the impact of tax treatment of pensioners in the United Kingdom and a proposal for reform.

¹⁵ These contributions deliver entitlement to these other benefits, but all social security programs involve a substantial degree of redistribution. In the absence of actuarially calculated individual contribution rates, it is difficult not to treat these contributions as a tax. See OECD (1998) for a discussion.

Figure 8.11 **Impact of a progressive personal income tax**



gross replacement rate of 50 per cent. The net replacement rate, at different levels of earnings, is given by the lowest line in figure 8.11. Once gross earnings pass the \$5000 level, income tax is levied, but the pension at this earnings level (\$2 500) would be tax free. The net replacement rate peaks at gross earnings of \$10 000, because from then onwards the pension starts to be taxed. At very high levels of earnings, the net replacement rate will get very close to the gross.

Moving upwards in figure 8.11, the next line shows a system which gives a larger allowance (\$7 500) to the pensioner than to the worker. Now, the net replacement rate peaks later and at a higher level (60 per cent). Finally, the highest line in figure 8.11 adds a 10 per cent contribution for other social security benefits. This shifts the line upwards at each point. Now, the net replacement rate can exceed 65 per cent, compared with the 50 per cent gross rate.

8.6 Extensions to the basic model: defined contribution schemes

Many countries allow drawdown from DC schemes rather than forcing conversion to an annuity (Brugiavini 1993; Piggott and Doyle 1999). Drawdown reduces ‘timing risk’ (the risk that interest rates are low on the date that the pension fund is converted). It also permits those with a short life expectancy to avoid the losses from annuitisation, and either to enjoy a higher pension or leave a bequest.¹⁶

Under drawdown, the fund continues to earn the market investment return. In the model, we assume that this is higher than the riskless interest rate (which underlies the calculation of the annuity rate). The only way of continuing to earn the market

¹⁶ Given the correlation between income and longevity, compulsory annuitisation is regressive.

return on accumulated pension in the basic model is to continue in work. But if drawdown is allowed, the individual can retire and still earn this higher return.

8.7 Extensions to the basic model: defined benefit schemes

The simple, stylised DB model ignores many of the complexities of ‘real world’ plans, and many of these can be expected to have substantial effects on retirement incentives. We have assumed that the plan is based on lifetime average earnings, and that each extra contribution delivers additional pension benefit. Many plans, however, have nonlinear accrual structures, with floors and/or ceilings to contribution and/or benefits. This means schemes deliver different returns for people with different levels of earnings.

Second, many plans have higher accrual factors for early years of contributions. As later years deliver a lower return to working in the form of extra pension entitlement, this can be a disincentive to continue working. Other schemes have maximum pension levels or a maximum number of years of accrual in the plan. Once these limits are reached, the additional pension accrual is zero, but often, contributions continue to be levied.

Third, only a limited number of years of earnings count in most schemes, which use either ‘final’ or ‘best’ years in the plan. The effects of these rules are extremely complex. Assuming that earnings continue to increase (as in the basic model, see figure 8.2 or 8.5) then plans based on either final or best years increase the return to working relative to an average pay scheme because the earnings base used in the pension formula is growing more quickly. If, however, earnings decline at older ages, then the pension value falls with each year of extra contributions in a final earnings plan. A best years scheme has marginally lower returns to working than an average salary scheme.

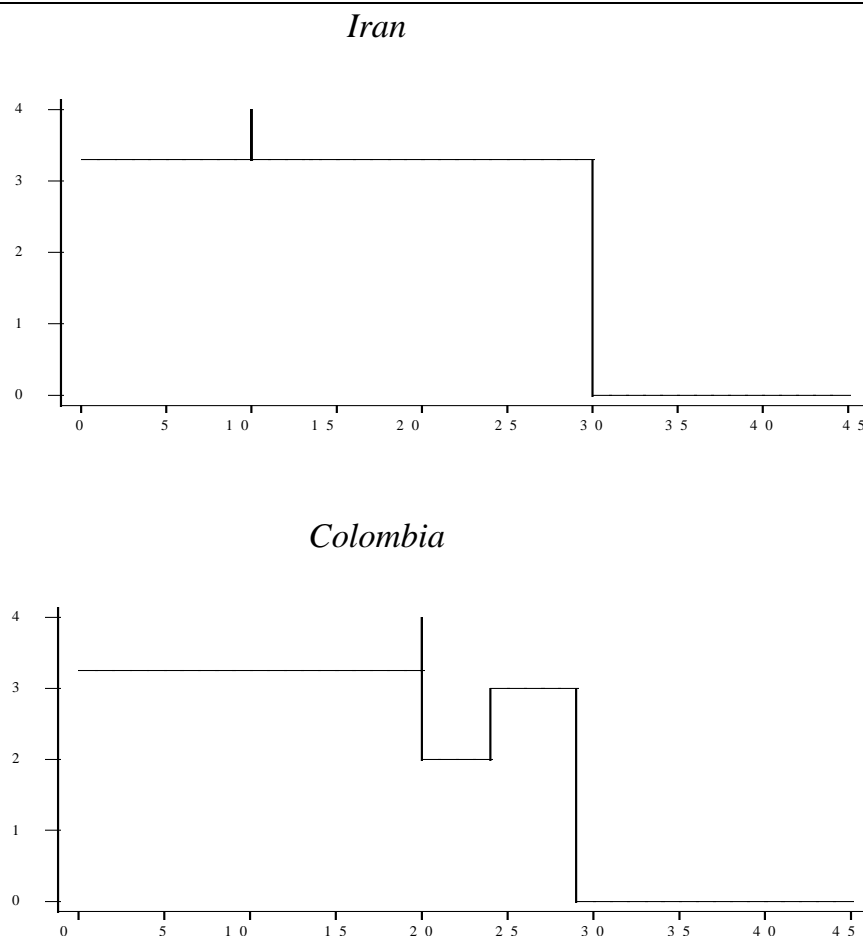
Finally, the simple DB formula does not allow for adjustments to the pension depending on the age at which it is drawn. In some countries, pensions drawn at the earliest possible age are ‘actuarially’ reduced. In others, deferring drawing the pension beyond the normal age attracts an increment to the pension value when eventually it is drawn.

8.7.1 Nonlinearities in pension accrual

The structure of pension accrual clearly impacts directly on the decision to retire, and in many countries accrual is a nonlinear function of the number of years of

contributions. Typically, one finds that nonlinear accrual schemes display diminishing rates of accrual at older ages. By way of example, figure 8.12 shows the structure of pension accrual in two example public DB plans; Iran and Colombia. The horizontal axis shows the number of years of contributions, the vertical, the percentage of the relevant measure of earnings secured in pension for that year of contributions.¹⁷

Figure 8.12 **Structure of pension accrual for Iran and Colombia**



These two accruals regimes have been chosen to demonstrate the potential for variation in the nonlinearity of accrual rate structures across countries.¹⁸ Iran offers a very high accrual rate of 3.3 per cent, but there is a maximum replacement rate of 100 per cent. This means that after 30 years of contribution, there can be no further

¹⁷ A full 46 countries profiles are covered in Disney and Whitehouse (1999).

¹⁸ The choice of accrual rate structure follows Disney and Whitehouse (1999), who base their ranking of nonlinear accrual schemes on the coefficient of variation of the annual accrual from zero to 45 years of contribution.

increment to the pension. The ‘spike’ at 10 years indicates that the pension ‘vests’ at that point. No pension is granted for nine years of contributions. At 10 years of contributions, the pension is 33 per cent of earnings. The spike indicates this change.¹⁹ Colombia’s public system is more complex than Iran’s (figure 8.12). A replacement rate of 65 per cent is given for 1000 weeks of contributions, with an increment of 2 per cent for each 50 weeks between 1000 and 1200 weeks, to a maximum of 73 per cent of earnings. Between 1200 and 1400 weeks, the increment is 3 per cent for each 50 weeks, to a maximum of 85 per cent. A minimum of 1000 weeks contributions is required for the pension.

Table 8.1 Effect on pension value from working from age 55 to 64

<i>Zero accrual</i>		<i>Broadly linear</i>		<i>Nonlinear</i>	
<i>Country</i>	<i>Per cent</i>	<i>Country</i>	<i>Per cent</i>	<i>Country</i>	<i>Per cent</i>
Canada	0	Belgium		Poland	17
Ireland	0	France		Austria	15
Netherlands	0	Germany		Norway	15
Spain	0	Greece		Italy	13
Sweden	0	Luxembourg		Portugal	12
United States	0	Switzerland		Finland	8
		United Kingdom		Japan	6
				Czech Republic	2
				Hungary	2

Source: Department of Health and Human Services.

¹⁹ A ‘legal contract’ approach (see Bulow 1982 for an application to private DB schemes in the US) would show a zero accrual for the first 9 years, and a 33 per cent accrual in the tenth year. This is also called the accumulated benefit obligation (Bodie 1991). The alternative, used here, is to show the accrual in the first 10 years assuming that the individual will make 10 years of contributions (see, for example, Kotlikoff, Smith and Wise 1985 on the US). A final approach is to compute the probability at any point before 10 years that the individual will contribute for 10 years, also called the ‘projected benefit obligation’. This method is discussed in Disney and Whitehouse (1996) and compared with the other two measures for private DB schemes in the UK. See also Disney (1996, pp. 116–121).

Even these figures are a simplification: they ignore sectoral privileges (giving early retirement or reduced contribution requirements to particular occupations or industries) and credits granted, for example, for periods of unemployment, disability, education or child rearing.

To assess how differential accrual structures might affect work incentives, we simulate replacement rates under three alternative accrual scenarios. The first regime assumes a constant rate of accrual over the contribution's lifetime. The second posits a diminishing piecewise linear accrual scheme with equal step reductions in accrual rate at ages 35 and 50, and a zero accrual rate beyond age 65. The third assumes a smooth diminishing accrual structure starting at 3 per cent at age 20. Figure 8.13 charts these schemes.

In figure 8.14 we simulate replacement rates under these alternative accrual schemes, with incomes generated using a quadratic earnings profile. As before, all pensions are equalised at age 65. Comparing DB plans, one finds a diminishing accrual structure (whether smooth or piecewise linear) to generate greater disincentives to work at younger ages than the constant accrual scheme. One can therefore look to the reform of accrual structure as one mechanism by which work incentives can be altered.

Figure 8.13 **Alternative accrual schemes – hypothetical examples**

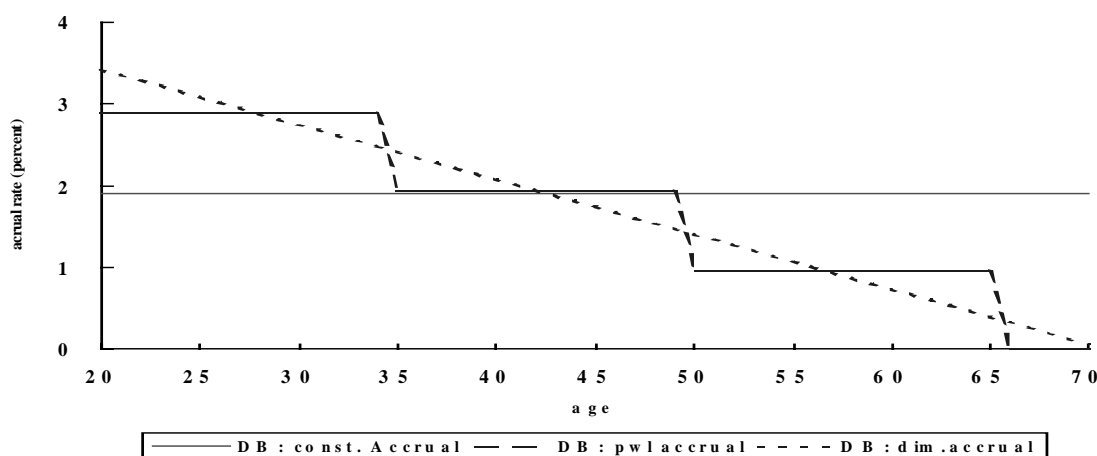
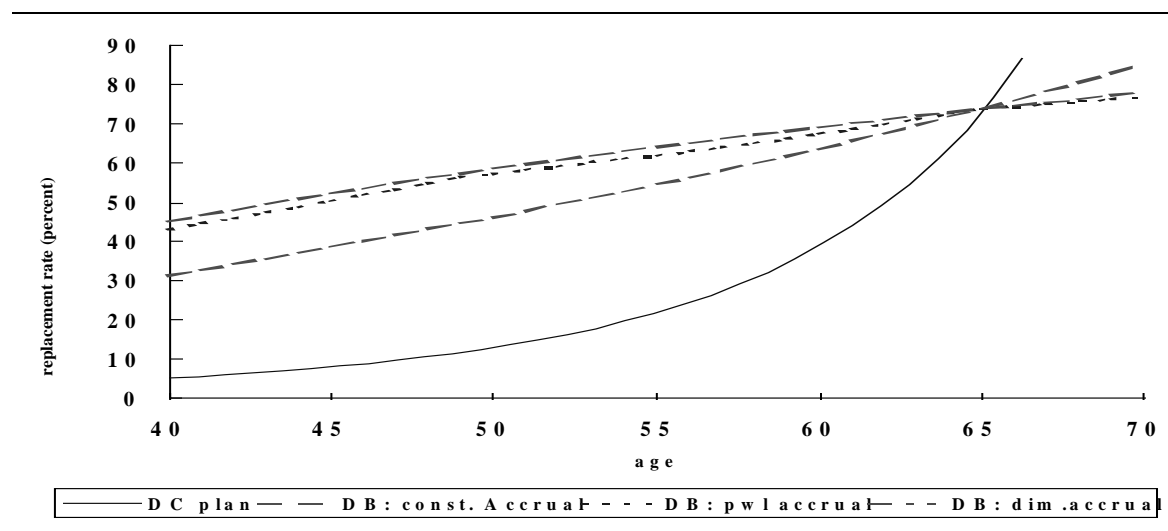


Figure 8.14 Replacement rates under alternative defined benefit accrual structures



8.7.2 Final, average and best salary schemes

The formulae used in 80 different countries' public, DB plans are shown in tables 8.2 and 8.3. Countries with final and best salary formulae are ranked inversely; from the longest to the shortest averaging periods. OECD countries, shown in table 8.2, divide evenly between those which average earnings across all or most of the working life, those which take a measure of earnings in the final few years of the working life and those which take earnings in a number of 'best' years.

In other countries (table 8.3), final salary schemes dominate. Only 14 per cent of countries use average pay and 18 per cent use a measure of best earnings. Schemes outside the OECD also tend to take rather fewer years of earnings into account. In final pay plans, the average in OECD countries is around seven years, compared with fewer than four years in lower income countries. There is also rather less variation among OECD countries. Outside the OECD, three countries use only the final month's pay in the pension formula, while six countries average over the last

Table 8.2 Earnings measure in public defined benefit plans – OECD

<i>Average</i>	<i>Best</i>	<i>Final</i>
Belgium	Norway (20)	Czech Republic (average since 1985)
Germany	Austria (15)	Portugal (best 10 of 15)
United Kingdom	Sweden (15)	Turkey (5–7)
United States (ex. worst 5 years)	France (11)	Greece (5)
Canada		Mexico (5)
		Hungary (best 4 of 5)

Source: Department of Health and Human Services.

ten years. In best earnings schemes, the OECD average is a 15 year formula, compared with six years outside the OECD.

There are a number of reasons for adopting short averaging periods in DB plans. First, they are a simple way to correct the effects of high and volatile inflation. Second, they are administratively simpler than tracking work and contribution records right across the working life. But they can lead to high costs, strategic manipulation of earnings profiles, and disproportionately higher benefits going to higher income workers, because they tend to have more steeply rising age-earnings profiles (World Bank 1994, box 4.8).

Figures 8.15 and 8.16 compare replacement rates under a range of final, best and average salary schemes. We again restrict attention to a quadratic earnings profile, and for this first series of simulations we use a 15 year period for the calculation of

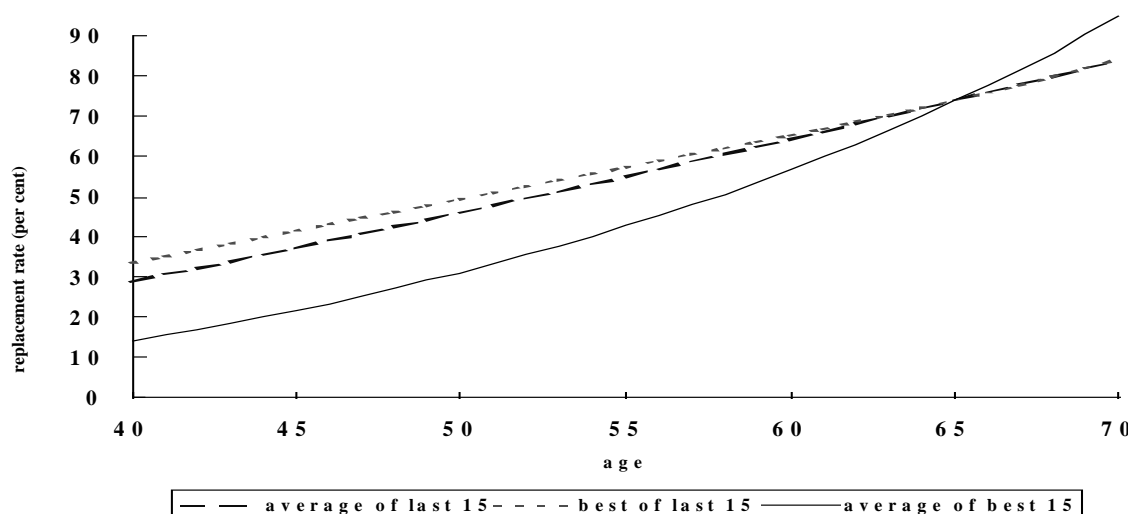
Table 8.3 Earnings measure used in public defined benefit plans – non-OECD

<i>Average</i>	<i>Final</i>	
Albania	Argentina (10)	Rwanda (best of 3 or 5)
Cote d'Ivoire	Colombia (10)	Tunisia (best of 3 or 5)
Congo (Kinshasa)	El Salvador (10)	Dominica (best 3 of final 10)
Cyprus	Haiti (10)	Malta (best cons. of 10)
Jamaica	Madagascar (10)	Dominican Republic (2)
Liberia	Uruguay (10)	Egypt (2)
Mauritius	Guatemala (5)	Iran (2)
Philippines	Mali (5)	Jordan (2)
Trinidad and Tobago	Romania (best cons. 5 of 10)	Oman (2)
	Cuba (best 5 of 10)	Saudi Arabia (2)
	Slovakia (best 5 of 10)	Costa Rica (best 2 of 5)
<i>Best</i>	Nicaragua (3,4,5)	Syria (best of 2 or best cons. 5 in 10)
Poland (6 of final 15)	Peru (3,4,5)	Georgia (best of 1 or 5)
Croatia (cons. 10)	Brazil (3)	Moldova (1)
Serbia (cons. 10)	Ethiopia (3)	Pakistan (1)
Slovenia (cons. 10)	Iraq (3)	Kuwait (final month)
Panama (7)	Libya (3)	Lebanon (final month)
Belarus (cons. 5 of final 15)	Paraguay (3)	Nigeria (final month)
Kirghizistan (cons. 5 of 15)	Cameroon (best of 3 or 5)	
Turkmenistan (cons. 5 of 15)	Central African Republic (best of 3 or 5)	
Russia (cons. 5 or final 2)	Congo-Brazzaville (best of 3 or 5)	
Ukraine (cons. 5 or final 2)	Gabon (best of 3 or 5)	
Ecuador (5)	Mauritania (best of 3 or 5)	
Bulgaria (cons. 3 of final 15)	Morocco (best of 3 or 5)	
Algeria (3)	Niger (best of 3 or 5)	

Note: cons. = consecutive

Source: Department of Health and Human Services (1997).

Figure 8.15 Replacement rates for 15 years final, average and best salaries

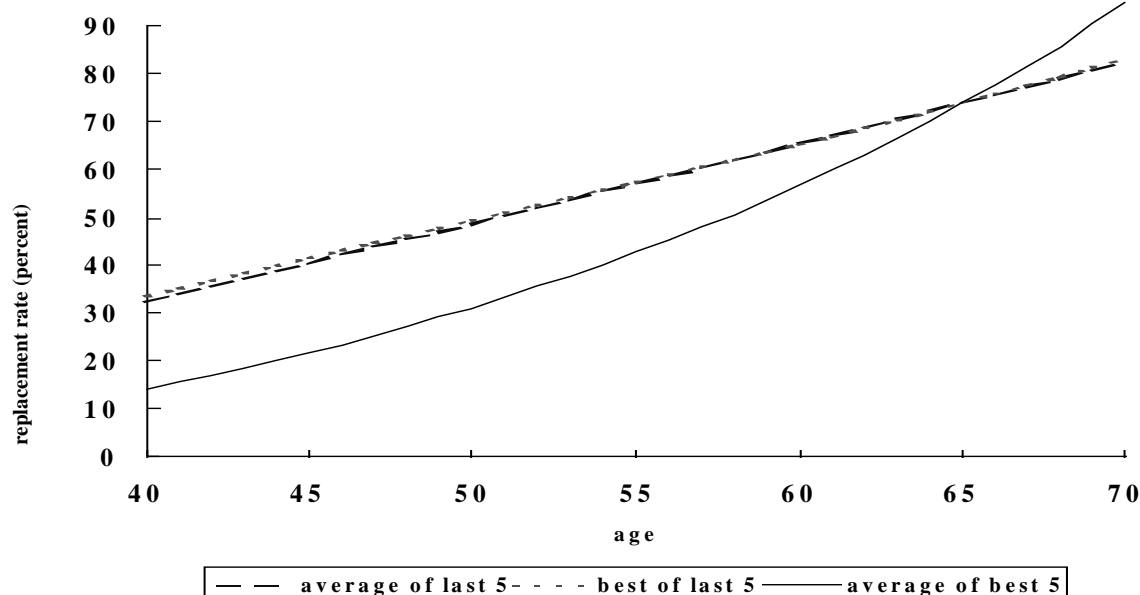


each scheme. As earnings fall towards retirement, the ‘average of best’ and ‘best of last’ schemes would clearly dominate the ‘average of last’ scheme if one were to apply an equal pension multiplier to each. To examine incentives for early retirement, however, we adjust the final/best/average salary multiplier to yield an equal pension at age 65. As can be seen in a comparison of figures 8.15 and figure 8.16, the ‘best of last’ and ‘average of last’ replacement rate profiles become more similar as one shortens the period over which final, best and average salaries are calculated. When a quadratic profile is used, the scheme for which the ‘average of best’ 15 years defines the pension benefit yields the lowest replacement rate below age 65. Note also that the rate of increase in replacement rate is greatest for the ‘average of best’ scheme, since this is the salary figure which changes least as one approaches age 65 under a quadratic earnings profile. The incentive to retire early is therefore greater with last salary schemes under these circumstances.

8.8 Conclusions, policy implications and future developments

How does the structure of a retirement pension scheme affect retirement behaviour? From a policy perspective, this is an important and increasingly relevant question. Many countries have introduced or proposed more radical reforms, switching from DB to DC pensions schemes. Since the vast majority of these schemes are recent, few people have retired with substantial DC pensions, so it is not surprising that the issue of retirement incentives in these plans has not yet been addressed. In this paper we investigate the relative retirement incentives of DC and DB schemes.

Figure 8.16 Replacement rates for 5 year final, average and best salaries



The work incentive impact of alternative pension schemes is complex and difficult to model. The incentive to retire depends on a range of factors, including the shape of earnings profiles, demographic structure, labour market expectations, subjective rates of discount, and subjective mortality. In addition, incentives to retire depend on the particular characteristics and structure of the retirement income scheme. For DC plans, optimal retirement depends on prospective earnings and the evolution of the accumulated fund, which, in principle, are separable. For DB plans, the incentive to retire is influenced by the contributions structure, the structure and degree of linearity of accruals, and the definition of pensions benefit (for example, final, average, last salary). The picture is further complicated with the potential for actuarial adjustments for early or late retirement. Given the difficulties associated with econometric modelling of the retirement decision, we adopt a simulation approach in which hypothetical individuals are confronted with stylised pensions plans. That said, a full econometric study remains high on the agenda for future research.

It is difficult to generate definite behavioural predictions for the retirement decision when confronted by such a complex range of pensions structures. Nevertheless, we are able to draw a number of tentative conclusions from our simulation analysis. In general, DB schemes create substantial incentives to retire early when compared with standard DC plans. More specifically, our simulations demonstrate that nonlinear accrual structures increase incentives to retire earlier in DB plans. A comparison of DB plans across a range of countries reveals great variety in structure, with pensions benefits determined by a range of best, final and average salary figures. Work and retirement incentives for such plans depend on the

interaction between the DB structure and the shape of the earnings profile. In general, inverted U-shape age-earnings profiles increase early retirement incentives in 'average of last' or 'best of last' salary schemes.

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9 Income support, retirement incomes and the living standards of older people: trends and comparisons

Peter Whiteford and Kim Bond¹

9.1 Introduction

All developed societies provide for income protection in retirement and old age in a range of ways. The Australian retirement income system includes the Age Pension and the Service Pension as government income support, plus the mandatory superannuation system and tax concessions for superannuation. The public health and health insurance systems, and community services such as public housing and institutional and community care are also important, as are other arrangements such as private home ownership. The retired may also benefit from private transfers in cash or in kind from their families.

Government activity to promote social protection for older people has a range of objectives, including the alleviation of poverty or the maintenance of pre-retirement living standards (Donald 1984; Foster 1988), the encouragement of self-provision, the avoidance of undesirable incentive effects, or the minimisation of government expenditures. Typically, systems have multiple objectives, which may conflict.

The Australian system differs from that in most other countries. In particular, it emphasises the poverty reduction objective over that of income replacement. As a consequence, while total spending on public pensions is low by the standards of the OECD countries with which Australia is usually compared, coverage of the system is close to comprehensive, and the system appears highly redistributive to those often poorly served by social insurance systems (ie. females, those with long term disabilities, and low wage earners among others).

¹ We are grateful for comments received from Alanna Foster and for data supplied by Geoff Maloney. Any errors are our own. The views expressed are also our own and not those of the Minister or the Department for Family and Community Services.

The targeted nature of the Australian public pension system raises important questions about its effectiveness and efficiency. Creedy and Disney (1989) note the inbuilt tension between the adequacy of benefit levels at the very low end of the income distribution and the high marginal tax rates implied by means testing — an important issue as the Australian population continues to age over the next half century or more.

The Age Pension is the Commonwealth Government's largest single program of income support. Between 1965 and 1998, spending on age and related pensions increased from \$2 900 million to \$13 100 million (in 1996-97 dollars), an average real rate of growth around five per cent per year. Concerns about the adequacy of pensions ensured that real increases in rates of payment contributed roughly 40 per cent of this growth (Whiteford and Morrow 1998).

Assessing how well off or poorly off is the older population is therefore of considerable policy significance. In considering this and related issues (see appendix B), it is crucial to have a clear understanding of the effectiveness of current arrangements in securing the living standards of older people and especially the distribution of income within the older population.

Internationally, there is a good deal of uncertainty about the living standards of older people (see OECD 1988 and World Bank 1994). In this regard, it is worth noting that studies by Saunders (1994) and Johnson (1998) which suggest that the incidence of low incomes is relatively high among older age groups in Australia.

This paper constructs a framework around which information on the current distributional impact of Australian public pension arrangements might be assessed. The data includes trends over time in the incomes of persons of age pension age and of a wide range of alternative indicators of living standards.

The paper is structured as follows. Section 9.2 discusses some conceptual and measurement issues and their impact on incomes and living standards. Section 9.3 provides a range of measures of the adequacy of the basic pension for those completely reliant on social security income. Section 9.4 provides data on the private income and assets of Age Pensioners. Section 9.5 presents an analysis of trends in the disposable incomes of the older population, including trends in the proportion of the older population with cash disposable incomes below various alternative measures of relative low income. The section also explores the sensitivity of outcomes to these different measurements of living standards. Section 9.6 presents a range of alternative measures of living standards. Section 9.7 discusses the impact of Government non-cash benefits and indirect taxes on the relative living standards of the older population. Section 9.8 looks at estimates of relative low income among the older population. The paper concludes in section 9.9 with a summary of the main

findings. We argue that a comprehensive framework for measuring living standards is necessary to assess changes over time (and differences in outcomes between countries). Otherwise, comparisons across time (and countries) are likely to lead to incorrect conclusions about the effectiveness of public pension arrangements and related policies. Section 9.9 also discusses the information required to monitor the distributional impact of public pensions in the future.

9.2 Issues in assessing income distribution and pension adequacy

9.2.1 Measuring living standards

How have the living standards of older people² in Australia developed over time? In attempting to answer such questions, a number of questions must be addressed, including:

- what is the measure of resources — income, expenditure or consumption, and how is wealth to be taken into account?
- what is the unit assumed to share resources — household, family, benefit unit, or person?
- how should we treat units of different types or composition (equivalence scales)?
- what is the period of assessment — current, annual or lifetime?
- what is the low income standard, and how is it defined?

In each instance, a different choice will alter the results. Indeed, this paper shows that very different conclusions flow from these different methodological choices, in particular the measure of resources used. The choice between different approaches will depend upon research objectives, what is practicable, and researcher's judgments about what is technically correct.

It is also necessary to use specific measures to compare standards of living. Quinn (1987) notes that measures to assess the adequacy of incomes available to older people include absolute measures, such as the comparison of resources required in order to achieve a satisfactory life. Relative measures include how the resources of older people as a group compare with the rest of the population, or how individual

² Older people are persons of pension age or over — that is, age 60 for females and age 65 for males for most of the period of time for which data were collected (although the pension age for females is now rising gradually). Much of the published data refer to persons aged 65 and over, or persons in households where the reference person is aged 65 and over.

resources after retirement compare with those available to the same person or family before retirement. In summary, Atkinson (1990) suggests presenting a range of estimates based on different approaches. This approach is adopted here.

9.2.2 Assessing trends in income distribution

Figure 9.1 compares two ways of analysing data on the distribution of income. One is that employed in most standard income distribution studies and the other is used in the ABS (1996) report, *The Effects of Government Benefits and Taxes on Household Income*.³

Using the standard approach, the degree of redistribution effected by either public transfers or income tax (and social security contributions) can be assessed in several ways, such as by calculating the relative change in income levels for different individuals or by calculating income shares at different stages in the ‘process’ in figure 9.1 (left column).

Like the standard methodology, the framework of the ABS is well known and widely accepted. The ABS concept of final income is a more comprehensive measure of living standards, including all components of the disposable or ‘net cash income’ measure, plus the effects of indirect taxes and other government social spending on subsidies or services to households.

One obvious point to be made from these comparisons is that a household’s resources can be measured in a range of ways, with neither of the two measures shown here being fully comprehensive. A major limitation of both is the failure to account for household wealth. This may have significant implications for assessing the relative wellbeing of the older population, in part because of the life cycle pattern associated with wealth accumulation.

The potential importance of broadening the definition of resources is illustrated by the alternative definitions of pension replacement rates (figure 9.2). International comparative studies of retirement income systems commonly use pension replacement rates as the basis for ranking the relative generosity of pension systems. Replacement rates are usually calculated by comparing the levels of statutory entitlements to some measure of incomes in work, thus showing what percentage of earnings is ‘replaced’ by benefits. In figure 9.2, the top panels show the component items used to calculate conventional replacement rates. The lower panels propose additional items to give a more comprehensive approach, accounting for the complete range of income sources and costs before and after retirement.

³ This approach derived from CSO (1990).

Attempting to implement this broader approach to the measurement of living standards is complex. There is no single study that incorporates all of these components of material living standards.

The discussion that follows therefore looks first at the simplest measures of social security adequacy. This is followed by an analysis of cash disposable incomes, and then the analysis incorporates indirect benefits and taxes.

Figure 9.1 **Comparison of different income concepts**

Standard approach – income distribution surveys	ABS fiscal incidence studies
Wages and salaries and self-employment income	Wages and salaries and self-employment income
+	+
Investment and property income	Superannuation and annuities
=	+
1. Factor income	Investment and property income
+	+
Occupational pensions and annuities	Other income (eg. alimony)
=	=
2. Market income	1. Private income
+	+
Government cash benefits	Government cash benefits
+	=
Private transfers	2. Gross income
+	–
Other cash income	Income tax
=	=
3. Gross income	3. Disposable income
–	+
Income tax (and employee's social security)	Benefits in kind (health, education, etc.)
=	=
4. Net cash income	4. Disposable income plus indirect benefits
	–
	Indirect taxes
	=
	5. Final income

Figure 9.2 **Definition of the net replacement rate in retirement**

Numerator: post-retirement consumption	Denominator: pre-retirement consumption
<i>Positive items</i>	<i>Positive items</i>
Cash benefits	Labour earnings
<i>Negative items</i>	<i>Negative items</i>
Direct tax	Direct taxes
	Social insurance contributions

Possible refinements to the definition of the net replacement rate

<i>Additional positive items</i>	<i>Additional positive items</i>
Occupational and private pensions	Investment income
Investment income	<ul style="list-style-type: none"> • Interest income • Imputed rent on owner-occupied housing
<ul style="list-style-type: none"> • Interest income • Interest portion of annuity income • Imputed rent on owner-occupied housing 	
Government non-cash benefits	Government non-cash benefits
<ul style="list-style-type: none"> • Health • Housing • Education • Transport 	<ul style="list-style-type: none"> • Health • Housing • Education • Transport
Dissaving	<i>Additional minus items</i>
<ul style="list-style-type: none"> • Drawing down savings • Capital portion of annuity income • Sale of house or reverse annuity mortgage 	Indirect taxes
	Work-related expenses
	Saving
	<ul style="list-style-type: none"> • Bank deposits • House downpayment, capital portion of mortgage payments
<i>Additional minus items</i>	Private and occupational pension contributions
Indirect taxes	

Data source: Adapted from Wolfson (1987).

Table 9.1 The Australian age pension system, 1999

<i>Feature</i>	<i>Value at January 1999</i>	
Standard (single) pension rate	\$357.30 per fortnight	
Married pension rate (each)	\$298.10 per fortnight	
Supplementary rental assistance	Up to \$74.80 per fortnight single Up to \$70.60 per fortnight couple	
Free areas (disregards)		
• Single	\$100 per fortnight	
• Combined Married	\$176.00 per fortnight	
Cut-out points		
• Single	\$825.40 per fortnight	
• Combined Married	\$1379.20 per fortnight	
<i>Assets test</i>	<i>Allowable assets:</i>	<i>No rate paid above:</i>
• Single home owners	\$125 750	\$245 750
• Single non-home owners	\$215 750	\$335 750
• Married home owners	\$178 500	\$377 500
• Married non-home owners	\$268 500	\$467 500

9.3 The Age Pension

9.3.1 The current system

Details of the Australian Age Pension system as at January 1999 are provided in table 9.1. Basic rates of payment may (depending on pensioners' circumstances) be supplemented by rent assistance, a pharmaceutical allowance, a telephone allowance or a remote area allowance. A pension concession card entitles the holder to Commonwealth health concessions and to various State-based concessions.

The basic rate of age pension is indexed each September and March (as per movements in the Consumer Price Index (CPI)) to protect the real purchasing power of the pension. The Commonwealth Government has also legislated to maintain the single rate of pension at the indexation dates at a minimum of 25 per cent of male total average weekly earnings, with flow-ons to the married rate of pension, to enable pensioners to share in community living standards.

Table 9.2 shows the number and characteristics of age pensioners and spending on age pensions since 1965. At 30 June 1998, there was a total of 1.73 million age and wife pensioners. The age pension is received by around two thirds of the population of pensionable age. Veterans' pensions are received by a further 390 000 people, giving a total coverage of 81 per cent of the older population. A small number of

people receive other benefits,⁴ but the bulk of the remainder are excluded from payments by their private incomes or assets.

The number of age pensioners has nearly trebled over the past 33 years, rising from 5.5 per cent to 9.2 per cent of the total population. Coverage of the pensionable population has fluctuated markedly, reflecting changes in policy towards income and assets testing. Also, in recent years a higher proportion of those reaching retirement age qualify for the age pension (coverage rising from 58 per cent to 67 per cent since the late 1980s) as fewer people qualify for a Department of Veterans' Affairs (DVA) service pension (the cohort who served in the Second World War having now all retired).

The characteristics of age pensioners have changed over the period 1965–98.

Table 9.2 Number and characteristics of age and service pensioners, Australia, 1965–98

	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998
<i>Number of age pensioners ('000)</i>										
Age pensions	628.1	779.0	1 092.2	1 321.9	1 331.8	1 340.5	1 578.7	1 602.8	1 680.2	1 682.6
Wives	3.5	6.6	21.9	30.8	22.9	23.8	39.6	41.1	36.6	36.2
Total Social Security Pensioners and Beneficiaries	849.2	1 054.7	1 707.7	2 338.2	2 848.5	2 808.8	3 741.0	3 912.4	3 994.9	na ^a
Department of Veterans Affairs Pensions	65.2	74.4	121.6	264.7	412.3	440.5	346.8	335.0	389.5	na
Total of DSS and DVA Cash Benefits	914.4	1 129.1	1 829.3	2 602.9	3 260.8	3 249.3	4 087.8	4 247.4	4 384.4	na
<i>Characteristics of Age Pensioners (including wife/carers)</i>										
% of total population	5.56	6.21	8.06	9.21	8.51	7.92	9.01	9.03	9.32	9.24
Coverage (%) of pensionable population	53.2	60.3	72.6	76.8	66.5	58.2	64.9	64.7	66.4	67.3
Single rate	61.1	61.1	57.4	55.2	56.0	57.2	49.5	46.9	46.9	46.5
With rent assistance (%)	10.8	13.4	14.9	14.1	16.2	18.2	na	15.6	15.4	9.6
Reduced rate (%)	13.4	20.6	10.4	33.5	28.7	29.5	32.7	34.6	32.6	32.0
Nil income assessed (%)	na	na	19.4	9.5	14.9	11.2	10.1	15.1	8.9	9.6
<i>Spending on Age Pensions</i>										
1996-97 \$million	2 918	3 765	7 205	9 339	10 005	9 844	12 552	12 551	13 118	13 142
% of GDP	1.65	1.65	2.60	2.91	2.70	2.22	2.50	2.41	2.45	-

^a not available.

Source: Department of Social Security, *Ten Yearly Statistical Summary, Annual Report* and *Customers: A Statistical Overview*, various years.

⁴ At June 1998, there were 13 800 persons aged 65 and over receiving other payments, and 34 400 females aged 60–64 years receiving other payments.

- Until the early 1970s around 60 per cent were single, although the proportion has now fallen to around 47 per cent.
- While the percentage receiving a reduced rate (because their incomes are over the 'free area') has fluctuated, there has been an increase in the proportion receiving a reduced rate from 10 to 15 per cent in the 1960s to one third in the 1990s. Correspondingly, the proportion who are completely dependent on the age pension (nil income assessed) has fallen from over 25 per cent in the early 1970s to around 10 per cent the 1990s.
- The 10 per cent of age pensioners who are completely dependent on the pension comprise about seven per cent of the population of age pension age. In addition, there will be DVA Service Pensioners with nil private income, plus a very small number receiving other payments with no private income. There are also a further group of about five per cent of age pensioners with extremely low private incomes (under \$1 a week). For these groups, it is the level of the Age Pension itself that is the primary determinant of their incomes in retirement.

Table 9.3 shows trends in the real level (in 1996-97 dollars) of the Age Pension. Since 1965 the real value of the single rate of pension has increased by 79 per cent, while for couples there has been a 63 per cent real increase. For those receiving rent assistance, total real payments have doubled for single people and increased by 75 per cent for couples. Most of the real increase in pension rates was achieved in the early and middle part of the 1970s. Price indexation since 1976 has generally maintained the real value of the pension, with an upward trend reflecting an 'indexation lag effect',⁵ plus a number of explicit policy decision to increase the real value of the payment (including the recent formal linking of pensions and average weekly earnings).

Table 9.3 Trends in the real value of social security payments for different family types, 1965–97 (1996-97 dollars per year)

	1965	1972	1976	1982	1983	1989	1996	1997
<i>Pension, no rent assistance</i>								
Single, no children	5 032	5 556	7 859	7 947	7 932	8 269	8 867	8 991
Couple, no children	9 217	9 830	13 079	13 248	13 224	13 782	14 793	14 998
<i>Pension, with rent assistance</i>								
Single, no children	5 455	6 206	8 888	8 652	8 891	9 282	10 735	10 927
Couple, no children	9 640	10 480	14 108	13 953	14 184	14 796	14 997	16 825

⁵ During periods of falling inflation, the lag between the period used as the base for an indexation increase and inflation in the period of measurement means that the real value of the payment will rise to a small extent.

Table 9.4 compares the single rate of pension with a range of alternative indicators of community living standards, including GDP per capita and Household Disposable Income per capita (HDIPC), male total average weekly earnings, the process worker's wage (C13), and the 'Henderson poverty line' for a single person of age pension age. These indicators give a more mixed picture of pension trends.

The pension reached its highest point relative to GDP per capita in 1974, and again exceeded 40 per cent of GDP per capita in 1975 and 1978. Over the past ten years, the pension rate has fluctuated between 30–35 per cent of GDP per capita. The position in regard to HDIPC is broadly similar in showing substantial fluctuations, but a downward trend. As the 'Henderson poverty line' is adjusted by HDIPC, the relative shifts are the same as for the base series. The single rate of pension has been above the Henderson line in five years since 1965, but is now at a historic low relative to this indicator.⁶ In contrast, the single rate of pension has increased relative to male total average weekly earnings and in relationship to the process worker's wage (for unskilled workers not in labouring jobs).

Table 9.4 Trends in the level of standard pension, 1966–98 (per cent)^a

<i>Single pensions as a per cent of:</i>					
	<i>GDP (I) per capita</i>	<i>HDIPC</i>	<i>MTAWE^b</i>	<i>Process worker's wage</i>	<i>HPL – single pensioner</i>
1966	33.5	na	23.7	35.0	na ^c
1968	31.9	na	22.3	33.1	na
1970	30.7	na	20.9	35.8	na
1972	32.1	na	23.7	35.9	na
1974	41.3	57.9	25.9	39.0	103.9
1976	39.3	55.4	26.0	39.7	99.3
1978	40.3	57.1	26.4	41.4	102.3
1980	37.8	54.7	26.7	40.0	98.0
1982	36.9	53.7	24.0	35.2	96.2
1984	37.0	54.1	23.9	39.1	97.0
1986	35.4	53.5	24.0	42.0	95.9
1988	34.6	53.6	24.9	43.6	96.1
1990	33.9	52.5	26.2	43.4	94.1
1992	36.0	54.8	25.6	44.7	98.2
1994	34.3	52.3	25.7	45.4	93.7
1996	33.6	50.3	25.8	47.8	90.2
1998	30.5	49.3	25.0	45.4	88.4

^a GDP = gross domestic product; HDIPC = household disposable income per capita; MTAWE = male total average weekly earnings; HPL = Henderson Poverty line. ^b This is the value of the standard rate of pension at September each year compared to the relevant MTAWE benchmark as legislated in November 1997. ^c Not available.

⁶ No Australian Government has ever endorsed the Henderson poverty line as a measure of adequacy. As discussed in the text there are significant conceptual problems with this measure.

The contrast between these trends and the trend in the value of the pension adjusted for inflation, by definition, reflects variations in the real values of alternative indicators. One reason for the disparity between indicators is that the National Accounts include income components not taken into account in the wage indicators. In the case of HDIPC, the two most important are the earnings of superannuation funds and imputed income from owner-occupied housing. Some comparisons are problematic, however, in that the apparent ‘generosity’ of the pension rises when HDIPC and GDP per capita fall during recessions, as occurred in 1991. The same effect is evident in the wage indicators, although not to the same extent.

The difference between the relativities compared to average earnings and process worker’s earnings highlights the fact that the replacement rate will vary depending on the earnings indicator chosen. Since the Australian Age pension is flat rate and directed to poverty alleviation not earnings replacement, it is not entirely appropriate to use replacement rates as a measure of adequacy (Johnson 1998; Whiteford 1995). Despite this, it is sometimes noted that the standard rate offering replacement of only 25 per cent of average earnings is far below the replacement rates apparently available in the earnings related social insurance systems of most other OECD countries.

This is not a fully accurate picture of the generosity of the Australian system for a range of reasons. As a starting point it can be noted that the 25 per cent standard provides greater assistance to those receiving less than average male earnings, which is more than half of the employed male workforce, and a higher proportion of females. Table 9.5 provides calculations of the effective replacement rates of the age pension for a range of different circumstances. For example, the standard replacement rate for *a single person* is 25 per cent of *gross* male total average weekly earnings. This is equivalent to 38 per cent of average gross female earnings. The combined pension for a couple is 42 per cent of gross male total weekly earnings. Moreover, as noted above, someone completely reliant on an age pension would pay no income tax, while workers do. Thus, the 25 per cent gross replacement rate is equivalent to a replacement rate of 33 per cent of net earnings. Again, for a minimum wage worker, the single pension replacement rate is 58 per cent of net earnings (and higher for a single income couple on the minimum wage).

Finally, table 9.5 shows the effects of taking account of employee superannuation contributions and housing costs, which increase the net replacement rate for an average earner to 50 per cent. The reason for taking account of these is that most working people will face these costs, but retirees are unlikely to be making superannuation contributions or paying mortgages.

Table 9.5 Alternative definition of pension replacement rates^{a,b}

<i>Alternative definitions</i>	<i>Replacement rate (%)</i>
% of gross MTAW (single)	25
% of gross MTAW (couple)	42
% of gross FTAW (single)	38
% of net MTAW (single)	33
% of gross minimum wage (single)	49
% of net minimum wage (single)	58
% of net MTAW, net of employee superannuation contributions and housing costs ^c	50

^a Calculations are at May 1998. ^b MTAW = male total average weekly earnings; FTAW = female total average weekly earnings. ^c Assumes that pensioner is an outright home owner and pays 18 per cent of gross pension rate in housing-related expenses; assumes that worker is purchasing a home and paying 34 per cent of gross income in housing-related expenses and superannuation contributions. These ratios are derived from the 1993-94 Household Expenditure Survey and are the ratios of the average expenses on these items to the average income for the second quintile of purchasers and owners respectively.

In summary, simple measures of pension adequacy should be regarded with caution. Components of living standards for those in retirement and those in work are much broader than either the pension alone or a single measure of incomes for those of workforce age. More reliable indicators of living standards need to adopt a comprehensive approach.

9.4 Private incomes and assets of age pensioners

9.4.1 Trends in private incomes

While the proportion of age pensioners completely dependent on the pension is fairly low, the largest group is those with incomes under the free area. In 1998 around 58 per cent of pensioners had incomes within the free area. Unpartnered females (61 per cent) are more likely to have income in this range than couples (57 per cent) or unpartnered males (55 per cent). The most common form of private income is from savings and investments, usually from banks, building societies or credit unions. In 1998, around 90 per cent of age pensioners had incomes from this source. Currently, around 10 per cent of pensioners have incomes from superannuation (7 per cent of females and 14.5 per cent of males) — an increase from around 7.5 per cent of pensioners in the late 1980s.

The growing proportion of age pensioners receiving a reduced rate of payment reflects increased access to private income and assets among the retired, and changes in income test parameters. The proportion of age pensioners with a reduced rate fell from around 20 per cent in 1970 to 10 per cent in 1975, due to the abolition of the income test for pensioners aged 70 years and over. The reintroduction of the income

test from 1978 resulted in an increasing proportion paid at the part rate. The real value of the free area has fluctuated substantially over time. The free area for a single person was around 54 per cent of the standard rate of payment in 1966, although the withdrawal rate was then 100 per cent and the rate of payment was itself much lower. The free area was equal to the standard pension rate in 1972, but fell substantially thereafter, because it was not indexed in line with inflation, while the pension rate was from 1976. In 1982 the free area was 39 per cent of the pension, falling to around 28 per cent by 1990. Since 1991, the free area has also been indexed and has remained around 28 per cent of the standard rate, with the rate for couples being about 30 per cent of their basic payments. Nevertheless, the long run increase in the proportion of pensioners with reduced rate payments in part reflects this fall in the value of the free area.

9.4.2 Pensioners' assets

As noted by Foster (1988), asset ownership confers a number of advantages on some older people. Assets can be invested to produce an income, or in the case of home ownership can reduce the need for income to pay rent. Assets can also be sold to meet consumption needs. The assets test on pensions was introduced in 1985 in order to better target assistance on those with greater needs, and to ensure the effective operation of the income test. The rate of pension is calculated under both the income and assets tests, with the test that results in the lower rate being the one applied. The majority of pensioners have payments assessed under the income test. The proportion directly assessed under the assets test increased from under 2 per cent in the late 1980s to just over 5 per cent in 1998.

Table 9.6 Distribution of assets of age pensioners, by age, June 1998 (per cent)

Age	\$0.01 to \$1000	\$1000 to \$5000	\$5000 to \$10 000	\$10 000 to \$20 000	\$20 000 to \$50 000	\$50 000 to \$100 00	More than \$100 000	With assets as % of total
60–64	7.3	8.7	8.8	13.8	25.9	23.0	12.4	93.7
65–69	6.8	8.64	8.5	13.7	26.7	22.9	12.9	94.0
70–74	8.0	10.2	9.9	15.8	27.2	18.4	10.5	92.8
75–79	10.3	13.8	12.1	17.9	23.4	13.5	8.9	90.7
80–84	10.6	15.8	13.0	17.7	21.0	12.4	9.5	89.8
85–89	9.6	16.2	13.1	17.2	19.4	13.1	11.4	89.3
90 plus	8.6	15.7	12.2	15.9	18.5	14.6	14.6	88.0
Total	8.3	11.3	10.3	15.6	24.8	18.4	11.2	92.2

Source: Department of Family and Community Services (1999).

Administrative data on assets are collected from all pensioners. Tables 9.6 and 9.7 provide details of the distribution and average value of assets held by age pensioners at June 1998, as well as the proportion of those with assets who own their own home. At June 1998 around 92 per cent of age pensioners were recorded as having positive assets (not including the family home). The proportion of customers with assets falls from 94 per cent to 86 per cent from age 65 to age 95 and over. Average assets held begin to decline around age 66, and continue to be less for each of the age groups until the 85-89 age group where average asset holdings again begin to increase.

Around 67 per cent of age pensioners are home owners. Among those with other assets, home ownership is above 70 per cent of the up until ages 75-79 where it is slightly lower. For those aged 80 years or more, home ownership is substantially lower, down to around 50 per cent for those aged 85-89 years, and 33 per cent for those aged 90 years or more. The age groups at which home ownership is lowest coincide with the ages around which average assets held begin to rise.

Further analysis of the position of females finds that divorced, separated and never married females are less likely to have assets than widows, who are less likely to have assets than married females (with 16 per cent, 17 per cent, 11 per cent and 4 per cent respectively of these groups having no recorded assets). Overall, around 45 per cent of divorced or separated age pensioners and 38 per cent of single female age pensioners have no assets or less than \$5000 worth of assets.

In summary, tables 9.6 and 9.7 suggest around one quarter of all of those with assets have holdings of between \$20 000 and \$50 000, with around 45 per cent having assets below this level and 30 per cent having assets of \$50 000 or more. It can be noted, however, that including those with no recorded assets, roughly one quarter of all age pensioners have assets of less than \$5000, including personal effects.

Table 9.7 Average assets of age pensioners, by age June 1998

<i>Age</i>	<i>Home owners (%)</i>	<i>Mean assets of those with positive assets (\$)</i>	<i>Mean assets of all pensioners (\$)</i>	<i>Median assets of those with positive assets (\$)</i>
60-64	78	45 300	42 500	31 100
65-69	78	46 100	43 300	32 100
70-74	75	40 300	37 400	24 600
75-79	69	34 200	31 000	17 800
80-84	61	34 000	30 500	15 300
85-89	50	37 600	33, 600	15 800
90 plus	33	44 000	38 700	18 400
Total	67	40 800	37 600	-

Source: Department of Family and Community Services (1999)

9.5 Trends in the cash incomes of older people

9.5.1 Trends in gross incomes

Table 9.8 summarises trends in the incomes and characteristics of older income units from 1982 to 1996-97, derived from published results of the ABS Income Surveys. Results refer to income units or nuclear families, and the income data are gross (before tax) and not adjusted for income unit size (equivalised).⁷

Table 9.8 Trends in incomes and characteristics of older income units, Australia, 1982 to 1996-97

	1982	1986	1990	1994-95	1995-96	1996-97	Change (%)
<i>No. of older income units</i>							
Couples	439.2	521.5	591.4	643.9	684.8	691.6	57.5
Singles	600.3	643.3	733.4	840.6	811.4	867.2	44.5
All older	1 039.5	1 166.2	1 327.7	1 484.8	1 496.8	1 561.9	50.3
<i>% of income units</i>							
Couples	6.3	7.0	7.4	7.2	7.7	7.6	1.3
Singles	8.6	8.6	9.2	9.4	9.1	9.5	0.9
All older	15.0	15.6	16.6	16.5	16.8	17.2	2.2
<i>Singles as % of:</i>							
all older income units	57.7	55.2	55.2	56.6	54.2	55.5	-2.2
people in older units	40.6	38.1	38.3	39.5	37.2	38.5	-2.1
Females (% of older singles)	na.	78.1	77.1	72.2	73.9	73.0	-5.1
<i>Mean income (\$/week)</i>							
							<i>Real %</i>
Couples	208	270	423	410	429	481	14.3
Singles	111	143	214	208	226	242	7.7
All older	152	200	307	296	319	348	13.1
Total Population	303	410	563	579	609	625	1.9
<i>Mean income (% of total)</i>							
Couples	68.6	65.9	75.1	70.8	70.4	77.0	8.4
Singles	36.6	34.9	38.0	35.9	37.1	38.7	2.2
All older	50.2	48.8	54.5	51.1	52.4	55.7	5.5
<i>Principal source of income of older couples (%)</i>							
Wage or salary		3.6	4.3	3.7	4.6	5.0	1.4
Own business/ partnership	na.	2.2	2.5	2.9	3.0	3.1	0.9
Other private income		19.6	23.3	24.7	21.8	26.2	6.6
Pensions and allowances		74.7	69.8	68.3	70.2	64.9	-9.8

(continued)

⁷ It should also be noted that the Income Surveys cover people in private and special dwellings. They exclude people in institutions such as hospitals, nursing homes and hostels and retirement villages.

Table 9.8 continued

<i>Principal source of income of older singles (%)</i>							
Wage or salary		*0.3	*0.6	*1.4	*1.1	*0.4	*0.1
Own business/ partnership	na.	*0.9	1.1	*0.8	*0.8	*1.5	*0.6
Other private income		16.7	16.7	17.4	17.4	15.6	-1.1
Pensions and allowances		82.1	81.6	80.0	80.0	81.4	-0.7
<i>Pensions and allowances (% of gross income of older couples)</i>							
50 and less than 90	na.	31.0	31.2	18.4	18.6	20.8	-10.2
90 and over		43.3	37.9	48.9	50.9	43.1	-0.2
<i>Pensions and allowances (% of gross income of older singles)</i>							
50 and less than 90	na.	18.4	27.1	12.3	16.0	17.2	-1.2
90 and over		63.7	54.1	71.3	63.8	63.9	0.2
<i>Gini coefficient</i>							
Older couples	—	0.30	0.34	0.29	0.31	0.33	0.03
Older singles	—	—	—	0.22	0.25	0.26	0.04
Total population	0.40	0.41	0.42	0.44	0.44	0.44	0.03
<i>Tenure of older couples</i>							
Outright owner	80.0	77.1	81.2	84.9	85.2	84.1	4.1
With mortgage	7.3	10.0	6.5	5.5	4.2	4.9	-2.4
Public renters	4.3	3.9	3.8	*2.0	3.0	*2.5	-1.8
Private renters	3.6	2.5	3.3	3.5	3.9	3.2	-0.4
<i>Tenure of older singles</i>							
Outright owner	59.8	60.9	64.5	62.9	64.0	67.0	7.2
With mortgage	3.5	3.1	3.5	4.0	*1.9	2.6	-0.9
Public renters	7.2	8.3	7.9	10.4	9.2	9.0	1.8
Private renters	6.9	6.9	5.6	6.8	7.3	5.7	-0.5
<i>Tenure of total population</i>							
Outright owner	27.6	29.2	32.5	32.9	32.4	31.3	3.7
With mortgage	25.4	24.3	22.5	20.7	21.9	21.4	-4.0
Public renters	3.9	4.1	4.5	4.2	4.7	4.4	0.5
Private renters	15.7	14.2	15.6	17.5	19.9	20.6	4.9

In 1996-97, older income units made up just over 17 per cent of all income units. Their mean income was around 56 per cent of the total mean income for the population. Around three in four older income units have government pensions and allowances as their main source of income, compared to 30 per cent of the total population. Nearly three quarters of older income units own their home without a mortgage, compared to just under one third overall. Older households are only half as likely to be renters (16 per cent compared to 35 per cent), but are slightly more likely to be renting public housing. Just over half of all older income units are single people, and very few have dependent children. Older income units have increased from 15 to 17 per cent of all income units over this period. Single person units have declined slightly from 58 per cent to 55 per cent of older income units, and females as a proportion of older single people have fallen from 78 per cent to 73 per cent.

The real average income of older couples has increased by 14 per cent, while the real average income of older single people has increased by 7.7 per cent, compared

to a real increase of 1.9 per cent for the population as a whole.⁸ As a result, the average income of older people have increased as a proportion of the average incomes of all income units in the population, more substantially for couples than for singles. A good deal of this increase appears to have occurred between 1995-96 and 1996-97, suggesting that it may be premature to view this as a sustained trend. Nevertheless, there appears to be a substantial decline in the proportion of older couples for whom government benefits are the principal source of income, and correspondingly a substantial increase in the role of income from property and investments. In contrast, there appears to be very little change for single older income units in the role of different income sources.

For couples the overall decline in reliance on pensions and allowances is associated with a fall in the proportion who receive 50–90 per cent of their gross income from pensions. The proportion receiving 90 per cent or more of their income from government payments was virtually unchanged over the period, although showing fluctuations.

Inequality of gross incomes measured by the Gini coefficient has increased for older couples and older singles, but the overall level of inequality among older people is substantially lower than among the population generally.

The level of outright home ownership among older couples increased from 80 per cent to 84 per cent, with the proportion with a mortgage or renting from public authorities falling. The proportion who are private renters appears to have been broadly stable at under 4 per cent. Home ownership rates also increased among single older income units, but are substantially lower than for couples. There has been a small increase in the percentage of single older people in public housing. Among the total population there has been an increase in the proportion owning their homes outright, and a fall in the proportion with a mortgage. The proportion of the total population renting privately also increased over this period.

In summary, the older population has had larger increases in incomes than the overall Australian population since the early 1980s, and their incomes have increased relative to the population generally. This trend has been stronger for couples than singles. The trend also appears to have been associated with a reduction in ‘partial dependence’ among older couples, with the proportion of older couples

⁸ This is in marked contrast to the trend in the United Kingdom. For example, where between 1979 and 1996-97 pensioners’ incomes increased by 60 per cent in real terms before housing costs. However, the difference appears to be explained by the extremely low incomes of pensioners in the UK at the start of the period. See *The Pensioners Incomes Series 1996-97*, <http://www.dss.gov.uk/hg/press/press1298/298.htm>.

receiving 90 per cent or more of their income from government benefits little changed over the period 1982 to 1996-97.

9.5.2 The equivalent incomes of older people

Conclusions about the relative position of older people are very sensitive to adjustments for family size and also to the precise choice of equivalence scale. The reason for this sensitivity is shown in figures 9.3 and 9.4. Figure 9.3 shows the distribution of equivalent income of older people, adjusted with the OECD scales, as a percentage of the average equivalent income of the total population in 1995-96, compared to the distribution for the total population. Figure 9.4 shows the same figure for older people, but for 1986 and 1990, as well as 1995-96. The extreme concentration of older people between 40 per cent and 60 per cent of average income is evident. This range encompasses all of those completely dependent on the age pension or service pension, plus those with relatively small amounts of private income.

Figure 9.4 shows that the modal value for the equivalent incomes of older people has increased relative to those of the population generally, and that there was a very large shift in this modal value and a decline in the degree of concentration between 1986 and 1990. Between 1990 and 1995-96, the modal value did not appear to increase relative to the average incomes of the population, but the degree of concentration again increased (although not back to its 1986 level). The extreme degree of concentration of equivalent cash incomes of the older population has the effect of making many measures of living standards very sensitive to small differences in measurement.

Figure 9.3 Income distribution, 1995-96

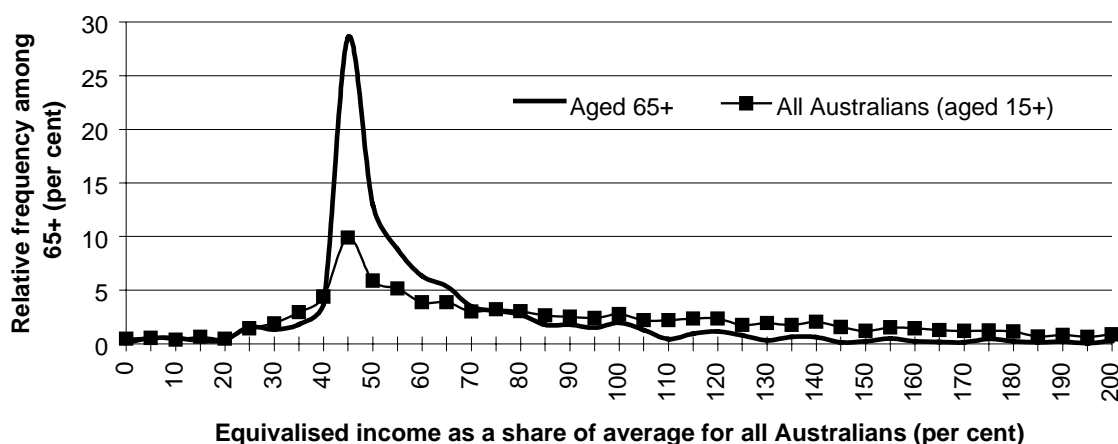


Table 9.9 shows average pensioner incomes as a proportion of the average income of non pensioners, adjusted using OECD equivalence scales.⁹ Couples tend to have higher equivalent incomes than single people, although in 1990 single males have about the same equivalent incomes as couples, and in 1995-96, single males are apparently the most well-off group. In 1995-96, those aged 75 and over appear to be substantially worse off than those aged under 75, but in the two earlier periods this does not appear to be the case (except for single males in 1990).

Figure 9.4 **Income distribution of those aged 65+**

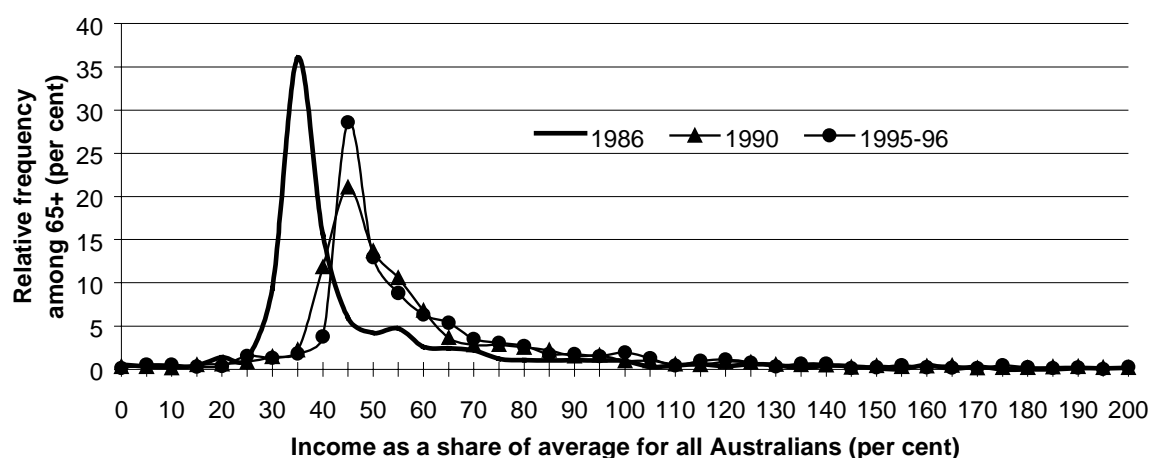


Table 9.9 **Incomes of pensioners as a proportion of the incomes of non-pensioners, by age group and income unit type, 1986 to 1995-96**

	60-64	65-69	70-74	75+	All pensioners
1986					
Couples	59.7	57.2	56.0	57.3	57.6
Single males*	81.0	68.4	55.4	50.0	65.3
Single females	65.4	53.7	52.5	53.2	55.4
All pensioners	65.3	57.2	54.5	54.2	57.8
1990					
Couples	61.1	67.0	64.2	64.3	64.4
Single males*	51.9	65.4	74.9	58.5	62.3
Single females	60.7	58.2	59.5	57.1	58.4
All pensioners	59.6	63.6	64.0	59.9	61.7
1995-96					
Couples	53.7	60.9	62.4	58.7	59.2
Single males*	53.4	68.3	70.7	62.6	63.9
Single females	51.4	58.0	60.5	49.1	53.4
All pensioners	53.0	61.0	62.7	54.6	57.6

* Subject to very high sampling variability.

Source: Estimated from unit record files, ABS 1980, 1990 and 1995-96 Income surveys.

⁹Pensioners are defined as all those aged 65 and over, plus persons aged 60-64 who are not participating in the labour market. The methodology follows that of Johnson (1998).

Table 9.10 shows the average incomes of quintile groups of persons of pension age as percentages of the average income of the non-pensioner population. The relative position of the poorest quintile has been generally stable. The higher relative income of pensioners on average in 1990 appears to be associated with a substantial increase in the incomes of the richest quintile of pensioners. Correspondingly, the subsequent decline in the average incomes of all pensioners appears to be a result of the richest quintile losing this advantage. This probably reflects the high interest rates applying in 1990, and the effects of declines thereafter. The second, third and fourth quintiles of pensioners have maintained most of their relative improvement. In this context, it is worth noting that the second quintile of pensioners have a higher degree of reliance on government income support than do the first quintile, primarily because the first quintile include persons of pension age who have low incomes from self employment. It is also notable that the average income of all pensioners is higher than the average income of the fourth quintile of pensioners in each year. This implies that the distributions are highly skewed, presumably reflecting the coexistence of the high concentration of pensioners around the statutory rates of pension and a very long tail of high incomes.

Table 9.11 shows the distribution of persons of pension age by (OECD) equivalent income quintile. Nearly half of all pensioners are in the lowest 30 per cent of the total income distribution. There has been relatively little change in this situation over the past decade, although the proportion in the richest 30 per cent of the population may have increased slightly.

Table 9.12 shows income inequality among pensioners by age and income unit type, using the ratio of the incomes of the ninetieth percentile of each group to the tenth percentile of each group. Inequality among single retired males aged 60–64 is highly variable, because of the small sample size of the group. Overall, this suggests a small decline in inequality, although the trends for different age and income unit types diverge. Generally, the highest degree of inequality is among the 60–64 age group, inequality is usually greater among single males than single females, and

Table 9.10 Incomes of pensioners as a proportion of the incomes of non-pensioners, by pensioner income quintile, 1986 to 1995-96

	1986	1990	1995-96
Lowest quintile	30	31	29
Second quintile	37	40	40
Third quintile	41	46	45
Fourth quintile	53	58	57
Highest quintile	120	134	117
All pensioners	58	62	58

Source: Estimated from unit record files, ABS 1986, 1992 and 1995-96 Income surveys.

inequality is lowest among those aged 75 and over.

Table 9.13 shows trends in pensioners' income sources by equivalent income quintile. The notable patterns here are the continued dominance of government income support up into the fourth quintile of pensioners. Overall, income support provided just over half the total cash income of older people in 1995-96. Results for 1990 differ significantly from the other years, particularly in the greater significance of investment income. The role of investment income for the highest quintile group

Table 9.11 Distribution of pensioners, by equivalent income decile, 1986 to 1995-96

	<i>Proportion of pensioners in each income decile</i>		
	<i>1986</i>	<i>1990</i>	<i>1995-96</i>
Lowest decile	19.1	20.0	19.6
Second decile	15.6	15.8	14.7
Third decile	14.4	14.3	13.8
Fourth decile	13.0	12.8	12.4
Fifth decile	11.2	11.1	10.9
Sixth decile	9.0	8.9	9.1
Seventh decile	7.1	7.1	7.3
Eighth decile	5.2	5.2	5.8
Ninth decile	3.7	3.4	4.2
Highest decile	1.9	1.5	2.3

Source: Estimated from unit record files, ABS 1986, 1990 and 1995-96 Income surveys.

Table 9.12 Inequality among pensioners — ratios of the 90th to the 10th percentiles of pensioner incomes, by age group

	<i>60-64</i>	<i>65-69</i>	<i>70-74</i>	<i>75+</i>	<i>All pensioners</i>
<i>1986</i>					
Couples	3.0	2.8	2.5	1.7	2.0
Single males*	4.4	3.6	2.7	2.4	3.0
Single females	3.9	2.5	2.6	2.5	2.5
All pensioners	3.6	2.8	2.7	2.6	3.0
<i>1990</i>					
Couples	2.2	1.9	1.7	1.7	2.9
Single males*	7.1	2.9	2.4	2.1	2.8
Single females	3.1	2.3	2.6	2.1	2.6
All pensioners	3.4	3.1	3.0	2.4	2.8
<i>1995-96</i>					
Couples	2.7	2.9	2.8	3.2	3.1
Single males*	2.9	3.4	2.3	3.1	3.1
Single females	3.1	2.5	3.2	2.0	2.4
All pensioners	2.8	2.7	2.8	2.6	2.6

* Subject to very high sampling variability.

Source: Estimated from unit record files, ABS 1986, 1990 and 1995-96 Income surveys.

is much lower in 1995-96 than in either 1990 or 1986, apparently reflecting a large increase in the contribution of superannuation and a more modest increase in the role of earnings. Over the whole decade between 1986-96, the contribution of investment income has fallen from 25 per cent to 18 per cent. Most of this declining share matched an increase in the contribution of superannuation income.

Table 9.13 Pensioners' income composition, by quintile

<i>Share of quintile income by source</i>						
	<i>Wages</i>	<i>Business</i>	<i>Income support</i>	<i>Investment</i>	<i>Super</i>	<i>Other</i>
<i>1986</i>						
First quintile	1	1	92	6	0	0
Second quintile	0	0	95	4	0	0
Third quintile	1	0	85	13	1	0
Fourth quintile	5	2	60	23	10	1
Fifth quintile	23	7	12	42	15	1
All	10.9	3.5	51.2	25.5	8.4	0.5
<i>1990</i>						
First quintile	1	0	88	10	1	0
Second quintile	1	0	90	8	1	0
Third quintile	1	0	80	15	3	0
Fourth quintile	6	2	56	23	13	0
Fifth quintile	20	5	11	48	14	1
All	10.3	2.7	47.7	29.6	9.3	0.4
<i>1995-96</i>						
First quintile	1	1	92	6	0	0
Second quintile	0	0	96	3	1	0
Third quintile	1	1	86	9	3	0
Fourth quintile	4	1	63	16	15	0
Fifth quintile	26	9	13	31	21	1
All	11.6	3.6	53.8	18.1	12.4	0.4

Source: Estimated from unit record files, ABS 1986, 1990 and 1995-96 Income surveys.

9.6 Trends in household expenditure levels

There are strong arguments that measures of consumption are more appropriate than incomes as indicators of household living standards (see Barrett, Crossley and Worswick 1999). This is because incomes may reflect temporary variations, which may be smoothed by borrowing or saving or by running down of assets. This is particularly important in the case of older people, who typically have lower incomes than the non-retired population, but who have had the opportunity to accumulate wealth. To the extent that such smoothing is possible, it would be expected that consumption and incomes would diverge, with consumption being the better indicator of long term living standards. Available data are limited to household

expenditures rather than consumption. The most notable problem with available expenditure data is that it does not include the flow of services from ownership of durables including the family home. The data should be considered as an imperfect indicator of consumption, albeit in the same way that income is an imperfect indicator of economic resources

Table 9.14 shows trends in the income and expenditure levels of older households between 1974-75 and 1993-94. Trends in household incomes and expenditures over this period are significantly affected by changes in household size, which has fallen, but more substantially for younger households than for older households. In order to partially adjust for this, the table also shows trends in income and expenditure per person. Real per capita incomes of older households fell by 6.6 per cent, but real expenditure per capita rose by 15.6 per cent. This compares with an increase for all households of 0.4 per cent in real income per capita and 10 per cent in real per capita expenditures. As a result the average income per capita of older households has fallen from 83 per cent to 76 per cent of the per capita household income of the population as a whole. On the other hand the per capita expenditures of older households rose from 84 per cent to 89 per cent of the population generally.

The differences in the income trends shown here and those found in the earlier tables are likely to reflect a number of factors. The periods covered differ, particularly because these results go back to the middle of the 1970s whereas earlier tables showed trends from the early 1980s. In addition, these results refer to household incomes and earlier results to income unit income.

9.7 The impact of non cash benefits and indirect taxes

Government noncash benefits in the form of services and subsidies have a substantial impact on the living standards of the population generally, and particularly older people. The ABS (1996) has estimated that in 1993-94 the value of government services and subsidies for households with a reference person aged 65 and over was \$145 per week, compared to cash benefits of \$185 per week. Indirect taxes paid by older households are estimated to be roughly equal on average to their income tax liabilities. Health benefits and other welfare services are most significant for the older population and education benefits are most important for the younger population. The average value of direct government cash benefits is greater than average private income for older households, and is particularly significant for older single person households, where direct benefits are more than twice as valuable as average private income.

These estimates can be used as broader indicators of household living standards incorporating the impact of a more comprehensive selection of government policies. It should be emphasised, however, that these estimates are the result of many assumptions. They do not show the redistributive impact of the welfare state in an economic sense (Piggott 1987). Nevertheless, they are useful for illustrating that government impacts on living standards encompass much more than cash benefits.

Table 9.15 compares income components for older household groups with the average for the population generally. For example, the average private income of older households is only 26 per cent of that of the total population. After the inclusion of cash income support, this ratio rises to 48 per cent, and after taking account of income taxes it increases to 54 per cent. The addition of indirect government benefits and the subtraction of indirect taxes increase the ratio further to 66 per cent.

Table 9.14 Trends in household expenditures and incomes, Australia, 1974-75 to 1993-94

	1974-75	1975-76	1984	1988-89	1993-94	% Change
<i>Households with reference person aged 65 and over</i>						
Average income	\$96.59	\$115.64	\$229.48	\$323.01	\$348.68	-11.9
Average expenditure	\$75.22	\$88.58	\$196.23	\$273.44	\$335.81	8.9
Income per capita	\$55.19	\$66.46	\$133.42	\$187.80	\$211.32	-6.6
Expenditure per capita	\$42.98	\$50.91	\$114.09	\$158.98	\$203.52	15.5
Food share of total expenditure (%)	24.0	22.6	22.6	21.9	21.3	-2.7
<i>All households</i>						
Average income	\$205.92	\$222.35	\$453.60	\$636.05	\$723.23	-14.3
Average expenditure	\$157.00	\$172.35	\$361.84	\$502.71	\$602.11	-6.4
Income per capita	\$66.86	\$71.96	\$159.72	\$228.79	\$274.99	0.4
Expenditure per capita	\$50.97	\$55.78	\$127.41	\$180.83	\$228.94	9.6
Food share of total expenditure (%)	20.6	19.5	19.7	19.1	18.4	-2.2
Ratio of average incomes	46.9	52.0	50.6	50.8	48.2	1.3
Ratio of per capita incomes	82.5	92.4	83.5	82.0	76.8	-5.7
Ratio of average expenditures	47.9	51.4	54.2	54.4	55.8	7.9
Ratio of per capita expenditures	84.3	91.3	89.5	87.9	88.9	4.6

Source: ABS (cat. no. 6531.0, various years)

Table 9.16 shows the income components as a percentage of the 'final income' for each household type. Thus it can be seen that in 1993-94 private income was around 38 per cent of the final income of older households, but 95 per cent of the final income for the population as a whole. Cash benefits were more valuable for older

Table 9.15 Effects of government benefits and taxes on household income, 1984 and 1993-94

<i>Income, benefits and taxes</i>	1984				
	<i>Couple only, reference person aged 65+</i>	<i>Single person aged 65+</i>	<i>Multiple income units, with reference person aged 65+</i>	<i>All households, with reference person aged 65+</i>	<i>All households</i>
Private income	28.0	12.4	80.4	30.0	100
Total direct benefits	239.5	159.5	255.8	208.9	100
Gross income	52.3	29.4	100.5	50.6	100
Direct tax	23.2	12.2	76.6	27.2	100
Disposable income	59.7	33.8	106.6	56.5	100
Indirect benefits					
• Education				8.0	100
• Total health benefits	141.2	89.2	159.4	122.5	100
• Other welfare	212.2	222.9	245.8	221.9	100
• Total indirect	81.1	61.1	107.6	77.5	100
Indirect taxes	52.4	24.2	89.1	46.7	100
Final income	64.7	40.2	108.4	61.7	100
<i>Income, benefits and taxes</i>	1993-94				
	<i>Couple only, reference person aged 65+</i>	<i>Single person aged 65+</i>	<i>Multiple income units, with reference person aged 65+</i>	<i>All households, with reference person aged 65+</i>	<i>All households</i>
Private income	29.7	10.4	66.1	26.1	100
Total direct benefits	210.9	153.0	265.0	191.4	100
Gross income	53.9	29.5	92.7	48.2	100
Direct tax	22.4	10.1	60.3	22.1	100
Disposable income	61.3	34.0	100.3	54.3	100
Indirect benefits					
• Education	—	—	27.7	4.9	100
• Total health benefits	195.3	115.5	198.5	159.5	100
• Other welfare	267.5	168.9	306.2	227.1	100
• Total indirect	127.1	79.0	144.4	107.7	100
Indirect taxes	62.3	25.7	83.9	49.1	100
Final income	74.6	43.9	110.8	65.7	100

Source: ABS (cat. no. 6537.0, various years)

households than their private income, raising it to 80 per cent of final income. Income tax reduces this, so that the cash disposable incomes of older households are about 73 per cent of their final incomes. Indirect benefits net of indirect taxes then contribute the 'remaining' 27 per cent of final income.

Table 9.16 Effects of government benefits and taxes on household income, 1984 and 1993-94

<i>Income, benefits and taxes</i>	<i>1984</i>				
	<i>Couple only, reference person aged 65+</i>	<i>Single person aged 65+</i>	<i>Multiple income units, with reference person aged 65+</i>	<i>All households, with reference person aged 65+</i>	<i>All households</i>
Private income	42.7	30.5	73.1	48.0	98.6
Direct benefits					
• Age pension	34.5	42.8	20.1	32.5	4.5
• DVA pension	11.3	6.7	4.8	8.2	1.8
Total direct benefits	47.4	51.0	30.2	43.4	12.8
Gross income	90.0	81.5	103.3	91.4	111.4
Direct tax	-8.1	-6.8	-15.9	-9.9	-22.5
Disposable income	82.0	74.7	87.4	81.5	88.9
Indirect benefits					
• Education	*	*	3.0	1.2	9.3
• Total health benefits	18.9	19.2	12.7	17.2	8.7
• Housing benefits	0.5	1.7	0.5	0.8	0.6
• Other welfare	5.8	9.8	4.0	6.4	1.8
• Total indirect	25.5	30.9	20.2	25.6	20.3
Indirect taxes	-7.5	-5.6	-7.6	-7.0	-9.3
Final income	100	100	100	100	100
<i>Income, benefits and taxes</i>	<i>1993-94</i>				
	<i>Couple only, reference person aged 65+</i>	<i>Single person aged 65+</i>	<i>Multiple income units with reference person aged 65+</i>	<i>All households, with reference person aged 65+</i>	<i>All households</i>
Private income	37.7	22.4	56.5	37.7	94.8
Direct benefits					
• Age pension	26.7	39.3	22.5	29.4	4.5
• DVA pension	13.1	11.1	*5.2	10.6	1.6
Total direct benefits	41.4	51.0	35.9	42.7	14.6
Gross income	79.1	51.0	91.6	80.3	109.4
Direct tax	-6.2	-4.8	-11.3	-7.0	-20.7
Disposable income	72.9	68.6	80.3	73.3	88.7
Indirect benefits					
• Education	*	*	2.0	0.6	7.9
• Total health benefits	23.6	23.6	16.1	21.8	9.0
• Housing benefits	*	1.7	*	0.9	0.6
• Other welfare	10.5	11.3	8.1	10.1	2.9
• Total indirect	34.8	36.7	26.6	33.5	20.4
Indirect taxes	-7.7	-5.3	-6.9	-6.8	-9.1
Final income	100	100	100	100	100

Source: ABS(cat. no. 6537.0, various years)

Overall, between 1984 and 1993-94 the net effect of indirect benefits and taxes become a slightly more ‘pro-aged’. This can be seen in table 9.15. While the relative contribution of indirect benefits has remained stable for all households (20.3 per cent to 20.4 per cent of final income), they rose for older households from 26 per cent to 34 per cent of final income. This appears to reflect an increase in the relative contribution of health benefits for older couples and older single person households, and an increase in the relative contribution of other welfare services for older couples.

9.8 Trends in relative low income

In assessing trends in the wellbeing of the Australian population, a common form of analysis is to estimate how many people have incomes below the Henderson poverty line or other measures of relative low income. This is to be expected in a system that emphasises poverty alleviation. There is considerable controversy about the nature of poverty in wealthy societies such as Australia. Much of the controversy is concerned with whether poverty is purely relative, whether it has an irreducible absolutist component, or whether these terms are at all useful. To review the literature on this topic is outside this paper’s scope. We emphasise that our analysis simply refers to relative low income, and does not provide direct evidence on the extent of hardship or deprivation among low income groups. When discussing the new results, we do not use the term poverty, but refer to relative low income. However, other researchers using the same data and similar methods have described their results as showing estimates of poverty, so when discussing their research, their term is adopted.

Studies using the Henderson line give a mixed picture of trends in the circumstances of older income units. King (1998) estimates that between 1972-73 and March 1996 the Henderson poverty rate (before housing costs) among single older people rose marginally (but was more than 30 per cent in both periods) and among older couples it fell slightly (from 5 per cent to 3.8 per cent). After housing costs, poverty rates were substantially lower for singles but not couples, and they fell over this period. In contrast, Saunders (1994) estimated that between 1981-82 and 1989-90 ‘Henderson poverty’ increased from 10 per cent to 28 per cent, while among older couples it increased from 4.3 per cent to 6.7 per cent.

The variability of such results reflects technical choices made in measurement, and the interaction between these choices and the very high degree of concentration in the incomes of older people discussed earlier. Because so many older Australian have incomes in a relatively narrow income range between 40–60 per cent of

average income, small differences in the level of the low income line used can have a large impact on rates of low income.

The sensitivity of poverty and low income estimates to these technical choices is illustrated in tables 9.17 and 9.18, which give a wide range of estimates of the level of relative low income among the older population and trends over time. All the results in table 9.17 refer to incomes over the relevant financial years, and show trends over time using the Henderson line, plus half median income adjusted by different equivalence scales, and a half average income measure.

The ‘Henderson poverty line’ shows the largest increase in poverty over the period 1981-82 to 1995-96. The low income rate for older couples rises from 5 per cent to 21.4 per cent over the period, for singles from 11 per cent to 32 per cent, and for the total population from 13 per cent to 21 per cent. As is well known, a major contributor to this is the fact that the Henderson line has been rising faster than average incomes in the income surveys. When the Henderson measure is adjusted only to reflect price changes — as is the case in the second panel of results — then the increase in the overall low income rate is from 13 per cent to 14.9 per cent, and the increase is much lower for older income units, particularly older singles.

The most consistent result is that low income rates for older income units are always above those for the non-aged population, although the extent of this difference varies widely. In addition, all the results — except those using half median income and the ‘DSS equivalence scales’¹⁰ — show increases in low income rates over this period. The extent of this increase varies enormously, however. The results using the standard Henderson measure show an increase of 8 percentage points for the population as a whole, while the half median line with the OECD equivalence scales show an increase that is only 0.8 percentage points.

All measures except the HBAI results show an extremely large jump in low income rates for older couples between 1990 and 1994-95 and most also show a jump for older couples. As noted by Harding and Szukalska (1999), there are doubts about the comparability of the annual income data in the ABS income surveys from 1994-95 onwards due to a change in the ABS treatment of those who altered family or labour market status during the year.

Table 9.18 shows there are also substantial differences between estimates of low income rates at the same point in time using a wider range of methodological variations. The first column shows results for older couples and older singles, respectively, which are the same as for the corresponding results in table 9.17. The table then shows results using households rather than income units, and then using

¹⁰ These are the equivalence scales implicit in the current structure of income support payments.

current weekly income rather than annual income. Two general conclusions can be drawn. The use of households rather than income units gives slightly higher low income rates for all other technical choices. Using current rather than annual income gives very much lower low income rates, except for single older people using the standard Henderson methodology.

Table 9.17 Alternative estimates of trends in the extent of low income, Australia, 1981-82 to 1995-96

Per cent of population with low income by low income measure

	1981-82	1985-86	1989-90	1994-95	1995-96
<i>Henderson detailed</i>					
Older couples	5.0	5.6	6.9	16.7	21.4
Older singles	10.8	24.5	27.9	31.1	31.7
All non-older	13.6	15.3	16.1	19.1	20.3
Total population	13.0	15.1	16.1	19.6	21.0
<i>Henderson detailed (CPI adjusted)</i>					
Older couples	5.0	4.8	5.3	14.1	16.9
Older singles	10.8	14.2	13.7	20.6	17.1
All non-older	13.6	14.0	13.2	15.6	14.6
Total population	13.0	13.4	12.7	15.7	14.9
<i>Half median, Henderson eq.</i>					
Older couples	3.5	3.8	4.1	12.9	14.9
Older singles	4.5	4.6	6.8	16.9	13.9
All non-older	9.4	9.4	9.6	12.1	10.5
Total population	8.8	8.8	9.1	12.4	11.0
<i>Half median, McClements eq.</i>					
Older couples	5.3	4.6	6.2	14.9	16.8
Older singles	4.9	5.9	9.1	17.8	14.9
All non-older	11.2	10.7	10.8	13.0	11.4
Total population	10.6	10.0	10.4	13.4	12.0
<i>Half median, OECD eq.</i>					
Older couples	5.0	3.8	5.2	13.9	15.8
Older singles	3.9	3.9	6.6	16.8	13.8
All non-older	11.1	10.8	10.3	12.7	10.6
Total population	10.4	10.0	9.8	13.0	11.2
<i>Half median, DSS eq.</i>					
Older couples	50.5	7.3	10.0	17.7	21.3
Older singles	66.4	15.7	14.2	18.1	17.6
All non-older	10.2	10.1	10.1	12.2	9.5
Total population	15.4	10.2	10.3	12.9	10.8
<i>Half mean, households, HBAI</i>					
Older couples	8.9	17.7	21.3	20.0	24.5
Older singles	25.5	40.3	36.4	26.6	28.4
Total population	13.2	14.5	15.4	15.6	15.1

Source: Estimates prepared by the Social Policy Research Centre, University of New South Wales, using ABS Surveys of Income, unit record files, various years.

A final set of estimates in the last column of table 9.18 show estimates of relative low income after taking account of non-cash services and subsidies and indirect taxes. Here, the relevant income concept is 'final income' as used in the preceding section of this paper. The first set of estimates is simply of the level of low income using half median equivalent disposable cash income, with subsequent estimates adding the value of non-cash benefits per household and per capita respectively. These low income rates are lower for older households than for the population generally.

Table 9.18 Alternative estimates of low income rates, Australia, mid-1990s^a

	<i>Annual income</i>		<i>Current income</i>		<i>Final income</i>
	<i>Income units</i>	<i>Households</i>	<i>Income units</i>	<i>Households</i>	<i>Households</i>
Henderson detailed	21.4 31.7	-	10.8 34.8	-	-
Henderson, CPI adjusted	16.9 17.1	-	-	-	-
Half median, Henderson	14.9 13.9	-	-	-	-
Half median, McClements	16.8 14.9	17.3 17.9	7.9 5.7	8.6 7.3	-
Half median, OECD	15.8 13.8	16.5 16.3	7.3 5.3	8.4 7.2	-
Half median, DSS	21.3 17.6	21.8 19.7	-	-	-
Half mean, McClements	24.0 22.2	24.5 28.4	12.0 9.7	12.9 13.5	-
Half mean, OECD	23.1 17.7	23.4 20.7	11.2 7.7	11.7 9.8	-
Half median, 1993, disposable	-	-	-	-	5.7 3.2 8.2
Half median, 1993, disposable plus social wage	-	-	-	-	2.6 2.6 4.2
Half median, 1993, disposable plus social wage per capita	-	-	-	-	2.8 2.3 4.9

^a The first number in each series is the low income rate for older couples, and the second number is for older single people. For 'final income' the third number in each set is the estimate for the total Australian population.

Source: Estimates prepared by the Social Policy Research Centre, University of New South Wales, using ABS Surveys of Income, unit record files, various years.

In summary, these results show that estimates of the size of the low income population are sensitive to the precise choice of methodological approach made in measuring 'poverty'. Again, this reflects the concentration of older people in a relatively narrow income range around the statutory pension rates. A number of conclusions seem robust to these technical choices, however. On the basis of cash incomes low income rates among older people are higher when households are used as the unit of analysis rather than income units. Similarly, using cash incomes older people are more likely to experience relative low income than is the non-aged population. Finally, use of current weekly income rather than annual income appears to produce lower estimates of relative low income.

9.9 Conclusion

A mixed picture emerges from the analysis conducted in this paper. The average incomes of older people have been increasing at a faster rate than for the population generally. As a result, the average incomes of older people have risen as a proportion of the community average. Average expenditures per person among older people have also increased. Taking account of government noncash benefits further improves the relative position of older people. At the same time, administrative data suggest that there are sizeable proportions of the age pensioner population who have little or no income apart from their pension, and little or limited assets. The extent to which this is the case appears to have decreased over time, however. Older people are also overrepresented in the lower income quintiles of the population. The most striking feature of the incomes of the older population is the degree of concentration of incomes around pension levels. This complicates interpretation of trends in incomes and the relative position of this age group, including their vulnerability to low incomes.

In considering likely future trends in the relative position of older people, it is necessary to take account of a wide range of factors impacting on the distribution of incomes of those in the pre-pension age groups. The wellbeing of older population in the future is likely to be enhanced by a wide range of factors, including increasing superannuation coverage, increasing labour force participation among females, higher real wages, and higher average levels of housing wealth. At the same time, there are trends that may tend to offset these, including the long-term decline in the participation of males aged 50–64 years (Ingles 1998), and higher wage inequality among those of working age. In addition, family trends (including the growth in the incidence of sole parent families) may also have adverse effects on wellbeing in retirement. Separated, divorced and single older females appear to have lower incomes and assets in retirement than do males or couples. The compression of life course events related to older age at first birth and increased educational

participation among youth may also impact on capacity for self-provision in retirement (Jackson 1998).

In terms of future monitoring of these and related trends, it is desirable to have improved information about the dynamic processes that are associated with these developments. This would be best achieved through an ongoing longitudinal survey. It is also necessary to use a broad range of indicators to monitor trends in order to capture the diversity of outcomes among the older population. Finally, the main message of this paper is that the concept of economic resources used in analysing trends in living standards is of fundamental importance. Future analysis should pay particular attention to modelling and measuring comprehensive income measures.

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Discussant — *Mark Wooden*

From a research standpoint, the issue of retirement incomes is an area in which I have very few credentials. I, therefore, am going to say very little directly about the contents of the three papers. Instead, I am going to focus my comments on the issue which Qaiser Khan raises in the final sentence of his paper (but which is central to the paper by Disney, Duncan and Whitehouse) — the issue of whether we can increase the incentives for keeping older workers in the workforce.

If we accept the argument that with an ageing population it is desirable to encourage people to retire later (as Khan and Disney, Duncan and Whitehouse do), then it seems to me that there are three obvious questions that need to be addressed.

1. Do older workers want to keep working beyond the standard retirement age?
2. Are older workers discouraged from participating in the labour market?
3. Do employers want to employ older workers?

Do older workers want to keep working?

In answering the question of whether or not older workers want to keep working, first consider current labour force participation data. As reported in table 1, recorded labour force participation rates (LFPRs) are still quite high among 55–59 year olds, but thereafter fall quite quickly, with less than 6 per cent of persons aged 65 years or over still in the labour force. One simple method for identifying the potential for increased labour force participation is to consider the impact of including as labour force participants those persons who report they want work (and are available to start work) but are not actually looking for work. The effect of this is reported in table 1 as the ‘revised’ LFPR. Comparison of the recorded and revised LFPRs appears to suggest only a modest amount of interest in working longer. Moreover, all of the scope for additional participation is concentrated in the ‘pre-retirement’ years (that is, before age 65).

Of course, future cohorts may exhibit a greater interest in remaining in the workforce longer, especially as a result of greater education levels and greater employment opportunities for women. Nevertheless, I think there are good grounds to be concerned about likely labour supply responses in the face of an ageing population.

Table 1 Labour force participation rates, mature-age workers, September 1998 (per cent)

<i>Age group</i>	<i>Recorded rate</i>	<i>Revised rate</i>
55–59	60.2	66.3
60–64	34.1	43.0
65+ ^a	5.9	7.2

^a Data are not available for persons with marginal labour force attachment who are aged over 69 years.

Sources: ABS (*Persons Not in the Labour Force, September 1998*, Cat. no. 6220.0; *Labour Force, Australia, September 1998*, Cat. no. 6203.0).

Are older workers discouraged from participating in the labour market?

This apparent lack of interest in working beyond age 65 may reflect the presence of disincentives to late retirement; certainly the incentives during the 1970s and 1980s were increasingly favourable to retirement. This has continued in the 1990s, particularly as a result of the spread of superannuation coverage, which provides workers with an incentive to retire early, spend the proceeds, and then live off social security after reaching the pensionable age ('double dipping'). Indeed, as Khan observes, it is surprising that many more do not do this.

The continued expansion in superannuation coverage notwithstanding, it can be argued, however, that the 1990s has witnessed a shift back in favour of increased working. Final superannuation pay-out figures, for example, are increasingly less dependent on the final salary, and more dependent on the amount contributed and on investment growth, which means that there is not the same penalty to accepting a lower paying job or a part time job late in a career.

A number of Federal Government initiatives have also been introduced that are intended to increase the incentive to retire later rather than earlier. The raising of the superannuation preservation age from 55 years to 60 years is an example here, though it is true that this initiative will take a long time to have any affect, with only those persons born after 30 June, 1960 affected. The introduction of a tax-free bonus for persons aged over 65 who defer taking their pension (the Pension Bonus Scheme) is also argued to provide an added incentive to late retirement, though again the immediate impact of this initiative is likely to be quite small given the substantial numbers of persons who currently cease employment before age 65. Moreover, the scheme will provide substantial windfall gains to those who would have worked beyond age 65 in the absence of the scheme.

Nevertheless, disincentives to working past age 65 remain. Many superannuation schemes, for example, place limitations on membership past the age of 65. Further, the (complicated) system for taxing superannuation benefits (especially the tax concessions that apply) tends to make employment at older ages very unattractive. Hours of work is very important in this context. Many older workers may still be interested in working in the labour market, but may no longer be interested in a full time job. I suspect, however, that superannuation arrangements (and the arrangements for the taxation of superannuation benefits) tend to drive workers into complete retirement rather than semi-retirement via part time work.

Do employer's want to employ older workers?

Even if the disincentives to remaining at work are removed, can it be assumed that employers will want to retain and hire older workers? The conventional wisdom is that older workers have low probabilities of re-employment should they become unemployed, but are at relatively low risk of unemployment. Official rates of unemployment are generally consistent with this hypothesis.

However, VandenHeuvel (1999) has demonstrated that if we augment the labour force and the unemployed numbers with what the ABS refers to as discouraged job seekers — persons who would like to work but who are no longer looking for work for reasons related to the state of the labour market — then quite a different picture emerges. As shown in table 2, the rate of total joblessness for workers aged over 55 in September 1998 was in excess of 10 per cent. Only young people (under the age of 25) have higher rates of joblessness.

Table 2 Joblessness rates, September 1988 (per cent)

<i>Age group</i>	<i>Official unemployment</i>	<i>Unemployment + discouraged job seekers</i>
15–24	15.0	15.5
25–34	7.3	7.6
35–44	6.1	7.0
45–54	5.6	6.6
55–59	7.7	10.6
60–64	4.8	10.8
65+	1.3	10.4
Total (15+)	8.1	9.1

^a Data are not available for discouraged job seekers aged over 69 years.

Source: ABS (*Persons Not in the Labour Force, September 1998*, Cat. no. 6220.0; *Labour Force, Australia, September 1998*, Cat. no. 6203.0).

It might be argued that as the workforce becomes gradually older, employers will more likely to both retain and hire older workers. However, if firms believe that older workers are relatively more costly than younger workers (for example, because of a perception that older workers are slower to learn), they might be motivated to adopt other strategies to meet output requirements, such as increased capital utilisation or working the existing (younger) workforce harder. Many firms, for example, have already exhibited a strong tendency to follow these types of strategies rather than recruit from the ranks of the long term adult unemployed.

Further, there are good grounds for believing that many firms actively discriminate against older workers. Bennington and Tharenou (1996), for example, highlight a number of stereotypes influencing age-based employment decisions, including the following perceptions.

1. Older workers take more absences and are more accident prone.
2. Older workers have memory problems and declining intelligence.
3. Abilities and performance decline with age.
4. Older workers are less creative.
5. Older workers cannot adapt to new technology.
6. Older workers cost more (for example, training time).
7. Older workers do not fit into a younger workforce.
8. Older workers are not interested in work, and are simply waiting for retirement.

Bennington and Tharenou (1996) go to great lengths to demonstrate that such perceptions are based on inaccurate perceptions. However, what matters is not whether such perceptions are accurate or not, but whether employers have them. If they do, then employer demand for older workers may not be as responsive as we might hope.

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Discussant — *Denys Correll*

My comments on the three papers by Qaiser Khan; Richard Disney, Alan Duncan and Edward Whitehouse; and Peter Whiteford and Kim Bond are presented against four headings. The first is conflicting policy or mixed messages; the second is the ineffectiveness of policies; the third is rejection of policy options; and the final one is poor understanding of policy implications and assumptions regarding behaviour.

In March 1996 there was, as usual, a high level of support by older people of the Coalition parties — with 58 per cent of the over 50 age group supporting the Coalition. The News Poll, which came out in June 1997 some months after the announcement of the aged care reforms, showed the Coalition's support by the 50 plus age group had fallen by 10 per cent. They wandered off to every other party, not just to Labor. That 10 per cent have stayed away, according to the News Polls. So we are facing a new political reality here. Traditionally, older people have voted towards the Coalition. Both parties realise now that there is a new swinging group of 10 per cent.

Conflicting policy or mixed messages

I have identified eight mixed messages. The first mixed message is about retiring early. We have been told it is a good idea to retire early, given that we have early access (age 55) to superannuation. Another message, which was presented today, is the incentive to retire early, use your superannuation, then go on the old age pension. The point that Whiteford and Bond's paper made, which is little understood, is that the longer you stay in a defined contribution scheme, the greater the end benefit, particularly if the last few years are contributor years. I think it is a very important point but very little understood in the community.

Another part of conflicting policy is the lack of programs for people to retain their jobs over the age of 50. Likewise there is a lack of programs for those in the same age group who have lost their jobs. Contrast this policy with the Central Departments' concern regarding the dependency ratio and the growth of that dependency ratio.

Khan's paper mentioned the three-pillars policy. I see the three pillars of policy more like Greek pillars which are somewhat corroded and do not actually have anything to do with each other. The contradiction is that the three pillars tend to stand alone, and there is not much cross-relationship between the pension, superannuation and savings. Australia remains the only country in the OECD that

taxes superannuation when it is paid in, while it is in the fund and on withdrawal. Surely this is a mixed message from the Federal Government regarding the individual's perception of a savings vehicle.

Finally, the means test on pensions skews investment decisions, particularly into a house which does not attract capital gains tax.

Ineffectiveness of policy

Before the Coalition came to power, it had a policy for a pension bonus scheme which provided for an add-on to the pension. Once in power, the Coalition changed the policy to a once-off payment which accrued on an annual basis. The policy was changed after the Federal Government was advised by the Department of Family and Community Services that the cost of their pre-election policy was too high. The scheme that has been introduced has had a minimal take-up because it is unattractive. The second component of ineffective policy is the lack of education of the community regarding the benefits of working longer, the compounding of retirement incomes through superannuation, and the benefits of regular payments over lump sums. With the love of lump sum superannuation remains the idea that you blow as much as possible then use the remainder to live on supplemented by the old age pension.

Increasing the retirement age has been avoided by most governments. The age of pension eligibility was set in 1909 at 65 for men and 60 for women. It is curious that we have not started to create an attitude in society through public education to extend the period of the working life, remembering that a male at age 65 will, on average, live another 16 years and a female will live another 20 years.

Rejection of policy options

The rejection of policy options is the third area. Khan was not aware of this, but the Institute of Actuaries developed a proposal some years ago for what has been misconstrued as a universal pension. I was curious about the way it was so publicly misconstrued when in fact the proposal was to target the pension through the tax system rather than through the social security system. I regret the standard of debate on that particular proposal. It should have been more widely disseminated and debated. Likewise, the Federal Government's proposal for unfunded lifetime community rating in private health insurance should be subject to a rigorous debate. I link that to Khan's comment about the old age pension without a means test. I think it is probably a very courageous person that would introduce that subject in this country.

Finally, on the rejection of policy options there is the extraordinary spread of income policy over a number of government departments and ministries. We have superannuation in one department and pensions in another. How can we possibly develop sensible retirement incomes policy when it is spread over so many government jurisdictions?

Poor understanding of policy implications, and assumptions regarding behaviour

People remember — nobody can forget in this country — the nursing home debacle. Whiteford and Bond identified in their paper, house ownership of 84 per cent. The government underestimated the meaning of the family home to individuals. The generation whose home ownership was threatened had scrimped and saved to buy their house. That may sound like bleeding heart stuff, but if a government wishes to introduce major changes in policy, they need to think about how to educate a community which has different perceptions. The case has yet to be made that it is reasonable for a person entering residential care to contribute to the costs of accommodation. Badly thought out, badly portrayed and badly implemented.

There are vast amounts of assets tied up in housing. Because the home is not included in the pension assets test, it is a natural inclination to tie up as much as possible in that type of equity. Reverse mortgages were tried to release some equity. They failed basically because people are not prepared to give up or risk their home. Few people know how long they are going to live and consequently do not know how quickly they may dissipate the remaining equity in the home. They do not want to take that risk. The home owner does not want to make an irreversible decision. So we have yet to devise ways to release home equity. Just as a small note, our Council in South Australia started a program which was to help older people sell the large family home, for a much smaller home. This would increase their cash resources and provide much more appropriate housing to accommodate them in their later years.

We do not have a social contract to run down assets. There has been a lot of talk regarding people using assets in retirement rather than handing them on to their children. If we are to imply that older people should be running down their assets, I do not believe that ethic exists in this community yet. If it is to eventuate, then it needs to be done by way of a social contract.

Finally, Whiteford and Bond's paper addresses the number of poor people on pensions, the ones with assets less than \$5000. Whiteford and Bond also make mention of poverty alleviation. The base pension for those who do not have any other assets is a pretty grim lifestyle. They do not have any money to replace major

whitegoods, pay for housing repairs and so on. Imaginative solutions are possible such as an annual bonus which could be given to people who do not have any other way of covering those once-off expenses.

General discussion

A lengthy and comprehensive discussion in this session examined:

- the demand for older workers;
- modelling the retirement process;
- the determinants of retirement timing;
- sources of income in old age;
- who the old are;
- data quality;
- pension reform; and
- home ownership.

Demand for older workers

A participant raised the question of the future impact of cohort effects on the skills levels of older workers, and thus on the demand for their labour. He observed that these levels are expected to increase, and yet the analysis in Disney, Duncan and Whitehouse's paper suggests that people with high skills and earnings face incentives to retire early.

Other participants concurred about future skills levels, suggesting that increases in educational attainment are largely driven by economic restructuring. Current rates of long term unemployment at older ages are unlikely to be as high in future as demand for labour overtakes supply.

Other participants differed: one remarked that cohort effects also mean that older age groups will contain persons who have a history of unemployment, and who therefore find it hard to overcome employer attitudes to hiring. Other participants added that skills are relative, and that older workers will always be at a disadvantage compared with 20 and 30 year olds. This would be especially true of new recruits, one participant suggested; even although the incentive for firms to retrain older workers may improve in future, firms would still avoid this group when hiring externally.

This view was qualified by a participant who argued that some countries will be hard pressed to retain their younger workers in future, when international work opportunities are going to increase dramatically. He cited the case of Italy, where

the labour force is predicted to halve in the next 50 years, opening up a vast market for guest workers.

Modelling the retirement process

On the question of modelling retirement behaviour, it was argued that a weakness of existing models lay in their assumption of sudden and complete retirement. It was indicated that sociological evidence points to the prevalence of partial retirement, whereby retirees become progressively disengaged from the labour force. A participant expressed the belief that retirement modelling would benefit from a greater understanding of this transition process. Other participants concurred, one adding that the majority of ‘late’ retirees are self-employed, a fact that retirement models needed to recognise.

A participant contended that the idea of progressive (or ‘phased’) retirement has merit, but is not useful in all circumstances. Currently, a subset of the retiree population is greatly ‘at risk’ after losing their (largely manufacturing) jobs and all re-employment prospects in their early fifties. The only option available to that group is total reliance on public transfers until their very old age. Another participant agreed, stating that early retirees are usually found among people who satisfy income tests and thus have low incomes, and who already rely on social transfers such as disability pensions prior to officially retiring.

Phased retirement was viewed differently by another participant, who remarked that the difference between the full time hours worked by the 40–50 age group and by older age groups really amounts to phased retirement. This variation in work intensity could perhaps explain the shape of typical age–earnings profiles, a proposition with which another participant agreed.

Determinants of retirement timing

One participant stressed the need to distinguish between the circumstances of early retirees and late retirees. She argued that the main driver of early retirement is the ‘discouraged worker effect’ rather than the incentives created by retirement arrangements. This is supported, she argued, by figures presented by Wooden, which show this effect raising the unemployment rate among older age groups to above 10 per cent. She mentioned the case of Japan, where the prevalence of early retirement twenty years ago was dramatically reversed by the subsequent economic boom. This reversal was achieved not by re-employing unemployed older workers, but by having a whole cohort ‘stay on’. Other participants confirmed that Japanese workers — primarily male workers — are staying on by switching to part time work

and adjusting slowly out of the workforce. However, for this to happen, incentives should not favour an abrupt and complete retirement, as they do in Belgium for instance. A participant remarked that the growth in part time employment of older workers had been significant in Australia also, since the 1991-92 recession. However, little is known about this group.

The influence of longevity on retirement behaviour was briefly discussed. It appears that retirement attitudes do not yet reflect the increase in life expectancy but, rather, are a legacy of a time when this expectancy was considerably lower.

Sources of income in old age

Whiteford drew participants' attention to the often overlooked fact that wages and salaries, while not the principal source of income for many older people, are actually greater (in absolute terms) than superannuation income. While less concentrated than investment income, labour income accrues primarily to people in the highest income quintile, where it accounts for one quarter of total income. For all quintiles, wages, salaries and income accruing to the self-employed amount to 15 per cent of aggregate income, compared with 12 per cent for superannuation.

Another participant argued that Whiteford's interpretation was somewhat misleading, because the prevalence of lump sum payments in superannuation means the importance of superannuation is underestimated. The reason is that the benefit system, once those lump sums have been reinvested, is no longer officially regarded as superannuation income but as investment income. In reality, superannuation is already making a significant contribution, one that is destined to grow in future.

Who are the old?

A participant emphasised the need to treat older persons as an heterogeneous group, rather than an homogenous one. He therefore welcomed the use of income quintiles in Whiteford and Bond's paper. He mentioned the fact that income support schemes, being means tested, affect the behaviour of their recipients in ways that are not uniform. The question of heterogeneity was also raised by another participant, who emphasised the need to differentiate older persons according to location, class or income, so as to gain any insights.

Data quality

A participant raised the question of data reliability, noting that estimates of labour force participation rates in older age groups vary significantly between sources. ABS rates are typically lower than those observed by non-government sources. Similar discrepancies appear to affect income and assets estimates, and could be attributed to respondents' concerns about information dissemination across government agencies.

Other participants disagreed: one argued that the questions asked in the surveys could hardly be viewed as threatening, because they were only concerned with the desire to work, not the process of active job search. A second participant remarked that both series, despite some specific problems with both income and social security data, resulted in similar age profiles, which did not suggest a systematic bias.

Pension reform

Pension and superannuation reform was mentioned as the key to influencing labour supply in older age groups. Short of coercion, one participant argued, incentives need restructuring in such a way that would make it worthwhile for people to continue working into old age. One possibility in the Australian context is to increase the real value of the pension the longer it is delayed. This would make retirees actuarially worse off if retiring at age 65 than if retiring later. This could be reinforced with superannuation initiatives similar to Great Britain's, whereby the drawing of a superannuation annuity, if delayed from age 65 to age 75, continues to earn interest while allowing the beneficiary to continue work at no penalty. With both pension and superannuation schemes, this participant argued, are actuarially fair incentives a necessary component of a successful policy.

Home ownership

A participant remarked that persons aged 50–70 who are still employed generally express a strong desire to keep working, a wish largely motivated by their concerns about their adult children's insecure prospects. In particular, there is a widespread desire to bequeath houses and other assets to children. This concern was endorsed by another participant, who added that the rate of home ownership is falling, with profound implications for income security in old age. He suggested that older persons have two reasons (in addition to concerns about their children) for not wanting to sell their homes: first, home ownership alleviates their feelings of vulnerability by giving them a sense of community belonging; and, second, they

face high effective tax rates if they sell their house, especially if they do not own it outright. These rates range from 7 per cent to 11 per cent of the value of their asset.

10 Population ageing and the growth of social expenditure

John Creedy

10.1 Introduction

There is little doubt that most industrialised countries are undergoing a demographic transition associated with falling fertility, increased longevity, and the ageing of the post-World War II ‘baby boom’ generation. This view can be held with some confidence because the main features of the population age structure can be expected to change in reasonably predictable ways and are not subject to erratic changes.¹ There is a widely held view that the anticipated population ageing is, without substantial changes in social insurance arrangements, likely to lead to an unsustainable increase in social expenditure that could only be financed by tax rates that would be regarded as excessive. This is largely motivated simply by the fact that social expenditure now forms a large proportion of total government expenditure, is particularly difficult to control,² and the major components (such as pensions and health expenditure) are strongly positively related to age.

However, it is far from clear that population ageing presents a major cause for concern. It can instead be argued that references to a future ‘crisis’ are exaggerated. This paper considers some of the issues that arise in examining the possible implications of population ageing for social expenditure.³ First, it is useful to place the growth of expenditure in perspective, by discussing the role of earlier demographic transitions and other factors in explaining social expenditure growth. This is the subject of section 10.2. Later sections then discuss the possible orders of magnitude involved. Population projections for Australia are presented briefly in section 10.3. This is followed in section 10.4 by projections of the ratio of social expenditure to gross domestic product (GDP). The limitations associated with this

¹ However, changes in fertility can sometimes vary substantially over fairly short periods.

² Governments can impose eligibility conditions and set levels of benefits, but the total expenditure is endogenous.

³ On wider aspects of population ageing, see Creedy (1995).

type of projection, and the need to consider statistical aspects rather than concentrating on single projections that ignore the uncertainty involved, are stressed. Brief conclusions are drawn in section 10.5.

10.2 Social expenditure in perspective

In considering the potential importance of the current demographic transition, it is useful to examine the role of previous transitions in relation to other considerations in generating changes in social expenditure. These factors are discussed in this section. In considering the extent to which the system is likely to be placed under stress, it is important to remember that less than 100 years ago social expenditure was negligible. Indeed, formal retirement did not exist for the vast majority of the population, and the extent of tax-financed public health was negligible. The welfare state is relatively new, and since the 1950s it has seen a large increase in public expenditure, little of which has been associated with population ageing. The current demographic transition is of course likely to involve a continued transition in social insurance arrangements. However, these have experienced very little stability in their short history and have undergone changes that are in many ways more substantial than those anticipated from population ageing alone.⁴

10.2.1 Demographic transitions

The importance of earlier demographic transitions can be summarised in terms of the stresses placed on family intergenerational support systems and the increased acceptance of a role for some form of government transfer system in which current benefits are financed by current taxation.

Most industrialised (particularly European) societies have passed through several demographic stages or transitions from a 'primitive' stage, which is characterised by high mortality and fertility, to a 'modern' stage of development with low mortality and fertility. The time taken to move through the various stages has varied between countries, and more recently industrialised countries have passed through some later stages more quickly (in view of the transfer of medical 'technology').⁵ The different stages are characterised mainly by their birth and death rates (expressed per thousand of the population) and the associated age distribution of the population.

Table 10.1 summarises the demographic transition under four main headings. The figures given in the table must be regarded simply as representative values rather

⁴ For further discussion of the development of social insurance, see Creedy and Disney (1985).

⁵ For a broad discussion concentrating on demographic change in Asia, see Williamson (1998).

than indicating precise orders of magnitude for a particular country. The pre-modern stage is characterised in table 10.1 by quite high fertility and high mortality. The expectation of life at birth is only about 25 years, so there are very few individuals in the 60 plus age group. The high birth rate, while imposing very heavy burdens on families, is nevertheless associated with a growth rate of the total population of only about 0.5 per cent, so that reproduction may be described as being ‘inefficient’.

The middle two stages are shown as ‘early transition’ and ‘later transition’ periods, though they are sometimes amalgamated into a single demographic transition, or movement towards the ‘modern’ period. The early transition period is characterised by a fall in mortality, particularly infant mortality, which is associated with a rise in the expectation of life to about 30 years. In the later transition period, improved health conditions reduce mortality and increase longevity further, while the birth rate continues to be high. This period is thus associated with a high youth dependency ratio, with about 45 per cent of the population aged under 15. Despite the much higher expectation of life at birth, the proportion of people aged over 60 remains relatively low, while the population growth rate is increased to about 3 per cent.⁶

The later transitional period is one in which the idea of retirement from employment does not really exist, despite the increased longevity. Individuals continue to work, unless illness prevents labour market participation. Hence increased longevity did not lead to a breakdown of family support systems, despite the high youth dependency ratio already faced.

Table 10.1 Demographic transitions

	<i>Pre-modern</i>	<i>Transition</i>		
		<i>Early</i>	<i>Late</i>	<i>Modern</i>
Births/1000	45	45	45	20
Deaths/1000	40	33	15	10
Share aged 15 and under (%)	36	38	45	26
Share aged 60+ (%)	5	5	5	15
Expectation of life at birth (years)	25	30	50	70
Population growth rate (%)	0.5	1	3	1

⁶ It can be shown that the extent of population ageing is more sensitive to fertility than to mortality changes. In this connection, fertility rates can change relatively more rapidly, although population projections typically assume steadily declining rates.

As shown in table 10.1, the modern period experiences a continued reduction in mortality and an increase in the expectation of life at birth to about age 70.⁷ A significant feature is the reduction in the birth rate so that, despite the extra longevity, the population growth rate falls to about 1 per cent. The age composition of the population shifts substantially, with a reduction in the proportion aged under 15 and an increase in the proportion aged over 60.

10.2.2 From family to state support

The later demographic transitions place great strain on family support systems, given the difficulty of making life cycle savings, despite the reduction in the youth dependency ratio. Hence the overall burden of dependency increased. The demand for some kind of government pension became irresistible in the major industrialised countries at the turn of the century. The difficulty of providing adequate personal savings for old age, combined with the strain placed both on family support and the existing sickness support schemes, which covered only a small minority of workers, resulted in a situation in which the aged formed the majority of those found to be living below a designated poverty level. However, population ageing was not the only consideration. At about the same time, there was much wider recognition of a role for the government in the other areas of social insurance, such as sickness and unemployment. It is no accident that this movement coincided with wider support for redistribution, involving also the use of progressive income taxation. The shift from family support to government support in the form of the tax and transfer system involved a complex range of factors, including the high costs, particularly health costs, of supporting the aged compared with those of supporting the young.

The modern period shown in table 10.1 corresponds to the industrialised countries around 1960, and must be augmented by a yet more modern or post-modern period through which many countries are currently passing. The expectation of life at birth has increased further. The birth rates have also fallen further, implying significant population ageing in the early years of the twenty first century. This population ageing is also associated with the ageing of the members of the postwar baby boom.

The recent post-modern period has also seen a substantial increase in the labour force participation rate of women (which is of course largely associated with the lower birth rate) along with a certain amount of variability in unemployment rates. Following a shift of the ‘aged burden’ to the tax and transfer system during the modern period, it is also of interest that, despite the much lower birth rate, more recent times have seen increased pressure for a further shift of the ‘youth burden’ to

⁷ These changes are not exogenous, but are related to a variety of economic factors, so that the above discussion is highly simplified.

the tax and transfer system. This is also associated with the increased labour force participation of women.

10.2.3 The shift to social insurance

The higher levels of unemployment, also associated with industrialisation, were gradually recognised to be a ‘problem of industry’, or market failure, rather than simply of individual failure. The large strain placed on intergenerational family support systems by large scale unemployment and poverty in old age, associated with increased longevity, eventually led to the introduction of various forms of social insurance. The use of the term social ‘insurance’ is of course important in indicating the way in which such schemes were envisaged. Even though benefits were, and continue to be, financed on a pay-as-you-go basis — whereby benefits are paid out of current taxation — the schemes were seen in terms of risk pooling rather than redistribution of lifetime income between individuals.⁸ In other words, they should be viewed predominantly in terms of smoothing consumption over the life cycle, financed from general taxation (regarded as compulsory ‘contributions’)⁹ rather than a systematic planned redistribution between people, though of course there is always some *ex post* redistribution involved. Separating the insurance from the redistribution is of course not straightforward. There is sometimes an illusion of intra-generational redistribution involved in some government pension schemes, but the effect is usually negligible, especially when allowance is made for differential mortality.

The growth of social expenditure over the past hundred years is therefore substantially a story that can be told in terms of a shift from private and family support systems to tax financed government schemes which are largely seen in terms of consumption smoothing rather than intra-generational redistribution. Hence, it is no surprise that it has been accompanied by a greater willingness to pay taxes.¹⁰ Of course, the willingness of current workers to finance the benefits paid to those currently retired and the education of young dependants has been associated with a hypothetical (some would say metaphysical) ‘social contract’ between generations. The education of current workers was financed from earlier taxes paid

⁸ Some systems, such as pensions and unemployment benefits in the UK, involve a record of social insurance contributions, but the individual benefits are not actuarially related to accumulated contributions, and those without a history of employment may claim means-tested benefits.

⁹ If there are differences in risks between individuals, then self-selection, whereby the low risk individuals would leave the scheme, requires compulsion.

¹⁰ Expenditure on, for example, unemployment benefits has also sometimes been regarded as having automatic stabilising properties.

by the previous generation of workers, the current pensioners, and there is the expectation that future workers will meet their contractual obligation to make the intergenerational transfers that largely provide a public mechanism to enable effective private smoothing of consumption over the life cycle.

The idea of such a social contract has been further extended by the recognition that with a sufficient amount of productivity growth, added to population growth, the public scheme can in some sense outperform the use of private savings. This is the social insurance paradox, which established the conditions under which pensioners can share in the growth of real incomes, thereby obtaining a higher implicit rate of return than the real rate of interest that is available from private savings (Aaron 1966; Disney 1996; Creedy and van de Ven 1999). This can occur even with negative population growth, so long as productivity growth is sufficiently high (and during many periods the real rate of interest has been very low and sometimes negative). It is much too simplistic to argue, despite the repeated popular repetition, that the future generation of workers, when faced with a growing aged population to support, will not be prepared to pay the higher taxes involved.¹¹ Any discussion of the ‘burden’ borne by any generation of workers must consider transfers among at least three generations.

10.2.4 A misleading equation

This may also be an appropriate point to dispense with a misleading piece of algebra that is often used to highlight the strain under which the social insurance system is likely to find itself as a result of population ageing. This relies on a very simple view of the dependency rate and a completely static approach involving just two generations. If N_w and N_p are respectively the number of ‘workers’ and the number of ‘aged dependents’, p is the social expenditure per aged person, \bar{w} is the average earnings of workers and t is the average tax rate, the budget constraint faced by the transfer system alone is:

$$t\bar{w}N_w = pN_p$$

or:

$$t = \left(\frac{p}{\bar{w}} \right) \left(\frac{N_p}{N_w} \right) = RD$$

¹¹ It might instead be thought surprising that the ‘baby boomers’ have willingly financed the pensions of the previous generation, when faced with the repeated suggestion that the next generation will not in turn support them.

where R is the replacement rate and D is the aged dependency ratio. The substitution of sample numerical values for R and D (where the latter is based on age distributions alone) can easily generate alarm regarding the required value of t . Apart from treatment of just two generations, this formulation is much too simplistic in its treatment of the dependency ratio, the tax system and the specification of the replacement rate. For further extensions, see Creedy and Disney (1989, 1992) and Creedy (1992, 1998).

10.2.5 Social expenditure growth

Indeed, after the initial introduction of social insurance, its substantial increase as a proportion of GDP during the present century has been associated with factors other than ageing.¹² For example, rapid changes have been associated with the ‘displacement’ effects of wars, as suggested by Peacock and Wiseman (1967). They argued that people have views about public expenditure which are not necessarily compatible with their views about reasonable tax burdens. While these views are unsteadily balanced in times of peace, in periods of upheaval such as war, taxable capacity is raised as the usual constraints are relaxed. The increase in expenditure is maintained after war by what are called ‘inspection’ effects (the greater awareness of social conditions) and ‘concentration’ effects (the movement towards central government control). These and other arguments are examined in detail in Gemmell (1993).

In the major industrialised countries, transfer payments increased from about 10 per cent of government expenditure to about 40 per cent from the 1920s to the late 1980s; this involved an increase from about 1 per cent to about 12 per cent of GDP. In addition, the rate of growth of transfers has increased — for example, from about 10 per cent over the 1950s to about 18 per cent over the 1970s — during periods where it is hard to attribute a significant amount of the growth to population ageing. Public health spending alone has increased in the OECD countries from about 2.5 per cent of GDP in the mid-1960s to about 6 per cent of GDP in the 1980s, while the public share of total health expenditure increased from 60 per cent to 80 per cent over the same period. In Australia, transfer payments increased from 6.4 per cent to 15.4 per cent of GDP from 1968 to 1987. For further details, see Gemmell (1993, pp. 27–30, 155, 170) and EPAC (1994).

Having undergone these increases, that have been largely unrelated to population changes, it seems unduly alarmist to suggest that anticipated population ageing will

¹² On the rise of social expenditure from the late nineteenth century, see Lindert (1994).

create a social expenditure crisis. The history of social insurance has indeed shown it to have been in a constant state of transition over its short life.

10.3 Population projections

This section presents benchmark population projections for Australia for the period 2001–51, under alternative immigration assumptions. These are based on the estimated resident population as at June 1993 (ABS 1994a), mortality rates as described by the *Australian Life Tables* for 1985–87 (Office of the Australian Government Actuary 1991), and the age and sex distribution of the inward and outward migration flows between 1988–89 and 1992–93 (DIEA 1994). The projections assume that fertility rates remain constant at the 1993 level. However, mortality is assumed to decline as described by the long term rates of annual change estimated by the ABS (1989a). Further detailed information about the assumptions and the data used is provided in Alvarado and Creedy (1997).

Four alternative levels of annual immigration, defined as permanent arrivals, are considered: 170 000 immigrants per year, which represents high immigration; 125 000 immigrants per year, which is similar to the average intake experienced during the second half of the 1980s; 80 000 immigrants per year, which is closer to the 1990's levels; and a low immigration level of 40 000 people per year. Much of the following discussion focuses on an immigration level of 80 000 people per year, with the alternative levels used for comparison purposes. These figures represent the assumed constant number of immigrants per year. The extent and age distribution of outward migration, defined as permanent departures, are assumed to remain constant at the average of the period 1988–89 to 1992–93, which involves approximately 27 500 people per year.¹³

10.3.1 Age structure

Table 10.2 shows population projections for the years 2001, 2021 and 2051, assuming annual immigration of 80 000 people. The figures suggest that although Australia has one of the youngest and fastest growing populations of the Western countries, it is projected to grow older rapidly during the next few decades. The proportion of people aged younger than 40 falls from 61 per cent in 1993 to 45.7 per cent in 2051, while those aged 65 and over increases from 11.7 per cent to 23.6 per cent during the same period.

¹³ The number of net migrants actually varies over the projection period, since outward migration is specified in terms of age-specific transition proportions.

Table 10.2 Population projections 2001–51, with annual immigration of 80 000

<i>Age group</i>	<i>2001</i>		<i>2021</i>		<i>2051</i>	
	<i>'000</i>	<i>%</i>	<i>'000</i>	<i>%</i>	<i>'000</i>	<i>%</i>
1–14	3 686	19.4	3 637	16.8	3732	15.8
15–24	2 597	13.7	2 716	12.6	2757	11.7
25–39	4 282	22.5	4 254	19.7	4313	18.3
40–49	2 827	14.9	2 828	13.1	2915	12.3
50–59	2 342	12.3	2 905	13.4	2942	12.5
50–64	823	4.3	1 380	6.4	1391	5.9
65–69	669	3.5	1 191	5.5	1299	5.5
70–74	611	3.2	1 026	4.7	1154	4.9
75–84	860	4.5	1 215	5.6	1977	8.4
85–99	293	1.5	459	2.1	1149	4.9
TOTAL	18 992	100.0	21 611	100.0	23 630	100.0

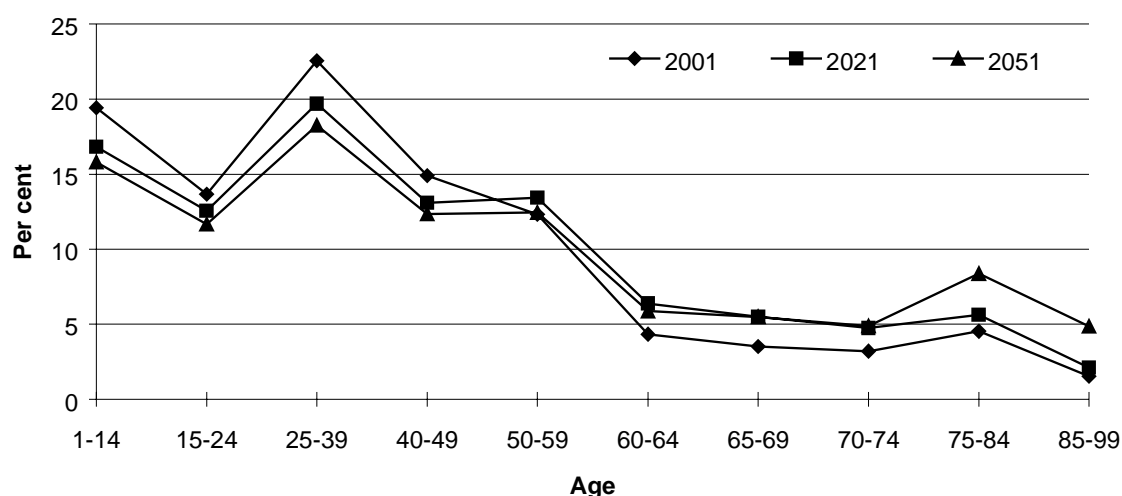
Population ageing is projected to accelerate, particularly during the second and third decades of the next century (although only selected decades are shown in the table), with the number of people aged 65 and over increasing by 44 per cent between 1993 and 2011, 61 per cent during the following 20 years, and 17 per cent between 2031 and 2051. The number of people aged 40–64 is projected to increase from 27 per cent to 34 per cent of the total population between 1993 and 2011, although it falls to 31 per cent by 2041. Even more dramatic is the appearance of the ‘ageing of the aged’ phenomenon. While the number of people aged 65 and over is projected to increase three-fold between 1993 and 2051, those aged over 74 experience a four-fold increase and those aged over 84 are multiplied seven-fold. Although the ageing appears to slow down after 2031, it is projected that the number of people aged over 74 will increase by over 800 000 during the two decades to 2051.

The aggregate age distributions are also displayed in figure 10.1. This clearly displays the extent to which the distribution ‘rotates’ in an anticlockwise direction over the period.

10.3.2 Alternative immigration assumptions

Table 10.3 shows the effect of alternative levels of immigration on the age structure of the population. Compared with the lowest migration case of 40 000 people per year, by 2031 a level of 80 000 people reduces the proportion of those aged 65 and over by 1.1 percentage points; it falls by 2.2 percentage points with an intake of 125 000; and by 3.1 percentage points with 170 000 migrants. However, this retarding of the ageing effect is achieved at the expense of higher population

Figure 10.1 Age distributions as a proportion of the total population
Population projection, 2001–51



increases. By 2031, an intake of 170 000 immigrants per year increases total population by 30 per cent more than does an annual intake of 40 000 immigrants.

The younger the migrant intake, the more immigration can slow down the extent of population ageing in the destination country. Almost 60 per cent of the migrants who arrived in Australia between 1988-89 and 1992-93 were aged younger than 30. These data were used to make the base projections presented in table 10.3. To illustrate the impact of a younger cohort of immigrants, the table also shows projections of the age structure of the Australian population assuming that 80 per cent of the intake of migrants to Australia between 1988-89 and 1992-93 was made up of people aged younger than 30. For further details of these projections, see Alvarado and Creedy (1997).

The younger assumed age structure of the annual migrant intake does, as expected, slow down the extent of population ageing. Comparing the impact of a migrant intake of 80 000 people, by 2031 (not shown in the table) a younger immigration level of 80 000 people increases the percentage of people aged 1–39 by almost 2 percentage points, and reduces the percentage of people aged over 65 by 1.1 percentage points.

Table 10.3 Age structure and Immigration

Base case					Younger migrants				
Year	Immigration intake	Percentages aged			Total	Percentages aged			Total
	('000)	1–39	40–64	65+	('000)	1–39	40–64	65+	('000)
2001	40	55.3	31.7	13.0	18 652	55.5	31.5	13.0	18 657
	80	55.6	31.6	12.8	18 992	56.1	31.1	12.7	19 003
	125	56.0	31.3	12.6	19 375	56.8	30.7	12.5	19 392
	170	56.4	31.1	12.4	19 758	57.4	30.3	12.3	19 781
2021	40	48.3	32.9	18.8	20 260	49.1	32.3	18.6	20 352
	80	49.1	32.9	18.0	21 610	50.7	31.8	17.5	21 794
	125	49.9	32.9	17.2	23 130	52.3	31.3	16.5	23 417
	170	50.6	32.9	16.5	24 649	53.6	30.8	15.6	25 040
2051	40	44.7	30.5	24.9	20 507	45.9	30.1	23.9	20 943
	80	45.7	30.7	23.6	23 630	47.8	30.1	22.1	24 501
	125	46.6	30.8	22.5	27 143	49.4	30.1	20.6	28 503
	170	47.3	31.0	21.7	30 656	50.5	30.1	19.4	32 506

10.4 Social expenditure projections

The importance attached to social expenditure has given rise to several projections for a variety of countries. These projections are based on the same general type of accounting framework, using information about expenditure costs in several categories and age groups, along with assumptions about relevant growth rates. The studies include those by international organisations such as the International Monetary Fund (IMF) and the OECD (Heller et al. 1986; Hagemann and Nicoletti 1989). Projections of social expenditure in Australia have been made by Kelley (1988), Creedy and Taylor (1993a, 1993b), Economic Planning Advisory Council (EPAC) (1994, 1988) and Alvarado and Creedy (1997). These studies typically find that the ratio of social expenditure to GDP is projected to be lower in Australia than in many other countries. A major reason why Australia differs from the majority of OECD countries is the influence of high immigration which, as seen in the previous section, has the effect of slowing down the extent of population ageing.

10.4.1 Age and social expenditure

An initial indication of the potential influence of population ageing on aggregate social expenditure can be obtained from data on the costs per year per capita on each expenditure category. However, despite the importance attached to this subject, there is in fact an appalling paucity of detailed data. Furthermore, the most

comprehensive information relates to over a decade ago. Table 10.4 presents social expenditure per capita (in 1998 dollars) in seven categories; the age pension, other aged assistance, unemployment benefits, other social security,¹⁴ health, education, and employment.¹⁵ It must be stressed that these data can be regarded as, at best, approximate. Furthermore, the links between these aggregate figures and the costs involved in the relevant systems (for example, the system of unemployment benefits) are far from transparent. Unfortunately, it is not possible to disaggregate the expenditures further; a male/female division would obviously be desirable.

The items shown in table 10.4 are the main categories of government social expenditure that vary with age. Unemployment benefits, education, and expenditure on employment programs are concentrated on people aged under 60, while the rest of government social expenditure increases substantially when people reach age 60 and over. In total, social expenditure per person on people aged 75 and over is 5.2 times higher than public outlays on people aged under 16.

In other words, age-related growth is dominated by health and the age pension. In

Table 10.4 Social expenditure costs (in 1998 dollars) per person per year^{a,b}

Age	Age pension	Other age assistance	Unemployment benefits	Other social benefits	Health	Education	Employment	Total
0–15	0	3	0	883	443	1 913	2	2245
16–24	0	2	384	346	443	1 829	165	2870
25–39	1	2	300	423	602	303	59	1691
40–49	6	3	211	503	565	141	38	1466
50–59	57	6	215	1 088	942	58	25	2390
60–64	1 139	12	184	1 729	1 579	24	13	4681
65–69	2 430	31	0	2 041	2 185	16	0	6703
70–74	3 368	60	0	1 626	3 255	16	0	8325
75+	4 168	263	0	1 135	6 111	12	0	11689

^a These data were compiled and presented by Creedy and Taylor (1993a, pp. 48, 55–6). ^b Data on social expenditure were obtained from Commonwealth and State spending figures for 1988 (DCSH 1990, pp. 18–25, 28). The spending breakdown was more detailed for Commonwealth than for State outlays, which covered only the broad groupings of welfare, health and education. Dividing the sum of total State and Commonwealth expenditure in each category and age group by the total population age distribution at June 1988 (ABS 1989c) gives per capita spending. Table 10.4 has revised values for education expenditure in age groups 0–15 and 16–24. I am grateful to Ian McDonald for pointing out a transposition error in the original source.

¹⁴ Other social security includes Commonwealth assistance to veterans, the handicapped, families, sole parents and widowed people, and other welfare payments such as outlays for funerals and temporary accommodation. State welfare payments are also included.

Australia, the importance of the age pension is lower relative to other countries, in view of the fact that it is only intended to provide a basic retirement income and is means tested. It is clear that population ageing is likely to alter the relative importance of the different items of social expenditure as well as changing the aggregate level.¹⁶ Indeed, it is likely that the most important policy implications concern the need to plan for the changing composition of expenditure, rather than the change in the aggregate level.

If all items of social expenditure per person are assumed to grow at the same rate as productivity, and if all age-specific unemployment and labour force participation rates remain constant, it is clear that the value of aggregate social expenditure, expressed as a proportion of GDP, depends only on the population age structure. This simple property has perhaps had an unduly large influence on the production and interpretation of projections of future social expenditures; that is, emphasis has typically been given to ageing alone, to the exclusion of many other considerations. In particular, population change has often been treated as being exogenous, whereas it is perhaps best seen as involving complex interdependencies.

10.4.2 Benchmark expenditure projections

This subsection presents some examples of projections of social expenditure, (expressed as a ratio of gross domestic product) associated with the population changes discussed in the previous section. The approach involves the production of projections of GDP over the relevant period, along with the levels of social expenditure on each of the expenditure categories in table 10.4. The GDP projections depend on the labour force participation and unemployment rates of males and females in each age group, along with the rate of productivity growth. Using the above per capita social expenditures in each age group, and making assumptions about their growth over the period, aggregate social expenditure can be calculated.

The projections consequently require, in addition to the cost and population data, assumptions about growth per spending category, age-specific and sex-specific participation and unemployment rates, and assumptions regarding future productivity growth. Age and sex specific participation and unemployment rates of

¹⁵ Employment costs may underestimate total social spending in this category because data for State spending on employment in DCSH (1990) were not included as a separate category. State employment spending not included in State welfare payments is therefore excluded.

¹⁶ This may cause a change in the mix of Commonwealth and State outlays. For example, as education spending falls and aged assistance and health expenditure rises, Commonwealth social outlays increase in importance relative to State social expenditure.

the labour force are shown in table 10.5. These rates are assumed to be constant throughout the projection period, although it would be a straightforward matter to allow them to vary in a specified way.¹⁷

Table 10.6 presents social expenditure projections for a population age structure estimated assuming annual immigration of 80 000 people, which is the same population age structure as that presented in table 10.2. Expenditure projections are reported for the period 2001–51, taking 1988 as the base year.¹⁸ Productivity and per capita costs in each social expenditure category are all assumed to grow at 2 per cent per year, so that the changes are related purely to ageing, as mentioned above. The expenditure categories are the same as those used in table 10.4.

Most social expenditures are concentrated in only three categories: these are health, other social security, and age pension. These categories are highly sensitive to population ageing, particularly age pension and health expenditures. In 1988, 67 per cent of total social expenditure was concentrated in those three categories. By 2051 it is projected that 80 per cent of social expenditure will be made up of health, other social security, and age pension expenditures. Expenditures on age pensions are projected to experience the fastest growth. Most of that increase occurs during the first four decades of the projection period, reflecting the pattern of population ageing. Health expenditures are projected to increase substantially. As with age pensions, most of that rise is projected to occur during the first decades of the next century. (The problems of predicting the growth of per person costs in these areas is discussed below).

The trends described above are reflected in the social expenditure to GDP ratios. As the population ages, education spending as a proportion of GDP decreases, while expenditure on the age pension, other age assistance and health increase as a proportion of GDP. The aggregate social expenditure ratio is projected to increase because of the combined effect of population ageing and the fact that expenditure per person on old people is projected to be much higher than that on younger age groups. Table 10.7 shows the ratio of social expenditure to GDP corresponding to the dollar amounts presented in table 10.6. At an aggregate level, the social expenditure to GDP ratio is projected to increase by just under 50 per cent, from approximately 0.18 to 0.26 during the projection period.

¹⁷ Creedy and Taylor (1993a, 1993b) conducted sensitivity analyses where explicit allowance was made for changes in unemployment rates and their effect on the growth rate of expenditure on unemployment benefits.

¹⁸ The GDP figure for 1987–88 is \$299 920 million; I am grateful to Ian McDonald for pointing out an error in the figure used in Creedy and Taylor (1993a), which was too low, thereby producing social expenditure to GDP ratios that were too high.

Table 10.5 Unemployment and participation rates (per cent)

<i>Age Group</i>	<i>Unemployment rate</i>		<i>Participation rate</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
0–14	0.0	0.0	0.0	0.0
15–24	12.8	13.4	73.5	65.9
25–39	5.3	6.9	94.6	64.5
40–49	4.2	4.8	93.3	66.3
50–59	4.9	4.5	80.7	41.8
60–64	8.7	1.0	48.7	13.3
65–69	0.4	0.0	13.4	4.6
70–74	0.6	0.0	9.3	2.2
75+	0.0	0.0	4.4	0.9

Source: Creedy and Taylor (1993a, p. 49).

Table 10.6 Social expenditure projections, by category (\$ million)

<i>Category</i>	<i>2001</i>	<i>2021</i>	<i>2051</i>
Age pension	12 401	29 006	76 087
Other allowances	539	1 163	3 476
Unemployment benefits	4 575	7 300	13 440
Other social security	19 434	36 360	73 883
Health	27 124	53 950	131 577
Education	17 706	26 656	49 370
Employment	1 120	1 739	3 202
Total	82 899	156 175	351 034

Table 10.7 Social expenditure as a percentage of GDP, by category

<i>Category</i>	<i>2001</i>	<i>2021</i>	<i>2051</i>
Age pension	2.74	4.03	5.70
Other allowances	0.12	0.16	0.26
Unemployment benefits	1.01	1.01	1.01
Other social security	4.30	5.05	5.53
Health	6.00	7.49	9.86
Education	3.92	3.70	3.70
Employment	0.25	0.24	0.24
Aggregate	18.33	21.69	26.29

Table 10.8 Aggregate social expenditure as a percentage of GDP

<i>Immigration</i>	<i>2001</i>	<i>2021</i>	<i>2051</i>
40 000	18.43	22.27	27.35
80 000	18.33	21.69	26.29
125 000	18.22	21.14	25.42
170 000	18.12	20.66	24.76

10.4.3 Alternative immigration assumptions

In examining the impact that alternative levels of immigration can have on the social expenditure ratio, table 10.8 presents the aggregate social expenditure to GDP ratio under alternative immigration assumptions. It can be seen that higher levels of immigration might be expected to retard the growth of the social expenditure to GDP ratio. For example, by 2051, an immigration level of 40 000 is projected to produce a social expenditure to GDP ratio of 0.2735, whereas with an annual intake of 170 000 people that ratio is projected to be 0.2476. The increase in the ratio of social expenditure to GDP falls as immigration increases. Thus, although higher immigration levels increase the size of the population, the impact of immigration on the age structure of the population, holding all other factors influencing public expenditure constant, is to restrain the growth of the ratio of social expenditure to GDP during the projection period.

As shown above, the retarding of the ageing effect is greater the younger the migrant intake. So it would also be expected that the slowing down of the rate of growth of the social expenditure to GDP ratio would be stronger with a younger migrant intake. This is illustrated in table 10.9 which presents projections of the aggregate social expenditure to GDP ratios corresponding to the age structure of the Australian population which would result from a younger migrant intake such as that assumed in calculating the age distributions shown in table 10.3 (where it was assumed that the participation of immigrants aged younger than 30 increased from 59 per cent to 80 per cent of the total immigrant intake).

Comparing the values in tables 10.8 and 10.9, it can be observed that a younger migrant intake, through slowing down the extent of population ageing, retards the growth of the ratio of social expenditure to GDP. For example, by a younger migrant intake of 80 000 people would reduce the social expenditure to GDP ratio by 0.0139 by 2051. As expected, the fall in the ratio increases with the size of the intake of immigrants.

Table 10.9 Social expenditure to GDP ratios with younger migrants

<i>Immigration</i>	<i>2001</i>	<i>2021</i>	<i>2051</i>
40 000	0.1847	0.2216	0.2667
80 000	0.1840	0.2150	0.2521
125 000	0.1832	0.2086	0.2405
170 000	0.1825	0.2032	0.2320

Given the age structure of the immigrant intake to Australia between 1988-89 and 1992-93, the social expenditure to GDP ratio is projected to be 0.2476 by the year 2051 if 170 000 immigrants settle in Australia each year of the projection period. A similar social expenditure to GDP ratio could be achieved by the year 2051 with only about half that intake of immigrants, but with an increase in the participation of immigrants aged younger than 30 from 59 per cent to 80 per cent of the total annual intake.¹⁹

10.4.4 Sensitivity analysis

One criticism that can be made of the use of this type of projection approach is that too often only single values of the ratio of total expenditure to GDP, based on a single set of assumptions, are presented. However, it is important to appreciate the sensitivity of results to variations in the underlying assumptions. For example, the results presented in the previous subsection have shown that the ratio of social expenditure to GDP is strongly affected by the number and age distribution of migrants. Furthermore, the assumption that all items of expenditure grow at the same rate (per capita) as productivity, and that age-specific participation rates and unemployment rates remain constant, was made in order to concentrate on the effects of population ageing alone. Yet it is most unlikely that these factors will remain constant over such a long period.

Productivity growth is particularly important. The sensitivity of the results to the growth of productivity alone is shown in table 10.10, which shows alternative projections of the aggregate ratio of social expenditure to GDP under the assumption of 80 000 immigrants. For each change in productivity growth of 0.002, or 0.2 of a percentage point, the ratio of total social expenditure to GDP in 2051 changes by about 3 percentage points. Sufficiently high productivity growth can of

¹⁹ The population projections and social expenditure projections reported here are all based on the standard assumption that immigrants immediately acquire the characteristics of the resident population, in terms of their fertility and mortality rates and propensity to claim social security benefits. For further discussion of the effects of relaxing this strong assumption, see Alvarado and Creedy (1997).

course produce a decline in the social expenditure ratio, despite the population ageing effect, as indicated in the last row of table 10.10.

Furthermore, it is unlikely that female participation rates would remain at the relatively low levels shown in table 10.5, given the assumed decline in fertility rates. Suppose that the (percentage) participation rates, for age groups 15–24 to 75 and over respectively, are 70, 80, 80, 70, 40, 10, 7 and 2. For the benchmark assumption of 80 000 immigrants and 2 per cent productivity growth, then social expenditures as a percentage of GDP for the years 2001, 2021 and 2051 respectively are found to be 16.44, 19.24 and 23.33; for the higher productivity growth of 2.2 per cent, these fall to 16.02, 18.04 and 20.62.

Table 10.10 Social expenditure as a percentage of gross domestic product, with alternative rates of productivity growth

<i>Productivity growth</i>	<i>2001</i>	<i>2021</i>	<i>2051</i>
0.018	18.81	23.14	29.75
0.020	18.33	21.69	26.29
0.022	17.87	20.34	23.24
0.024	17.42	19.06	20.35
0.026	16.99	17.88	18.17
0.028	16.56	16.76	16.07

10.4.5 A sampling distribution of projections

There is obviously considerable uncertainty over the growth rates of social expenditure items, particularly those of pensions and health, along with the other variables that enter into the projections of the ratio of social expenditure to GDP.²⁰ The considerable variation in these items in the past, caused by factors that are largely unrelated to population ageing, shows that they are most unlikely to remain as constant as assumed in the projections. It is by no means clear whether they will decrease or increase.²¹

One way to allow explicitly for this uncertainty is to introduce a random or stochastic specification of the projection model whereby each of the relevant variables is assumed to follow a specified distribution, rather than being set at a fixed value in each projection period. A single projection is based on one random

²⁰ However, Luski and Weinblatt (1998) suggested that the income elasticity of most items is unitary in high income countries, and higher in low income countries.

²¹ The introduction of compulsory superannuation is of course designed to reduce the reliance on the means-tested age pension. But it is complicated by the ability to take benefits as lump sums and the extent of early retirement.

draw from each of the specified distributions. A large number of such projections can be produced, so that a ‘sampling distribution’ can be generated, thereby making it possible to consider the statistical properties of the projections. This approach makes it possible to determine the circumstances under which differences in social expenditure ratios are statistically significantly different.

A method of producing sampling distributions was proposed by Alvarado and Creedy (1997). For example, suppose that each of the growth rates is described by a normal distribution with a mean equal to the assumed fixed value used to produce earlier projections. However, the variance depends on the degree of uncertainty regarding the variation. The sampling distribution of the ratio of social expenditure to GDP — obtained by producing repeated calculations based on random drawings from the distribution of each variable — is itself found to be approximately normal.²² This sampling distribution is more dispersed, the longer the period over which projections are made.

Consider the ‘benchmark’ case used above where immigration is 80 000 per year, and growth rates are all 2 per cent per year. Suppose that in each case 95 per cent of values are thought to be in a range from 10 per cent less than the arithmetic mean to 10 per cent greater than the mean. The application of the stochastic model to the year 2051, for 5000 repetitions, gives a distribution of the ratio of social expenditure to GDP. This distribution has a median that is, as expected, very close to the projected value in table 10.7. However, the 5th and 95th percentiles are 23.36 and 29.64 respectively, while the lower and upper quartiles of the distribution are 25.09 and 27.68 respectively. The 95th percentile for 2021 is found to be 23.20, which is only slightly below the 5th percentile of 2051. Furthermore, the 5th percentile of the 2021 distribution and 95th percentile of the 2001 distribution are respectively 20.31 and 19.05. Again these differences are small, even though it may be said that the differences between the projected values are statistically significant at the 5 per cent level. The allowance for some uncertainty about rates of growth therefore provides a useful addition to the standard projections, and suggests that statements about social expenditure costs in the next century should be highly qualified.

10.5 Conclusions

This paper has discussed some of the factors affecting the link between population ageing and social expenditure. The role of earlier demographic transitions in influencing the shift from a predominant use of intra-family transfers and support

²² Even if each variable is assumed to be lognormally distributed, simulations reveal that the sampling distribution of the social expenditure ratio are nevertheless approximately normal.

systems towards some form of social insurance system, financed from current tax revenue, was discussed. However, the demographic transition was just one of a number of changes leading towards the introduction of social insurance. Furthermore, the subsequent substantial growth of social expenditure over a relatively short period has been largely independent of the population age distribution.

Projections of the ratio of social expenditure to GDP were presented, using a range of assumptions. In particular, projections appear to be relatively sensitive to changes in productivity growth, participation and unemployment rates. In addition, allowing for uncertainty about rates of growth of productivity and social expenditures introduces a large dispersion in the social expenditure/GDP ratio. The changes in the social expenditure ratio over the long period up to the middle of the next century (2051) were, with a relatively small degree of uncertainty in each of the relevant variables, found to be only just significantly different.

Some growth in social expenditure, relative to GDP, is expected, but it seems excessive to view this in terms of leading to a social security crisis. Nevertheless, careful planning will be required to deal with the changing composition of social expenditure, and this changing composition is in many ways the most interesting and challenging aspect arising from population ageing. Social insurance arrangements will experience, as they have done over their short history, a continual process of transition.

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Discussant — Ann Harding

Introduction

When trying to project the future characteristics of the population and the impact of population ageing on social expenditures, three modelling techniques are particularly useful. These are hypothetical, group and dynamic micro-simulation models. The paper by Professor Creedy provides us with an example of a group model.

Hypothetical models

Hypothetical models analyse the situation of an individual (or family), whose particular characteristics are defined by the model user. Thus, a hypothetical model might look at the future superannuation of a single woman earning average earnings and working full time for 20 years and part time for 20 years. Such models are very useful for analysing policy outcomes for *particular types of individuals* and can incorporate enormous detail. The Retirement Income Modelling Hypothetical (RIMHYPO) model developed by Treasury is a good example of this type of model (Gallagher 1995), as is the effective tax rates model developed at the National Centre for Social and Economic Modelling (NATSEM) (Beer and Harding 1999).

Hypothetical models are especially useful for providing information about how a particular type of family or person is likely to be affected by an existing program or by a possible policy change. What such models cannot tell you, however, is *how many* such families there are in the Australian population. As a result, such models cannot be used to obtain estimates of aggregate budget outcomes or distributional outcomes for the whole population.

Group models

Group models divide the population into a set of groups defined by characteristics such as year of birth, sex, marital status and labour force status. The extent of diversity is thus effectively constrained by the number and type of groups specified.

The output from such models is again very useful to policy analysts. For example, see the Retirement Income Modelling Group Superannuation (RIMGROUP) model developed by the Treasury and the paper by Bruce Bacon in this publication

(Rothman 1996 and 1997). The paper by John Creedy in this publication is also an example of a group model. In projecting future social expenditures, Creedy has divided the population into 10 groups defined by age, while, in projecting future gross domestic product (GDP), he has divided the population into 20 groups defined by age and sex.

What are some of the limitations of group models? First, there are definite constraints on the diversity of the groups that can be considered. Suppose, for example, that Creedy had found from other research that both income and gender play a major role in the usage of health and education services and that it is important to also include these variables in his projection model. If he divided the population into 10 income deciles, then there would now be 200 groups in the model to keep track of in future years (10 age ranges x 2 sexes x 10 income groups). Suppose further that whether or not the individuals still live with a spouse emerged as another key predictor of future expenditure on nursing homes and health. Then, for each of the 200 groups, there would have to be a further division into married/not married, resulting in 400 groups to keep tabs on. It is thus easy to see how group models can easily become intractable, once more sophisticated modelling is desired. Keeping the size of groups down to manageable levels means failing to capture the diversity present within the population. And to the extent that such diversity and different characteristics are in fact key predictors of whatever the model is looking at, inaccuracy is introduced into the results.

Another difficulty is that people can generally not move from one group to another. As a result, for example, such models usually cannot cope with changes in circumstances, such as divorce. They also cannot cope easily with fluctuating individual earnings over a lifetime, with people often being assigned to a lifetime earnings group and then experiencing the average outcomes for their group. Thus, for some population sub-groups of interest — such as sole parents for example — group models cannot provide comprehensive estimates of likely asset holdings and retirement incomes.

Finally, group models provide details of the *average* experience for each of the groups specified within the model. They do not provide details of the degree of dispersion around that mean experience. For example, rather than just showing the average age pension received by a particular group within the model, policy makers might want to know what proportion of that group received no age pension and thus just how skewed the distribution of the pension was.

Dynamic micro-simulation models

Dynamic micro-simulation models are a relatively new type of model that can provide both detailed distributional answers and profiles for small population subgroups (such as sole parents), as well as aggregate budgetary estimates. What is so different about dynamic micro-simulation models? The key difference is that *individuals* form the basis of the model and that such individuals make up a representative sample of the population. This means that the individuals within the model retain the diversity of experiences apparent in the real world, but that conclusions can still be drawn for all of Australia. Such models thus embody the key advantages of the hypothetical and group models, but do not suffer from their major disadvantages.

NATSEM's dynamic model begins with the 1986 Australian 1 per cent Census sample file, which consists of over 150 000 individuals. These individuals then experience a range of life events, in line with Australian data about the probabilities of those events happening to real Australians. The life events included in the current version of the model include: death; fertility; couple formation and dissolution; emigration and immigration; primary, secondary and tertiary education; labour force changes (full time and part time employment, unemployment and not in the labour force); disability onset and recovery; and earnings (Antcliff 1993; Antcliff et al 1996). (A wide range of technical papers describing the DYNAMOD-2 model are about to be published.) The original population sample is thus aged year by year (or, in some cases, month by month) for, say, 30 to 50 years.

Individual records in the model are linked to simulate couple formation, and the links are broken to simulate couple dissolution. Links are maintained between the records of parents and their children and between current and ex-spouses. In this manner, the model maintains the diversity in the population, copes very well with couple formation and dissolution, and, importantly, allows generation of a longitudinal history (or future) for individual cases in the model. This longitudinal element is essential in order to capture the accumulation processes which underlie superannuation and asset income. Alternative futures can be simulated by varying particular probabilities, such as the chance of becoming full time employed or of having a first child, given certain characteristics. The model also contains a capacity to make the summed outcomes for all individuals within the model fit some exogenously imposed total. (For example, the proportion of all women of a certain age range that are to be employed full time in 2010 can be set by the user.)

The model's population projections by age and gender closely match ABS population projections for the next few decades. What is unique about the model's output is:

- the degree of detail about the forecast characteristics of individuals (resulting in a *holistic* approach which is essential because, for example, the capacity of the baby boomers to shoulder their own costs will depend upon a multitude of factors, including their likely retirement incomes, their health status, their family relationships and the existence of kin, the forecast social security and health programs rules prevailing at that time, their accumulated assets, the extent of economic growth, and so on);
- the ability to group individuals into *families* (which allows, for example, exploration of such questions as the likely availability of future carers as the population ages); and
- the ability to use the resultant database to either analyse a future cross-section (such as Australia in 2030) or to examine the *longitudinal* profiles of the simulated individuals within the model (for example, to track the accumulation of superannuation entitlements over a 20 year period).

Another key advantage of dynamic micro-simulation models is to undertake scenario testing — ‘what if’ analysis. Suppose, for example, that a government looking at Creedy's projection that social expenditures would increase from 18.3 per cent of GDP in 2001 to 26.3 per cent of GDP in 2051 decided that Australia could not afford that degree of increase. They could not readily use the Creedy model to look at what impact possible policy changes might have on this result. In a dynamic micro-simulation model, on the other hand, all of the processes and rules included within the model can be easily changed, so that ‘what if’ analysis can be readily undertaken.

Dynamic micro-simulation models also have significant disadvantages. One key problem — insufficient computing power and resultant lengthy run times — is being continually reduced in importance due to improvements in computer hardware. Another key problem is the availability of sufficiently good micro data, needed both to form the base data set for the model and to estimate the probabilities of change occurring and the determinants of behaviour. Such estimates are, of course, subsequently coded into the model in the attempt to replicate the behaviour of real Australians. Again, the availability of such data in Australia has improved greatly in the past decade, with cross-sectional micro data readily available and some (still relatively limited) longitudinal micro data available.

But the other major problems of cost and time remain. It takes many person years to construct a sophisticated dynamic micro-simulation model. As a result, such a project is very costly, generally more than \$1 million. This is a direct result of the

complexity of the model. While part of this time is taken in actually writing the computer code for the model, the majority is taken in deriving estimates of the behaviour of Australians. To give just one example, if it is desired to replicate in the model monthly labour force transitions from, say, part time to full time employment by age, gender, marital status and education level, then econometric techniques must first be used to calculate the relative likelihood of such transitions occurring. Finding a suitable data source, identifying what is possible with the (always limited) range of variables present in that source, and then actually undertaking the estimation takes many months. Thus, it is simply not possible to have a very complex model which attempts to replicate behaviour across a very wide range of research areas, and to also construct such a model quickly and within a small budget!

Despite these problems, the rising concern about population ageing overseas has prompted the development of new dynamic micro-simulation models or the extension of existing models in the 1990s. For example, the Canadian Government has developed DYNACAN, a dynamic model designed to project the future liabilities of Canada's public retirement incomes program (Morrison 1997). Similarly, the MOSART model was extended in the 1990s to simulate public disability and old age pensions in Norway (Andreassen et al. 1996; Andreassen and Texmon 1997). The French *Destinie* model was recently revamped to look at the rates of return from public pensions for different generations (Bonnet and Mahieu 1998). In the US, social security is being added to the CORSIM dynamic model to resolve questions about intergenerational equity and the treatment of different groups and cohorts by the American social security system (Favreault and Caldwell 1997). And asset holdings are also being added to the CORSIM model, allowing the projection of past and future wealth patterns (Caldwell and Keister 1997). Laditka (1996) has recently built a dynamic model to estimate the changes in functional status for an American cohort aged 70 or over, with the level of functional status then being used to simulate nursing home admission and discharge.¹

The unique scope for dynamic micro-simulation models to answer questions about the impact of population ageing is also resulting in research teams across the world successfully bidding for funds to develop or extend dynamic models. For example, a team including Paul Johnson and Jane Falkingham at the London School of Economics (LSE) have won A\$1.6 million of Economic and Social Research Council funding to develop POPSIM during the next five years, a dynamic micro-simulation model designed to answer questions about the future of social policy in

¹ Other dynamic micro simulation models are also being developed to look at the development and treatment of diseases, including POHEM in Canada (Gribble 1997) and a model developed at the National Centre for Epidemiology and Population Health (NCEPH) in Australia (Mui 1997 and forthcoming).

an ageing. The Nuffield Foundation in the UK has funded a project to look at some of the consequences of alternative charging policies for care in later life, which will include the construction of a dynamic model (Hancock 1998). The Maxwell Centre for Demography and Economics of Ageing in the US has received a A\$1.5 million grant to develop a dynamic micro-simulation model of the health, family composition and economic resources of those aged 65 or more (Wolf et al. 1995). NATSEM at the University of Canberra has just gained three years of Australian Research Council funding to add superannuation and retirement incomes to the DYNAMOD-2 dynamic micro-simulation model. This work will be undertaken in close collaboration with the Retirement and Income Modelling Unit within the Commonwealth Treasury.

Conclusions

Although hypothetical and group models generate extremely useful answers for some types of policy questions, their ability to provide answers to complex questions about the likely implications of population ageing on social expenditure is limited. Policy makers are most likely to be interested in a holistic analysis of the circumstances of the aged in the next few decades. Thus, an analysis suggesting that outlays on the Pharmaceutical Benefits Scheme are likely to increase five-fold in the absence of policy change in the next 20 years (Walker, Percival and Harding 1998) is likely to immediately generate the following types of questions. What if the aged are asked to make a greater personal contribution to the costs of medicines? Are they likely to have sufficient personal resources to bear such costs? What other demands are likely to be placed on their incomes? Will their children have a capacity to pay higher taxes?

Consequently, answering questions about the impact of population ageing and about possible policy responses to that impact will require details not just about the health, asset holdings, children and spouses, housing tenure, or superannuation entitlements of the aged, but about all of these things *together*. Dynamic micro-simulation appears to be the only modelling tool capable of providing this degree of comprehensiveness. As the OECD (1996) — which has become increasingly concerned about the fiscal and other consequences of population ageing — recently concluded, micro-simulation modelling is among the few newer sophisticated techniques able to shed light on these types of issues.

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11 Ageing and the balance of responsibilities between the various providers of child and aged care: shaping policies for the future

Michael Fine¹

11.1 Introduction

This paper considers the effect of ageing on the future balance of responsibilities for providing care to older people and younger children. The age of the recipient is an important indicator of the need for care of both groups, so as the Australian population ages, changes may be expected in the total amount of care required.

The increase in the numbers of people at the upper end of the life course has been accentuated over the past decades by a parallel demographic development — that is, a reduction in the birth rate that has seen a decrease in the proportion of young children in the total population. Whilst attention to the demographic figures alone might suggest that such a reduction would be accompanied by a reduced overall demand for child care, there has instead been a significant expansion of formal child care provisions in Australia over the past three decades. This development raises important questions about the link between policy and the demography of particular age groups. It also casts doubt on the proposition that the care needs of an ageing population can be met by a simple switch of resources from care for the young to that for the old.

Irrespective of demographic developments, important shifts have also taken place over the twentieth century in the balance of responsibilities for providing care. In Australia there have been historically important shifts between the informal care provided by families and formal care provided by skilled, professionally qualified

¹ I would like to thank Hal Colebatch, Karen Fisher and Michael Bittman for comments on the first draft of this paper. Thanks also to Mandy Leratt and Ilene Wolcott for their suggestions on this version of the paper. The views proposed remain my own, as is responsibility for any errors.

staff (and also too often by unskilled and unqualified staff) in legally constituted organisations. Within the formal sphere, too, the balance between direct provision by for-profit businesses, governments (both State and Commonwealth) and charitable, religious and community non-profit providers has fluctuated considerably over the past 50 years in the fields of both aged care and child care. Different funding models, from complete user-pays systems to comprehensive government subsidy, have been tried with varying degrees of success over the same time span. How might this balance develop in coming years?

The central concern of this paper is the likelihood of future changes in the field of aged care with respect to what a number of European writers have come to term the ‘welfare mix’ — that is, the mix between family, the state and the market for underwriting and enhancing the welfare of the population (Evers 1988; Evers and Svetlik 1991). Section 11.2 focuses on a brief historic review of shifts in the balance of responsibility between family, the state and the market for providing care to children and older people, aiming to identify issues likely to determine current and future policy making.

This historical comparison reveals important common themes as well as significant points of contrast, and these are considered briefly in section 11.3. Section 11.4 considers two issues of fundamental importance arising from the foregoing account: the continuing importance of family support; and the capacity of the market to generate appropriate care solutions. Section 11.5 draws this evidence together, suggesting that it is more likely that the politics of the ageing rather than the demography will exert the greatest influence on policy development.

11.2 Brief review of the history of aged and child care

Forecasts of the nature, extent and likely outcomes of technological, economic and social developments, especially in the medium to longer term, are typically viewed by scientists, policy makers and the public alike with a degree of scepticism, if not downright incredulity. Even the careful projections of Thomas Malthus (1766–1834) based on hard population data can be wide of the mark (cited in Barber 1967).

There is, in short, a dilemma to be faced in looking at topics such as the future impact of population ageing. This arises from the fact that while data on the future are at best incomplete there are good reasons for wanting to know about it so that measures might be taken to ameliorate potential problems and take advantage of emerging opportunities. But if population projections and projections of costs of an ageing population on their own are unlikely to give an accurate or comprehensive picture, what might be done to fill in the gaps?

Both childhood and old age have undergone considerable redefinition over the past two centuries, reflecting economic, political and social developments as much as or more than demographic changes (Aries 1972; Phillipson 1982; Lasslet 1995). Policy in both child care and aged care also clearly mirrors broader changes in the relationship between the households and families from which individuals come, the economy/labour market and the state — the major institutional clusters which constitute the historical environment in which individuals needing care are born and live out their lives.

In examining the effect of ageing on the future balance of responsibilities between the various providers of child and aged care, this paper therefore turns to history to discern patterns and trends which might help illuminate the darkness that so many see in the future. Although necessarily brief, the review of developments in the fields of child care and aged care presented below strongly suggest that demography does not determine not destiny.

11.3.1 Child care

The history of child care in Australia takes on a rather different character depending on the definition employed.² Defined broadly as arrangements for the care of children, child care has a history in Australia that pre-dates European settlement by many millennia. As this paper is concerned with relations between family, community, the state and the market, it will be confined to the period since the establishment of the state as the sphere of supreme legal authority. To keep the story as short as possible, key points in this history have been summarised in table 11.1.

Following Colebatch (1998), four main periods can be distinguished. The first of these periods covers the initial three decades of colonisation, from 1788 to around 1820. Government, such as it was during this time, understood that it had ultimate responsibility for the care of children from the time the English flag was hoisted. Government authorised and financed services, such as the orphanages and the 'Native Institution' founded in 1815, which operated under the supervision of private citizens generally appointed directly by government. The establishment of these facilities was accompanied by the enforcement of the responsibilities of parents, especially fathers, for their children (Gilding 1991; Ramsland 1986; van Krieken 1992).

² I am particularly indebted to Colebatch (1998) for the following account.

A second period that may be distinguished extends from the end of the rule of Governor Macquarie in 1821 through until around the time of Federation. As the colony developed, children at most levels of society were commonly expected to work. Often this involved forms of home production and outwork. Within the household, children were also often made responsible for the care of younger children. Work and care were clearly not seen as incompatible. Nevertheless, the idea that education was appropriate for all children gradually gained acceptance. By

Table 11.1 Overview of the history of child care in Australia since 1788

<i>Period</i>	<i>Policy developments</i>
Establishment (1788–1820)	<ul style="list-style-type: none"> • Government sponsored orphanages • Removal of children from unsuitable mothers; substitute care provision for working single fathers
Consolidation (1820–1901)	<ul style="list-style-type: none"> • The normalisation of marriage and family responsibility for children • Further development of orphanages and reform schools • Private boarding out of children (babyfarming), which led to passing of protective legislation (1870s) • 1880–1900 — establishment of compulsory education from age 6
Entrenchment and reaction (1901–70)	<ul style="list-style-type: none"> • Family seen as the central institution in care for children (for example, the Harvester Judgement 1907) • Government supervision of parental responsibility and intervention in selected cases, for example, ‘stolen generations’ and forced adoption practices • 1890–1920 — emergence of kindergartens, pre schools and day nurseries • 1940 and later — Commonwealth Government funding of demonstration child care centres and kindergartens in each State
The developing market for child care service (1970–present)	<ul style="list-style-type: none"> • 1970–90 — recognition of single parent families and re-emphasis on family for custodial and other purposes; end of widespread adoption practices, closure of orphanages and other large scale facilities • 1970 — initiatives to develop network of child care centres opposed by the Australian Labour Party • 1972 — passing of <i>Community Child Care Act</i>; capital and recurrent grants for non-profit centres; requirement that centres employ trained staff • 1974 — introduction of family day care; expansion of Commonwealth and State funding, from 1972–98, for approved child care places, initially in non-profit centres and, later in for-profit centres • 1984 — introduction of Out of School Hours Care Subsidy • 1988 — implementation of National Child Care Strategy to expand provision by over 30 000 places; further large scale expansion, especially in Out of School Hours Care places, via 1992–96 National Child Care Strategy • 1991 — shift from grants based on operational costs of centres to system of centre support plus means-tested per capita grants based on parental income, leading to ‘uncontrolled’ growth of for-profit centres • Provision of most services under the Children’s Services Program; funding mainly from the Commonwealth with some extra State funding for preschools and community centres • 1996–97 — end of operational grants to community based centres; Centrelink assessment of eligibility for child care payments; voucher-like user subsidy approach; review of priority of access guidelines, shifting from emphasis on working females

Source: Colebatch (1998, 1999); Brennan (1994); Gandavia (1978); Gilding (1991).

the end of the nineteenth century, government had accepted responsibility for providing all children with at least a basic education. As the economy and market developed, government's responsibility for child care expanded to arranging fostering and adoption, and enforcing the exclusion of children from the workplace by requiring attendance at school. What we would today probably call community initiative also shaped provisions through this period, as well, seeing the emergence of the first 'preschools' and later day nurseries (Brennan 1994).

The third period, from early in the twentieth century through to the post-war baby boom, is often thought of as one characterised by 'traditional family values'. Welfare departments were established and showed they were not reluctant to intervene to enforce parental responsibilities or to remove children from the care of those deemed to be unsuitable. This occurred most chillingly and most thoroughly in the 'stolen generations' of Aboriginal children forcibly and permanently removed from their parents (HREA 1997). Factory legislation excluding children and limiting the employment of females, together with developments such as the family wage provided under the Harvester Judgement of 1907, underpinned such policy. These and other developments were accompanied by reduced birth rates and a gradual increase in the participation of females in the paid workforce. The rate of increase in the participation of married females in paid employment rose sharply in the two decades following the Second World War. Yet, despite what might be imagined to be massive demographic pressures exerted by the rise in the birth rate that constituted the post-war baby boom, it was to take another quarter century before the provision of specialised child care facilities came to be widely acknowledged as a central issue for government in Australia.

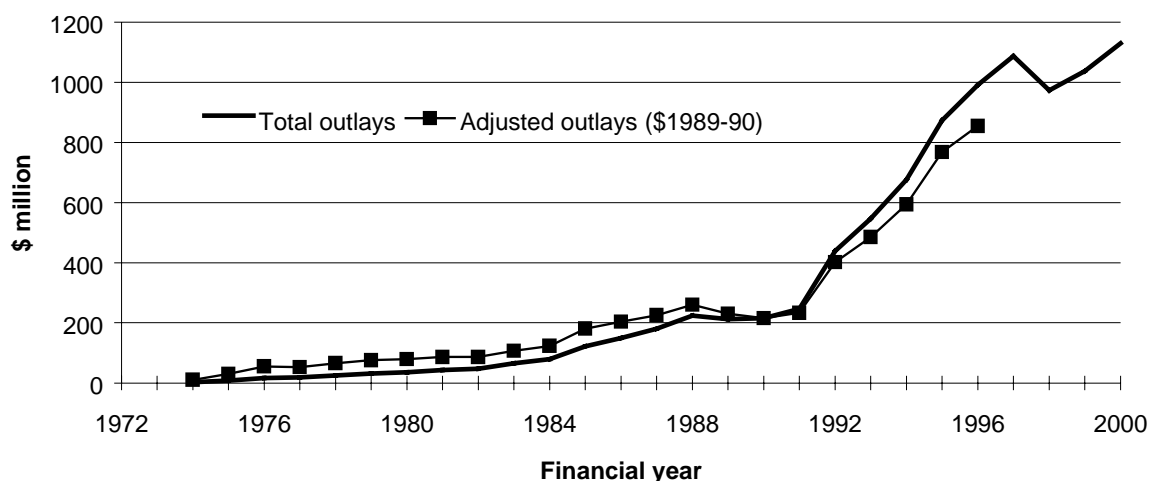
The expansion of formal services specialised in the provision of child care took part largely in the fourth period, which may be dated from around 1970. According to Brennan's (1994) history of the politics of Australian child care, educational justifications were initially emphasised by activists seeking an expansion in provisions. Increasingly, however, workforce considerations came to dominate the debate (Brennan 1994). Much of the initiative for this expansion came from feminists seeking practical means to release females, especially the mothers of young children, from full time domestic duties in order to engage in paid employment.

The 1990s have seen an increasing emphasis placed on access to formal child care services as a form of family support and as an equitable entitlement of all families, working or not. But economic arguments have been crucial in their expansion, with one important study commissioned by government (Anstie et al. 1988) showing that revenue gained from tax paid by females dependent on formal child care for their jobs exceeded government expenditure on child care by over \$106 million.

According to Brennan (1994), this was used to justify the expansion of subsidised child care places by a further 30 000 places. Even more successful in increasing total public expenditure on child care were arguments for a level playing field to be established across the industry. Fee relief became available in relatively unregulated private for-profit services as well as in the highly regulated community non-profit system. The result was a massive expansion in the total number of child care places from 114 391 in 1989 to 306 575 in 1996, with a corresponding growth in public expenditure on child care (figure 11.1).

Measures introduced since 1996 by the Coalition Government have seen the abolition of operational subsidies to non-profit community services, and a demand side measure limiting access to child care subsidies, effectively increasing the direct costs to many parents on low–middle level incomes (AIHW 1997). Subsidies are no longer paid in advance to service providers, but instead are paid in arrears to service users (parents) issued with a departmental card. Measures have also been taken to ensure assistance is targeted at working parents, and a cash rebate system was introduced for families using formal or informal child care for work related purposes. These and other measures are expected to affect demand and reduce the rate of growth in total care costs to the Commonwealth Government (Costello 1998). They may do this by reducing the use of community based long day care and possibly increasing the use of other types of service, such as for-profit long day care, family day care and other forms (such as nannies) for which a subsidy was previously unavailable.

Figure 11.1 Growth in Commonwealth expenditure on child care services, in current and constant (average 1989–90) prices (1998–2000 estimate)



Data source: DHFS (in Brennan 1994); AIHW (1997); Costello (1997 and 1998).

It is important to recognise that even with the expansion of child care services since the 1970s, the majority of child care continues to be provided by parents or as unpaid babysitting, generally provided by family. Many children in formal care attend on a part time basis (ABS 1996; AIHW 1997).

11.2.2 Aged care

Like child care, aged care is a field which may be defined narrowly, in terms of formal and formal services and facilities for the provision of specialised long term care for older people, or more broadly, bringing into scope the wide variety of sources of care and support that older people have drawn on over the period under review. In particular, the practical provision of aged care relies on unpaid assistance provided by family members, just as it overlaps extensively with that of medical and hospital care and, to a significant extent, with the field of housing, supported accommodation and income support.

The brief overview of the history of aged care in Australia presented here draws on Fine and Stevens (1998) who deal with aged care in New South Wales since white settlement. While some differences exist between care provisions in different Australian States, the general lines of development presented here are broadly representative of the national picture. In the interests of brevity, this account focuses on the development of the system of specialised formal services and facilities, touching only on the other forms of support where appropriate. As with the history of child care, four periods in the history of age care have been distinguished (table 11.2). These periods overlap to a significant extent with those outlined above for child care, but differ also in interesting ways, reflecting significant differences between the fields of aged and child care.

The first period, which extends from the time of European colonisation to the mid-nineteenth century, may be characterised by the view of older people needing care as being indigent, with the response being that they were made inmates of facilities for the destitute. Government took responsibility for ameliorating the conditions of those considered deserving of support but unable to provide for themselves, but sought to channel its response through a third party by providing grants to non-government organisations. A second, more benevolent period began to emerge by the time transportation of convicts had ceased and gold rushes had become the major source of new immigrants to this country. The new approach owed much to the emerging perspective on public health and health care provisions. A series of Royal Commissions and other public inquiries documented the condition of older people in the asylums for the destitute, and recommended a different approach to their care. Care remained largely prescriptive but now there were nurses to ensure the prescriptions were carried out with a higher degree of skill and humanity than

ever before. An important feature of this period is evidence that concern for the plight of older people and others needing support extended beyond government. For example, most religious orders had some form of organised charity with ‘indoor’ and ‘outdoor’ relief facilities to deal with destitution, old age and chronic disease.

The age pension, too, was introduced by government (first State and later Commonwealth) in the early part of the twentieth century, in large part to relieve

Table 11.2 Overview of the history of aged care in New South Wales and Australia since 1788

<i>Period</i>	<i>Main developments</i>
Establishment (1788-1850)	<ul style="list-style-type: none"> • Sydney Dispensary established in 1788 by Governor Arthur Phillip • 1818 — Benevolent Society established with government support • 1821 — government funding of the building and operation of a destitute asylum on behalf of the Benevolent Society; majority (70 per cent) of inmates aged 60 or more (1830); main care problem of indigence • Other public and charitable ‘asylums’ opened later, for example, the Liverpool St Asylum in 1849 (probably Australia’s first public nursing home)
From indoor relief to income support and ongoing nursing care (1860-1950) State Government responsibility	<ul style="list-style-type: none"> • 1860–1900 — numerous official inquiries into quality of care of destitutes • 1870s — the arrival of trained Nightingale nurses; compulsory employment of the Nightingale nurses in the asylums from 1877 • 1893 — development of Rookwood Asylum into the State centre for geriatric care; 200 men transferred from the overcrowded Parramatta asylums; state asylums becoming the centre-piece of aged care in NSW and generally throughout Australia until 1950s • 1901 (NSW), 1908 (Aust.) — introduction of the age pension as alternative to ‘indoor relief’ of indigent aged • 1900–10 — Sydney District Nurses Association and later other District Nursing services established • [1944 — NSW Housekeepers Emergency Service established]
Commodification and entitlement (1950-80) Emergence of Commonwealth responsibility	<ul style="list-style-type: none"> • 1951 — <i>Hospitals Benefits Act</i>, which excluded chronically ill and the elderly as ‘bad risks’; establishment of Pensioner Medical Service to provide medical and some paramedical services in the community • 1953 — <i>National Health Act</i>, which defined nursing homes for first time • 1954 — <i>Aged Persons Homes Act</i>, whereby Government made grants on a pound for pound basis towards capital costs; 1957 amendment, which doubled this commitment • 1963 — introduction of nursing home benefits (‘a pound a day’); expansion of private for-profit nursing homes • Emergence of specialised community care; 1956 — <i>Home Nursing Subsidy Act</i>; 1969 — <i>States Grants (Paramedical Services) Act</i> and <i>States Grants (Home Care Act) Act</i>; 1970 — <i>Delivered Meals Subsidy Act</i>
Pluralism and community care (1890-present) Concern at current and future costs of aged care	<ul style="list-style-type: none"> • 1983-1996 — <i>Age Care Reform Strategy</i>; establishment of residential care benchmarks; Aged Care Assessment Teams given sole authorisation of admissions to residential care; establishment of Home and Community Care Program (HACC); innovations strategy; case management, CACPs, etc. • <i>Aged Care Act 1997</i> — additional entry payments and income related fees for nursing homes and community services; nursing homes and hostels linked in single residential care stream; accreditation of services

Sources: Sax (1985); Fine and Stevens (1998).

pressure on ‘indoor relief’ centres (Dickey 1980; Fine and Stevens 1998; Sax 1985).

The broad pattern of provision evident in the early years of the twentieth century continued with some degree of stability through until the Second World War. This ‘steady-as-she-goes’ policy, which reflected the lack of prestige in the field, was the case even as the population of older people needing formal care grew slowly and changed in character from one dominated by single older males (the survivors of early settlement and the gold rushes) to one in which older females who had survived their husbands began to predominate among those seeking care.

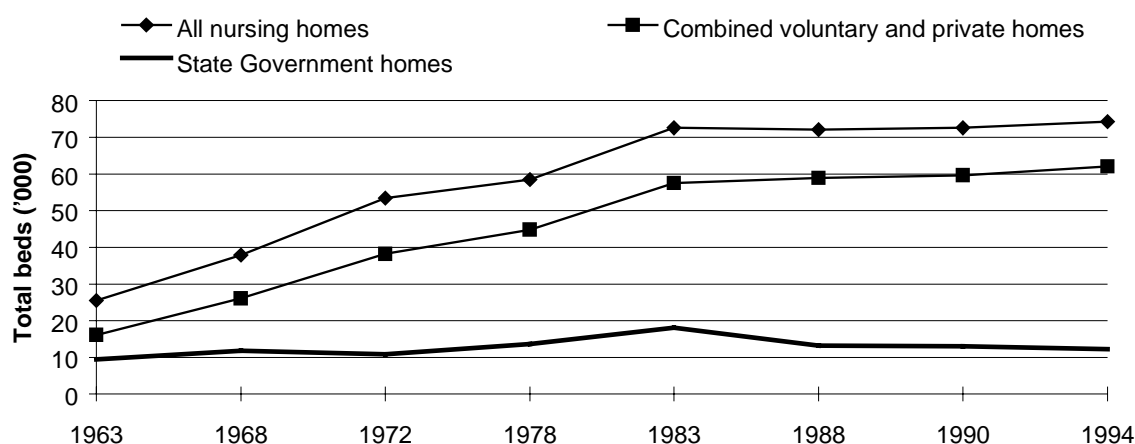
A third historic phase is associated with the expansion of social provisions that took place in post-war Australia as in other comparable nations. Importantly for Australia, aged care became a policy field of national concern. The States maintained responsibility for hospitals as these became centres for high technology acute care, but alternative long stay provisions were required for frail older people in need of continuing care. As a series of private facilities grew in response to increased demand, pressure increased for government action. Initiatives were taken to extend financial coverage for primary care and some paramedical services to pensioners in 1953, to develop non-profit residential homes for elderly people in 1954, and eventually, to introduce a relatively unregulated nursing home subsidy in 1963 (Fine and Stevens 1998; Sax 1985). The Federal Government of the time argued strongly that privately run nursing homes were a cheaper alternative to long term acute hospital accommodation. The incentives offered made nursing homes a sound financial investment and, for elderly people, a valuable asset. The private sector scrambled to get involved. Between 1962 and 1968 nursing home bed numbers grew by 48 per cent, a rate which was way out of proportion to the increase in the aged population (Parker 1988). Ninety-five per cent of the growth in residential care for the elderly and chronically ill had become organised and managed by the non-government sector, the majority being nursing homes run for profit. As shown in figure 11.2, nursing home numbers continued to grow after this period, as various attempts to curb their growth failed until the mid-1980s. While attempts to develop an alternative form of community based provision through a series of State Grants Acts in 1956, 1969 and 1970 did not succeed in curbing the growth of the nursing home industry, this did lay the foundations for Australia’s current system of largely non-profit community care services (Saunders and Fine 1992).

More recent developments in the fourth and current period, which may be dated from around 1980, reflect a growing awareness of the phenomenon of population ageing and the potential economic consequences that responsibility for the provision of care for an increasingly ageing population may bring. Change and innovation became central to the continued development of aged care. New proposals in the fields of both residential and community care were implemented on an almost routine basis (AIHW 1997; COAG 1995; DCS 1986; DHHCS 1991; DHHLGCS 1993; Morris 1994). Many of these changes built on existing modes of provision, but at their heart was the reorientation of policy away from an emphasis on institutional care towards increased provision of community care.

The reorientation towards community care is most evident in what became known as the Age Care Reform Strategy of 1983–96. The central developments were the introduction of strict residential care benchmarks; the development of Aged Care Assessment Teams and their authorisation as the sole assessors for admissions to residential care; and the establishment of the Home and Community Care (HACC) program in 1983, through which the Commonwealth Government jointly funded non-profit community care services with the States (DHHCS 1991; Fine and Stevens 1998). These service provision measures were also associated with financial access strategies, such as the 1985 nursing home funding reforms which limited nursing home fees payable by consumers and increased access of low income groups to services.

Despite effectively reducing the availability of nursing home beds, it should be noted that these policies considerably extended the coverage provided by aged care services, not only providing assistance to the nursing home and increasing numbers

Figure 11.2 Number of nursing home beds in Australia, 1963–94



Data sources: Giles (1984); DHHCS (1991); Saunders and Fine (1992); AIHW (1997).

of hostel residents, but ensuring that approximately 200 000 people were also able to receive support in their own home (AIHW 1997; DHFS 1997). One measure of the impact of these changes was the increasing proportion of older people with a profound or severe handicap living at home (table 11.3). In 1993, over 80 per cent of those aged 65-79 were living at home, as were almost 60 per cent of those aged 80 or older.

Like other areas of policy, such changes in the field of aged care did not occur simply because of demographic pressures. The development of aged care policies in Australia remains a product of political decision making and reflects the economic and social priorities as well as the conflicting interests that the process of government manifests. The introduction of Australian reforms in the 1980s was part of the Australian Labor Party's platform before the 1983 election, and many characteristics of the programs that were subsequently developed reflect the Labor Party's control at the Commonwealth and State level achieved during the 1980s. More recently, the Coalition Government elected in March 1996, wasted little time in seeking to stamp their mark on the provision of aged care. Whereas Labor's reforms of the 1980s and early 1990s attempted to harness the runaway market for care and to introduce an equitable, balanced, planned national program of services, redistributing existing government finance to expand community care, the Coalition Government has sought (through the Aged Care Act 1997) to promote an increasing reliance on user pays principles and the market, bringing in additional entry payments and income related fees to nursing homes and community services, fostering competition between different types of service providers, and promoting increasing self-reliance through such mechanisms as private long term care insurance. Measures of these kind were strongly advocated by the National Commission of Audit (NCA 1996) in order to reduce present and future public costs of providing aged care (Fine and Chalmers 1998).

Table 11.3 Residence of persons aged 65 or over with a profound or severe handicap

<i>Location</i>	<i>1988</i>		<i>1993</i>	
	<i>65-79</i>	<i>80+</i>	<i>65-79</i>	<i>80+</i>
Households (%)	79.4	49.8	83.7	59.0
Health establishments (%)	20.6	50.2	16.3	41.0
Total (no.)	178 900	151 900	185 900	177 700

Source: AIHW 1995, p. 190).

11.3 Behind the policy response: longer term trends in care

The above brief accounts of the history of child care and aged care in Australia focused predominantly on the development of government policy. Like the proverbial iceberg of which only the tip is visible above the waterline, public policy is but part of a much larger social configuration. The focus on policy development should not be allowed to obscure the near invisible systems of support provided by the family or the decisions, over time, of many better-off households to purchase private assistance. The use of domestic servants among the wealthy, especially in the early days of the colony, is well documented. Such domestic servants would undoubtedly have contributed to the provision of both child care and aged care. The private use of the market in more recent years has taken such forms as the employment of nannies, private housekeepers and babysitters to provide care for young children, and the use of private cleaners, personal nurses, private boarding houses and other forms of ongoing support for disabled and chronically ill older people. Because these decisions are made privately, the extent of reliance on such commercial forms of support is usually not well documented. Often, all that emerges are glimpses of inadequacies — for example, the eviction of low income residents of a boarding house to make way for a more profitable development, or the breakdown or lack of affordability of private care arrangements — as the public is called to remedy the situation.

The history of both child and aged care in Australia suggest a range of fine details and issues worthy of further exploration. These range from a consideration of the changing definition of family and familial responsibilities embodied in government and community initiatives, through the importance of the churches and social movements such as feminism and the emerging political power of pensioners and other retirees for determining policy, to the effect of constitutional, political and economic developments on the form taken by public policy. The issue of greatest significance for future policy raised by the reviews is the common thread which runs through both histories. This may be summarised as a pattern of increasing formalisation and public support of care provisions. This issue is addressed in the remainder of this paper.

11.3.1 Formalisation and public support of care provisions

The historical reviews showed that in earlier periods the care of young children and of older people in need of ongoing support was left to the family (with the important exception of Aboriginal families), with governments taking a residual role as a provider of last resort and the enforcer of public morality. Where intervention

occurred it often tended to be total, with the family completely relieved of responsibility for the care recipient. Older people needing care, for example, were removed from their families and placed in institutional residential care settings which were relatively self contained worlds in which family had little place other than as passive visitors. Children judged in need of care were also taken from their family homes to be placed in institutions, or fostered out to other families. Over the past 30 years or so, however, government has come to act differently, increasingly serving as the enabler, planner, funder and occasionally direct provider of specialised, formally organised services on which large numbers of people who continue to live at home and participate in family and community life came to rely. To varying extents, access to these services has also come to be regarded as an entitlement of citizenship.

It is of note that in both child care and aged care, government in Australia took some responsibility from the start, developing early a pattern of providing authority and financial support to voluntary non-government bodies to deal with many of the social needs that emerged. In the past few decades of this century a range of provisions which serve to supplement rather than supplant the family have been developed. In the field of child care, for example, specialised services were developed, authorised, licensed and subsidised by government, not so much to educate or intervene in the raising of young children, as to enable females, the children's mothers, to engage in paid employment outside the home.

Residential care and later community care facilities were expanded in the field of aged care, too, with government finance to provide compassionate support of a specialised, professional kind that family members were simply unable to provide. This care is now codified and regulated, complete with user rights strategies and appeals mechanisms, so that authorised strangers can now be entrusted and paid by government (probably with a user co-payment) to undertake intimate tasks of care that, in other circumstances, users would have performed themselves, or reluctantly relinquished to trusted family members they had known for many years.

It is important to emphasise that the formalisation process and the accompanying expansion and public subsidy of care facilities is neither cause nor evidence of the abandonment of children by their mothers or of older people by their families. The expansion of community based aged care services does not represent 'the shirking of family responsibilities' as argued by one conservative US congressman opposed to the expansion of publicly funded care provisions (Congressman Biaggi, cited in Chappell 1992, p. 55).

Certainly, there are numbers of individuals today who cannot rely on their family for care and who lack sufficient financial or familial resources to survive in old age without help in some form from the community or state. Continued attention to the

needs of those who are socially disadvantaged in old age remains a compelling argument for government intervention. But the proportion of older people today in such circumstances is almost certainly smaller than was the case around 200 years ago in the fledgling colony of New South Wales. In Britain, throughout the nineteenth century, the proportion of older people who lacked family or financial resources and who were institutionalised in work houses was the same as or exceeded the proportion admitted to residential care in Britain in the 1970s, according to the historical research undertaken by Thompson (1983).

For most older people needing ongoing care today, seeking access to the appropriate support service is a last resort, usually undertaken as a compassionate task by caring family members working together with the older person. Caregivers are typically involved with any decision to obtain formal assistance, and do so as an act of support and love, as an assumption (not relinquishing) of familial responsibilities (Fine and Thomson 1995 and 1996; Finch and Mason 1990; Qureshi and Walker 1989). As Litwak (1985) in the US has argued, and others in Australia have demonstrated (Kendig 1986; Fine 1994), formal services do not replace families but complement them by providing formalised, specialised forms of assistance such as nursing that contemporary families are simply not equipped to provide.

Neither can child care be understood as an erosion or diminution of familial responsibility, despite the calls (occasionally still heard) that a child's place is with its mother and a mother's place is in the home (Bittman and Pixley 1997). The use of occasional child care services may provide harried parents with a period of respite or babysitting, and pre schools and high quality day care services can function to give young children an early educational boost, a 'head start' as it has been termed following the American early intervention education program of the 1960s. But it is clear that the most popular forms of child care — long day care, family care and out of hours school care — have functioned mainly as a means of enabling the mothers of young children to undertake paid employment (Brennan 1994). Indeed, the period of the expansion of child care coincides strongly with marked increases in the rates of participation by married females in the Australian labour force. Whilst there is clearly a link between the provision of child care and increased employment of married females, these data suggest the trend towards greater participation of married females in the labour force was already well established by 1961, when 25 per cent of married females aged 20-24 and 17 per cent of those aged 25-34 were reported to be participating in the labour force. Yet this period remains strongly associated with the model of the single earner household and preceded the establishment of child care by more than a decade. In 1971, immediately prior to the establishment of the first formal, subsidised child care services, the labour force participation rates had increased to 44 per cent and 33 per cent of the respective age groups. This suggests that it was not the provision

of child care which initiated the movement of females to paid employment; instead, labour market developments served to create the conditions that led to the increased demand for formal care services.

Snooks (1994) argues that the increased participation rate of females in the Australian labour market owes much to the restructuring of the workforce. In recent decades, there has been a decline in employment in primary and secondary industries but strong growth in the tertiary and service sectors. It is these growth sectors in which the growth of women's employment, often casual or part time, has been particularly strong. As the two-earner family has increasingly become the normative model of the Australian family, formal services such as child care and community care have enabled families to adjust, providing economic support to families while enabling married females in particular to continue to care for members of the family. It is possible also to posit a further link between the growth in service sector employment and the expansion of formal caring services for young children and older people based directly on the labour force employed. In place of unpaid work in the home, females (often in relatively poorly paid employment) have been responsible for providing most of the workforce of these formal services. In other words, the supplementary care services that have developed to assist females who assume wage earning responsibilities have, in turn, been an area of significant employment growth for females.

The increasing importance of formalised, state subsidised care services is strongly paralleled by other changes taking place in the relationship between households and the market, as a result of a trend widely referred to as the 'outsourcing of domestic labour'. According to Bittman, Meagher and Matheson (1998) some analysts trace this process back many generations, noting that households have grown smaller over time, that since the agrarian revolution most people no longer produce their own food and since the industrial revolution few attempt to make things, such as their own clothes. Extrapolating this trend into the next century, Ruthven (cited in Bittman, Meagher and Matheson 1998, p.10) forecasts that domestic outsourcing will soon make kitchens and laundries 'museum pieces'.

In Australia there has also been a reduction in the amount of time females spend on many of the domestic tasks involved in housework in recent decades (Bittman 1995). Regrettably, the reduction in women's time spent on domestic tasks is not the result of any marked increase in the contribution of men in performing their share of the work, or even, to a significant extent, to the introduction of labour saving devices such as automatic washing machines. Instead, it appears simply that females spend less time working at home as a result of their increased employment rates. Time spent on food preparation is the task shows the greatest decrease over the past decade. This has been achieved in-part by direct outsourcing (the purchase of

prepared food outside the home by household members) and partly as a result of a change in diet and a shift to the marketing and use of convenience and semi-prepared foods which markedly cut down food preparation time (Bittman, Meagher and Matheson 1998). Growth in outsourcing of child care has also been significant, with expenditure on child care growing even faster than home cooking replacement (Bittman, Meagher and Matheson 1998).

Analysing the trends in the outsourcing of other domestic tasks using data from the 1993-94 ABS Household Expenditure Survey, Bittman, Meagher and Matheson (1998) report that around 30 per cent of households with a child aged under 12 spent some money on child care over a two week period. This was in addition to the informal child care provided without payment by relatives, friends and neighbours, which was reported in other ABS studies to be almost twice as prevalent. Interestingly, Bittman, Meagher and Matheson. (1998), using the household expenditure data, estimate that no more than the 1.3 per cent of Australian families with a child aged under 12 employed a nanny in 1993-94.

The use of gardening and cleaning services amongst all Australian families was also low, but increased with household income, as might be expected of a discretionary market good. The use of cleaning services increased even more powerfully with the age of the householders, with a sharp rise in those homes in which the reference person was aged 75 or over. Bittman Meagher and Matheson (1998, p. 15) comment that:

In this age group the purchase of housekeeping services reaches a level many times higher than for any lower age group. The effects of age are more powerful than those of income. These irregularities in the distribution of demand are produced by the organisation of social services. State subsidised housekeeping, cleaning and personal care services are available to the aged who would otherwise be unable to afford them.

Gershuny (1983) has argued that household choices to purchase services are subject to the relative price of alternatives and that there is not, therefore, a uniform trend towards outsourcing.³ In high income families, the purchase of cleaning services, for example, may be considered cost-effective. In lower income households, however, the opportunity cost involved may preclude such decisions. Here, social policy has, and is likely to continue to have, an important part to play in making available domestic support services, such as cleaning, available to the low income elderly who require such assistance.

The debate about trends towards domestic outsourcing clearly reflects the expanding labour market in the services sector and the shadow process of the

³ Rather, he posits a trend towards 'insourcing', as households have chosen to purchase cheaper durable goods in order to reduce the labour time required to service the household.

commercialisation and the partial commodification of domestic labour.⁴ Females, the unpaid source of most of this domestic labour in the past, are likely to continue to face decisions about the opportunity cost of engaging in employment outside the home (and thus contributing to expanding productivity and to a reduction in the dependency ratio). Unless there is a future economic collapse or a reversal of this pattern in some other way (such as men assuming primary responsibilities for care), this process is likely to continue to put pressure on the family. Despite predictions of low fertility rates for Australia in the medium to longer term, an expansion (not a reduction) in specialised family support in the form of child care is likely to be required. Increased commitment to community care services will also be required, both for the numbers of older people without family support and for those who must rely on support provided by employed family members. While saying this, it is important to point out that the trends in domestic outsourcing so far have not as yet seriously undermined the resilience of unpaid familiar care. In future years, appropriate policies can function to support and strengthen such informal support.

In the final section of the paper, therefore, attention is focused on the changing capacity of the family to provide care. This is followed by a short discussion of one other issue thrown up by the historical review: the potential impact of formal policy responses which might attempt to shift the balance of responsibilities towards increasing reliance on market mechanisms for the provision of care to supplement that provided by families.

11.4 The continuing importance of family support

Most care of children these days continues to be provided by parents and other family members, as shown earlier. The same situation also pertains to the care of older people (table 11.3).

Some idea of who these family caregivers are can be gleaned from table 11.4. Approximately 70 per cent of all informal caregivers are females. Of particular note is the fact that females of working age, from 15-64, predominate among such caregivers. They constitute almost one in every two informal caregivers of older people. Males of the same age make up another 15 per cent of the total. Hence, almost two thirds of unpaid caregiving of older people is undertaken by those of working age, most likely by females of working age.

⁴ The counter trend of 'insourcing' also reflects these processes, evident not just in food preparation practices, but in the increasing reliance on capital equipment (such as video players and perhaps home computers) for cheap household entertainment as well as in other household activities.

The data presented in table 11.4 record a variety of different forms of care to persons at all levels of disability (from mildly disabled to severely and profoundly handicapped). The sorts of help enumerated range from occasional help with transport (the most common form of assistance) through to responsibility for ongoing personal care. In the age range 15-64, the data tend to disguise the fact that most of the principal carers are aged 45 or above. Focusing on the relationship of the caregiver to the care recipient, it is clear the number of people who provide care to their partner or child far exceeds the number of children caring for a parent (table 11.5). Taking the figures on child care and those of support of severely handicapped older people at home together, it appears that females of working age are most likely to be involved with child care responsibilities when aged 25-45 years, and with the care of older parents when aged 45-65. More detailed data from ABS (1990) shows that the overwhelming majority of primary caregivers of severely handicapped people (those most likely to need regular care) aged up to 75 were partners of the care recipients (either their wife or husband) in almost equal

Table 11.4 Principal carers providing care to persons aged 65 and over, by sex and age group of carer, Australia, 1993

<i>Carers</i>	<i>Total</i>	<i>Per cent</i>
<i>Males</i>		
15-64	39 000	14.6
65-79	37 000	13.8
80+	10 600	3.9
<i>Females</i>		
15-64	132 400	49.5
65-79	42 400	15.8
80+	6 300	2.3
Total population (all ages)	267 500	100.0

Source: AIHW 1997, p. 254.

Table 11.5 Relationship of recipient of care to principal carer (all ages), 1993 (per cent)

<i>Recipient of Care</i>	<i>Carers</i>		<i>Total</i>
	<i>Males</i>	<i>Females</i>	
Partner	60.7	33.4	229.1
Child	3.8	22.7	89.3
Parent	22.9	30.3	150.9
Other	12.5	13.7	71.9
All principal carers	100.0	100.0	100.0
Number ('000)	177.2	364.0	541.2

Source: ABS 1995 (*Focus on Families — Support for Persons who are Older or Who have Disabilities*, Cat. no. 4423.0).

numbers. Daughter (and daughter-in-law) caregivers, those most likely to still be of working age, were increasingly common among those aged 75 and over, although their numbers were still less than 60 per cent of those of partners of the severely handicapped care recipients. Sons (and sons-in-law), also in the 45-65 age group, were the next most common category of informal caregivers (ABS 1990).

Older people, therefore, are already the major category of carers of older severely handicapped people at home. Older people are also the more likely to give assistance than receive it in a number of ways. Those aged over 55, for example, are the most significant providers of informal child care, and the most important group of voluntary workers and informal carers for the sick (ABS 1995b; Clare and Tulpule 1994; Kendig et al. 1983 and 1986; Wenger et al. 1996).

This suggests both that much family caregiving of older people continues to be resilient, but that future programs in support of caregivers will be essential. Arrangements for the care of older people need to be developed with a view of providing relief for working caregivers, or at least a series of alternative services (perhaps modelled along the line of child care) designed to enable those in employment to maintain their employment, at the same time as they continue to provide support for older family members. If policy for the future is to help maintain older people at home and prevent a significant shift from informal care towards formal care, the issue of what has been termed 'employed caregivers' (Thomson, Turvey and Fine 1996) must be of crucial importance for policy makers, as it is for feminists, employers, trade unions and family caregivers themselves.

In developing policy responses which might develop options for the support of an ageing population in the future, there are, according to Qureshi and Walker (1989) three broad policy options for government. These are:

- the withdrawal of public assistance and the enforced reliance on the provision of care by family members or the purchase of market based services;
- the relieving of informal caregivers of responsibility by providing alternative forms of care; and
- the support of informal caregivers through the development of shared care approaches in which state, community and family work together in partnership.

The feasibility of each of these options has been canvassed more fully elsewhere (Shaver and Fine 1995), but a brief recapitulation of the conclusions is pertinent here. The first of these options, while superficially attractive to certain hard nosed conservatives and perhaps some market economic liberals, is at variance with the worldwide evidence on informal support. Evidence from public support programs in the US (Christianson 1988; Kemper 1992), Scandinavia (Johansson and Thorslund

1991; Thorslund and Parker 1994) and Australia (as discussed earlier) have all shown that family support is more likely to increase than decrease following public interventions through home support services. The absence of such support, in contrast, appears to be one of the factors behind the rise of 'granny dumping' and elder abuse (Steinmetz 1988; Wolf and Bergman 1989). Reliance on competitive market mechanisms, especially where competition has succeeded in driving down wage rates to a level that older people might be able to afford without public support, also appears to be problematic. It is commonly reported that older people in many states of the US fear receiving in-home care from non medical sources for fear of being robbed or bashed by lowly paid domestic workers (Wallace 1990).

The second option, relieving families of care, has been advocated by some feminists (Dalley 1988) who see unpaid caregiving as essentially exploitative. It is fairly clear, however, that most recipients of care or their caregivers would not support such an option, even if the financial means were available to fund the vastly increased supply of services that would be required. The approach does, however, serve to draw attention to the importance of ensuring that the relationship between those who need care and their informal caregivers is not one based on exploitation and unrealistic expectations. In this regard, too, there are important policy implications.

The third approach, based on the development of a supportive partnership in providing care, is broadly in line with developments that have been occurring in Australia in recent years under both Labor and Liberal/National administrations. Details of some of these initiatives are discussed Briggs' paper in this publication.

The concept of a 'partnership in care' suggests a form of postmodern pragmatic compromise that is unlikely to satisfy fundamentalists of either the right or left of the political spectrum. The lack of appeal to fundamental principles is, however, probably less significant than the practical difficulties associated with the implementation of the ideals. It is easy to give lip service to the ideals of supporting existing and future arrangements for informal care, as governments have done for generations, but knowing how to deliver that support in effective ways is quite another matter. Despite all the pamphlets, counselling groups and advice lines developed to date, there is a nagging doubt that much of what passes for caregiver support programs is often simply a whitewash for governmental withdrawal from other care funding commitments.

An important part of any future policy must recognise that government is not, and cannot be the only institution responsible. Employed caregivers, for example, need support that includes:

- changes in the workplace and in their working conditions;

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- improved services for caregivers and, most importantly, for the recipients of care; and
 - improved income support provisions.

These approaches have been canvassed more fully than is possible here by Thomson, Turvey and Fine (1996). While it is important to recognise the needs of working females in these efforts, the approach needs to be expanded considerably to encourage men, especially while still of working age, to take on more of the tasks of informal care.

There are already, of course, a wide range of existing social security payments in Australia (Bradbury 1995) which serve to mitigate, to some extent, some of the worst aspects of poverty and social neglect that are often associated with unpaid family caregiving. These range from the Carers Pension, through to specific payments for the fostering of young children, tax rebates and family payments. It is also possible to claim the Child Care Rebate against informal child care costs such as charges by grandparents for child care. While child care related payments have been well received, the take-up rates of the Carers Pension has been poor and its coverage limited, affecting only a small proportion of the total population of informal caregivers. This suggests that there remains significant scope for enhancing informal care of older people by developing improved systems of payment to family caregivers.

It has been pointed out that the efforts of informal caregivers have traditionally been regarded by government as a 'free good' (OECD 1996). But experience with various schemes for the payments of informal caregivers in Scandinavia and elsewhere (Glendinning 1993; OECD 1996) suggest that there is merit in considering the potential of such schemes in Australia to encourage those who are themselves already above retirement age to undertake such work. As Walker (1997) argues, it is mainly those close to the age of retirement who have undertaken the role of caregiving for older people. With the likelihood that most of those entering the relatively active third age will be able to continue to be active for 15-25 years, incentives for retraining as formal, paid carers are worthy of consideration. What is proposed is not a disguised form of work for the dole (work for the pension?) but an approach that would involve experiments with innovative payments to test the viability of developing realistic and cost-effective responses to the planning dilemmas associated with the care labour force of the future, drawing upon an expanding demographic group (the active ageing) to help compensate for likely reductions in the existing labour force (unpaid females of working age).

11.5 Conclusion: the invisible hand and the future of care policies

In considering the care needs of an ageing population, it has been argued by the NCA (1996) and others that government will no longer be capable of funding the care services required. In reviewing the history of child and aged care, this paper has emphasised the often hidden contributions of the family and of other informal sources of support. A number of different approaches that should be used in order to enhance and sustain this approach have also been discussed. But, given the implicit faith placed in market based solutions to meeting human needs, the question remains: can the invisible hand of the market become the helping hand of the future?

The histories of aged care and child care demonstrate that turning to the market for solutions is by no means a new approach in Australia. The market has been important in two ways. First, market based provisions have been, in effect, *de facto* alternatives to care by the family for over two centuries. However, the adequacy of service coverage has been limited, mainly because the direct purchase of ongoing care, an intrinsically labour intensive activity, remains beyond the reach of most individuals and households. For those that have been required to make do with such care 'on the cheap', issues of quality and exploitation have emerged, as illustrated by such incidents as the public outrage associated with the deaths arising from babyfarming in the nineteenth century, and the scandals associated with some boarding houses and even subsidised private nursing homes for the elderly in more recent times. Indeed, the failure of market based provisions to adequately meet the needs of the population for child care and aged care has provided the demand and the rationale for social policy interventions in the field of care.

The second manifestation of market based approaches to care has been in the attempts by governments to utilise the relative efficiency of the market to reduce the public costs of care. Private nursing home proprietors in the 1960s and 1970s, for example, were clearly able to provide nursing home beds at a cost that was below that of the State Government hospital/nursing home system. But while the cost per bed may have been well below the public and even the charitable/non-profit alternative, the total cost to government proved to be anything but low as the result of providing government funding was that demand for care, manifested through the waiting lists, grew rapidly out of control. A similar experience of rapidly spiralling costs to government arose with the extension of public child care subsidies to the private sector in the early 1990s. This suggests that the combination of public funding and private enterprise care provisions is a rather potent mix, and not one which can be easily advocated by those interested in containing the cost of future public responsibilities for care.

Other approaches have been proposed to harness the power of the market in the provision of public services. These proposals range from tightly written contracts, through to the carefully capitated expenditure involved in managed care. Attempts to test the efficacy of some of these approaches underlie some of the experimentation currently going on through the Coordinated Care Trials (COAG 1995). To date, however, it would be premature to declare that solutions have been found to the dilemma posed by the need of the for-profit services to maximise their market share and product differentiation, and the importance of ensuring equity while constraining expenditure in the social policy field.

One further issue to be considered in appraising the future capability of the private sector to provide solutions arises from a consideration of the extent to which old people already serve as unpaid volunteers in the sphere of social and community service. The ageing of the population presents considerable opportunities to draw on the skills and enthusiasm of active retired people, in the provision of child care and aged, but also in other fields of social activity. However, it is unlikely that many would wish to make a contribution as unpaid or even low paid volunteers in services which otherwise operate on a purely commercial basis. The potential value of an ageing population in the formation of social capital is clearly considerable, but this would not be realised in a system in which profit and individual gain is the main motive.

Historical trends have shown that demographic developments alone have been of relatively minor importance in the shaping of social responses to the care needs of either children or older people. As Saunders (1996, p. 22) notes:

the question which needs to be asked is what impact the ageing of the population itself — and the effects to which it gives rise — will have on the future course of the economy and on those social benefits whose determination is the outcome of political choices. To ignore these links between the demographics and the political determinants of social benefits is to misunderstand one of the most important lessons of past social policy development throughout the world.

Just what political developments the ageing of the Australian population will bring in the twenty-first century remain unknown. But it is clear that in a democracy as vigorous and as solidly rooted as that of Australia, the next few decades are unlikely to leave a history of significant reductions in the total public cost of servicing the demographically most dynamic segment of the population. How these public costs might be best provided is, however, another topic (Fine and Chalmers 1998), and the subject of other papers in this publication.

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12 Policies governing aged and child care

Lynelle Briggs¹

12.1 Introduction

This paper examines recent trends in the care of older people and children, and future care roles within the context of population ageing.

The theme of part VI of this publication identifies for discussion the roles of the individual, the family and government. A fourth entity to be considered is the community. Non-government organisations, small and large, religious and secular, for-profit and not-for-profit have long played, and will continue to play, a very large role in the care of older people and children. Greater participation by the business community in care provision is being explored at the present time; this could see an emerging role for business in philanthropic funding and delivery of care.

The appropriate roles for individuals, families, the community and government are those which together provide the best quality care possible for older people and children, within available resources. Population ageing will increase the demands placed on each entity, and require a balancing of contributions asked of the individual towards their own care, of families for their members, and of government and the community for all.

The care roles of government and other entities are evolving. Recent years have seen significant changes in care provided by each and in apportioning the overall responsibility. Notably, governments have moved away from direct provision of care and their role instead has become one of planning, facilitating and funding services, the delivery of which has been taken on by community organisations and the private sector. Individuals and families have taken a greater role in choosing and paying for their own care, with those on lower incomes receiving significantly more

¹ I would like to thank my colleagues in the Commonwealth Department of Health and Aged Care for their assistance and advice. The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department or the Federal Government.

government income support to enable them to do so (although this choice will always be constrained for poorer families). As our society ages, growing national and personal wealth and continued growth in care service provision by the non-government sector will mean that more individuals can be expected to have the capacity to choose and purchase their own care services rather than relying on government.

This paper assumes a broad definition of care, from income support to education, health care, child care, aged residential and community care. As the Department of Health and Aged Care is responsible for aged care, a greater focus will be on this area. Broad definitions of ‘the aged’ and ‘children’ are assumed. The literature contains varied definitions appropriate to different research purposes, including:

- older people — eligibility for the aged pension (females aged 61 or more and males aged 65) mark commencement of financial dependence for many. Health and other care needs may commence at any stage but are progressively commencing later with improvements in population health; and
- dependent children — those aged under 15 or aged 15-24 and studying full time, as defined by the Australian Bureau of Statistics (ABS) for example. Dependence of children can of course extend beyond these bounds.

It would seem most useful to consider the widest margins within which older people and children may require substantial care. The elderly and the young are, on the one hand, the most vulnerable in our society, variously experiencing physical, emotional and intellectual frailty or limitations. On the other hand, they are people on whom we depend, being the workers, carers and leaders of tomorrow, and those to whom we are obligated for our own care. Care of both groups is, and must continue to be, a key priority for our society.

The term ‘government’ is used to refer to government at all levels, rather than introduce the additional dimension of appropriate roles for different levels of government. The word ‘provide’ is used in the general sense, to encompass either or both payment for and delivery of care, while ‘fund’ and ‘deliver’ are specific terms.

12.2 Looking over the shoulder

An important starting point in considering future care needs is to recognise that the roles of government, the community and individuals in our society are not static, as can be seen from historical shifts in care responsibilities (see Fine in this publication).

Australia this century has seen the role of government as a provider of a universal safety net fully emerge, with a trend post-war for governments to increasingly assume direct responsibility for provision of a range of forms of family assistance and aged care, with the scope and scale of services peaking in the 1970s and 1980s.

There followed a change in direction towards the early to mid-1990s, with less direct delivery of care by government, and greater roles for the individual and the family in self-care, and for community and eventually private sector organisations in delivery of care with funding from government. This has been due to a combination of factors, including fiscal constraints and the growing recognition of the greater benefits of individual and family autonomy and self-provision. The appropriate role for government has increasingly been seen to be one of supporting individuals and families to care for themselves, with targeted income support and support services.

Coupled with this has been the recognition that government cannot always directly provide the type of care that individuals want, nor necessarily guarantee its effectiveness or quality; and that a greater sharing of responsibility between care providers is the means by which increasing community expectations of care quality can be better met. As wealth increases, people will continue to seek better living standards, including in any care they require. Government's role is increasingly seen as assisting people in achieving this goal. For example, with the Superannuation Guarantee Levy, government created a structure to enable individuals to have a higher standard of living in retirement than that provided by the age pension.

As this trend has developed we have seen a finer adjustment in the role of government in promoting individual and family self-care, in the use of both vertically and horizontally targeted support measures. Vertical measures to compensate the less well off have been used extensively, with income-tested child care subsidisation being an example. Horizontal measures, designed to assist everyone in providing for themselves and their families (including help in choosing appropriate care services), also have been introduced — for example, the recently introduced universal private health insurance 30 per cent rebate.

12.2.1 Recent trends in care of older people

The 1960s saw government assume a large and direct role in age care by provision of nursing home care on a large scale. Over time, non-institutional care was recognised increasingly as a better option, particularly in meeting the preferences of older people themselves, and also in offering a financially sustainable model for increasing care needs. Governments therefore started to contain nursing home growth and to shift the balance of care, through benchmarking residential care provision and funding both a large expansion of hostels (providing lower level and

less expensive residential care) and also an increase in community care services. Illustrative of this shift were the 1984 introduction of the Home and Community Care (HACC) program to enable frail older people to remain in their homes, and the provision of government income support for people caring at home for a relative or friend (starting with the introduction in 1972 of the Domiciliary Nursing Care Benefit and progressing through to the carer payments of today).

In income support the role of government has shifted from universal direct support to a greater targeting of support plus measures to encourage financial self-reliance. Assets testing of the age pension was re-introduced in 1985, and from the early 1980s onwards measures were introduced to increase the number of people covered by superannuation, as per taxation incentives, award superannuation and ultimately the Superannuation Guarantee Charge of 1992.

The current tax reform proposals continue this trend, providing incentives for individuals to save for retirement and part pensions for self-funded retirees with lower incomes via reduced taper rates, which will also create an incentive to work, as pensioners with earned income will retain more of their earnings. The Aged Persons Savings Bonus and the Self-funded Retirees Supplementation Bonus (not available to those receiving an age pension) are similar measures, and the increase in Pensioner and Aged Persons Tax Rebates will provide additional income to certain older people. Also to aid self-provision, provisional tax is to be abolished and excess imputation credits are to be refunded.

12.2.2 Broad summary of current care of older people

Significant care of older people in the form of income and health care, is provided by government. Over \$13 billion was provided in the financial year 1998-99 in means tested aged pensions (ABS 1999a). In 1995-96, governments spent \$22.3 billion on health and other aged care services for people aged 65 and over, with this representing 32.8 per cent of total health, social security and welfare outlays.² Total funds appropriated for the Commonwealth Aged and Community Care Program in the 1997-98 Budget amounted to \$3.7 billion, of which \$2.8 billion was for nursing homes and hostels.

Most 'practical' care needs of frail older people — that is, needs for help with personal care, transport, mobility, home maintenance, etc — are met by family

² Expenditure items (and approximate outlays) include aged pensions (\$13.9 billion), hospitals (\$3.4 billion), medical services (\$1.4 billion), pharmaceuticals (\$0.7 billion), nursing homes (\$1.9 billion), hostels (\$0.4 billion) and non-residential care such as HACC services (\$0.6 billion) (Choi 1998).

members. This is despite recent changes in family structures, such as increased female workforce participation and higher divorce rates. A 1993 national survey (ABS 1994) found that 80 per cent of the care provided to people aged 60 and over was by family members living in the same household, with a large proportion being spouses. Significant care was also provided by people living elsewhere, with 70 per cent of such carers being relatives (most commonly daughters) and 30 per cent being friends.

Similar needs, but extending to nursing and other health care, are met by a variety of community care services. These are delivered by both government and non-government organisations, and are funded by government and to a lesser extent private donation, with significant support provided by volunteers. Recipients contribute financially according to their capacity. The HACC program is the main provider of such services, with approximately 4000 organisations delivering to 11 per cent of the population aged over 70. HACC services include nursing, respite, meals on wheels and home upkeep.

A higher level of care in the home is provided in the form of Community Aged Care Packages to a small number of people (0.2 per cent of the population aged over 70), whose dependency and complex care needs would otherwise qualify them for residential care. They are delivered by government and (largely not-for-profit) community organisations, with funding from government and user contributions (according to ability to pay).

Residential care, in hostels and nursing homes, is provided to frail older people unable to be cared for at home. These institutions are owned by government (16 per cent of nursing homes and 6 per cent of hostels), not-for-profit organisations (37 per cent of nursing homes and 92 per cent of hostels) and for-profit organisations (47 per cent of nursing homes and 2 per cent of hostels). They are funded largely by government subsidy (approximately 75 per cent) and resident contributions (approximately 25 per cent). Of note, only 5 per cent of the population aged over 70 is in nursing homes, with 4 per cent in hostels. The vast majority of older Australians live in their own homes in the community.

12.2.3 Recent trends in care of children

The changing role of government in providing care for children in recent decades shows some similarities with that in the aged care arena. Except for child care, government support in the 1960s and 1970s was extensive, including universal family allowances, free university education, provision of free or subsidised health services such as vaccination clinics and dental services in schools, and increasing income support for young adults. In the past two decades, there has been a winding

back of government service delivery, an increase in funding to non-government organisations to deliver services, and an increase in targeted income support to families to enable and encourage them to choose and pay for their own care services. The changes to family allowances in the late 1980s, including means testing of the previously universal family allowance payments and introduction of the Family Allowance Supplement for low income families, illustrated this targeting. The introduction ten years ago of the child support scheme was to ensure that non-custodial parents shared (with custodial parents and government) financial support for their children.

In the area of child protection, direct interventionist and institutional models of state care — most starkly evidenced by the stolen children, state ward and child migration experiences — were abandoned in recognition *inter alia* of the greater ability of the family, sufficiently supported, to provide quality care. The appropriate role for government was increasingly seen as being to provide and target services to enable families to perform this function, as well as to maintain mechanisms to detect and intervene where they could not. Non-profit community organisations — which have long provided family support services of different kinds — have been funded increasingly by government for this purpose.

We have of course also seen a significant shift in responsibility for (non-school based) care of young children, from the immediate family to government, the community and other family members. While the bulk of care is still provided by parents, care during working hours increasingly has been provided outside the home, as females have joined the paid workforce in large numbers. For example between 1984 and 1996 the proportion of children using informal³ or formal care (or both) rose from 39 per cent to 48 per cent and the proportion aged under 12 using formal care increased from 12 per cent to 20 per cent (ABS 1996).

Initially formal care was predominantly centre-based long day care, with other forms such as family day care, play groups and after school care expanding greatly in the 1980s. This expansion was funded mainly by government, consistent with a widespread view that government should fund child care in support of equality of opportunity and in recognition of the productivity benefits of female labour force participation. Commonwealth funded child care places quadrupled between 1983 and 1992.

As demand for formal child care continued to increase, a National Child Care Strategy was announced in 1988, involving not only increased government funding but encouragement to private business and employers to provide care. One thousand

³ Care from relatives, babysitters, friends and neighbours

industry-provided places were set aside; since then other employers have sponsored child care arrangements with approximately 3500 places operational at June 1998.

Extension of government fee relief to private child care centres in 1991 (by means of child care assistance being available to families using any approved long day care centre) produced a significant increase in the supply of child care places by the private sector. Removal of the Operational Subsidy to community based child care centres in July 1997 levelled the playing field for for-profit and not-for-profit centres.

In relation to care of young adult children, this decade has seen a greater role for families in providing income support. Changes have been made to benefit provisions to extend both the age until which, and the extent to which, families are responsible for their care. Family income testing for various forms of income support for the young has been introduced, as well as restriction by age of entitlements through the introduction of Youth Allowance for young unemployed people, eligibility for the sole parent pension stopping when the youngest child reaches age 16, and removal of (the formerly named) Family Allowance for dependent children aged 18 and over. The introduction of tertiary fees means that the individual now also shares responsibility for funding higher education with the government.

A view that the role of government is to provide income support to all families to assist them in caring for their children — leaving the choice of how this is done to the families — can be seen in the current tax reform proposals. The reform measures would:

- increase tax relief for families with children;
- reduce the family benefits withdrawal rate;
- increase the income threshold for family payments;
- reduce effective marginal tax rates for lower income working families; and
- simplify and increase the Child Care Benefit.

These measures would target both horizontally and vertically. Those directed at lower income families are intended to improve work incentives, for example, by removing the disincentive effect for some unemployed families to take on full-time work. In the Federal Government's view, this makes a better balance between targeting and enhanced work and saving incentives. In the measures aimed at all families can be seen a view that government is responsible for assisting families regardless of income to fund their own care and also to choose the care services most appropriate for them — a view also evident in the recent replacement of the Private Health Insurance Incentive Scheme (targeted at lower income earners) with

the universal private health insurance 30 per cent rebate. The tax measures will lower the effective marginal tax rates for a significant number of middle income earning families.

12.2.4 Broad summary of current care of children

Care of children is effectively shared by families, government and the community, with parents providing the greatest contribution to the range of care needs of their children. Government provides significant targeted financial support to families with children, in the form of tax rebates for dependents, various family allowance payments, and various forms of special assistance such as rent assistance. Government provides health care, free primary and secondary education; the community sector also provides private schooling, with fees paid by families (and subsidies by government).

Care of children outside the home, mainly related to parents working, is provided by government and non-government organisations (subsidised by government and with fees paid by parents) in various forms, including centre based long day care, family day care, occasional care, outside school hours care and preschool care. A range of other government funded services deliver care to groups with special needs, such as Aboriginal and Torres Strait Islander children and children from non-English speaking backgrounds. Informal care by relatives, friends and neighbours continues to be a major source of care outside the home.

Where families are unable to care for their children, care is provided both by government and community organisations, via protection and support services aimed at families in crisis (including child protection, supported placement and supported accommodation and assistance services). This support is only provided to a small proportion of children, but is nonetheless a critical component of overall care; in 1997-98, there were approximately 98 000 notifications of suspected child abuse and neglect, and at 30 June 1998, 16 000 children were under care and protection orders and 14 400 were in supported placements (SCRCSSP 1999).

As with older people, services to children are also supported by volunteers.

12.2.5 General trends

As noted above, recent years have seen an increased role for non-government organisations (both for-profit and not-for-profit) in delivering services with funding from government. Several factors can be seen at work here — the growing demand for community services related to social and demographic changes such as the

ageing of the population and greater female labour force participation. The trend towards non-institutionalised aged care has increased this demand, with institutions being replaced by community care models with links to other support services.

The change is also a product of different thinking about the appropriate role for government in service provision, and of a distinction being drawn between the care responsibilities of government and *how* government meets those responsibilities. In part a response to consumer pressure for more accessible and better services, governments came to see that they could not only meet their responsibilities without necessarily delivering the services, but also that they may not be best suited to deliver services. Instead, funding of non-government organisations to deliver services, and in some areas competitive tendering and contracting out of delivery, are seen to offer potentially more accountability, quality and cost-effectiveness.

Alternative delivery of care can also offer more consumer choice. As baseline services have become more readily available, governments have begun to provide funding direct to consumers (such as fee relief for child care) to enable individual choice in purchase of care.

12.3 Facing forwards

The effects of population ageing in conjunction with other demographic factors have and will continue to increase overall dependency needs, and impact on the ability of care providers to meet those needs in currently established ways. These are summarised below:

- *Dependency ratios have increased and will continue to increase.* Put simply and crudely, as a result of fewer people dying young, lower birth rates and increasing longevity, there is likely to be:
 - significantly higher ‘financial’ dependency ratios, or more older people per employed younger person (compounded by the trend to early retirement), increasing the call on government for income support and health and aged care service expenditure; and
 - significantly higher ‘family’ (and community) dependency ratios, as reflected in fewer adult children per frail older person, increasing the call on the family for informal care.
- *More older people are living alone.* As a result of higher divorce rates over recent decades, compounding the existing effect of females marrying older men and outliving them, more people are entering old age in a single state and hence are unable to call on a spouse for physical care nor enjoy the economies associated with a joint household. Both effects potentially will increase the call

on government and the community for income support and residential and community care services, and on adult children for informal care.

- *More parents of minor children are in the labour force.* Increased female labour force participation, changing community attitudes, more flexible working arrangements and the increased availability of child care have all led to an increased call on parents and government to provide for the care of young children outside the home. This is not a load which will increase in the same way as the care requirements of older people. It is a relevant (and complex) issue however, as the price of child care may well affect the labour force participation rate of (particularly lower paid) females, and the benefits for an ageing population of higher female workforce participation in terms of productivity and superannuation coverage need to be considered.
- *Young adult children are entering the workforce later.* As a result of factors including insufficient employment growth and increased educational participation, the young are entering the workforce later, increasing the call on parents and government for their support. Again, this is not a factor predicted to increase, however it may interact with population ageing and the trend to later child bearing to create demands on parents for simultaneous support of adult children and frail parents. Moreover, if present trends in under employment or insecure employment continue, the financial capacity of families to meet those needs may be constrained.

Without venturing into the areas of other conference participants, it is worth noting that these and other factors do not have a simple linear impact producing an overall increase in care need. They interact and are counterbalanced to some extent by a range of effects, including:

- productivity improvements which dilute the effect of rising dependency ratios. These are predicted to yield significant returns in GDP over the long term which may be increased by further technological advances;
- greater wealth among the elderly, which will enable them to purchase care services privately at lower relative cost to government and the wider community;
- the improving health of older people. While ‘the jury is still out’ on morbidity compression versus expansion,⁴ there is evidence that people are experiencing more years of healthy living, a trend which may continue; and

⁴ The theory of compression of morbidity, first proposed in the 1980s, says that if adult life expectancy is reaching its biological limit and the incidence of incapacitating disease can be postponed until later ages, then morbidity will be compressed into a shorter period of life. Briefly, this means that people will live longer, with the portion of life during which they are healthy, increasing. Expansion of morbidity is an opposing theory which says that decline in mortality is due to decreasing fatality rates for diseases, not a reduction in their incidence or

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- lower expenditure on the range of services for the young related to falling fertility.

12.4 Care roles for the future

The way forward lies in continuing the directions outlined — that is, with individuals who can afford to do so assuming increased responsibility for care of their dependent children and themselves in older age, and with governments providing the necessary incentives and support for this to occur. Governments will need to continue to develop monitoring of care quality and access in this environment, to identify and target areas where self-care fails, and to enable care to be provided for poorer people. Governments, together with other stakeholders, must continue to find ways to improve the capacity of the care system to maximise yields from available revenue.

12.4.1 Sharing increasing responsibilities for care of older people

The central consideration in planning care must be what older people themselves want. Recent survey work commissioned by the Office for Older Australians in preparation for the International Year of Older People (IYOP) shows that older people want to have income security, to remain in their own homes for as long as possible, to be able to participate actively in the community, and to be cared for as necessary by the family (specifically a spouse or daughter).

Of interest in these survey results is a widespread acknowledgment that while government ‘owes’ older people support, the individual should and also will need to provide for their own retirement. These findings may indicate that Australians are increasingly coming to terms with the idea of providing for their own retirement at a higher standard of living than their parents, rather than assuming that the government will support them. Social security data show that the vast majority of new age pensioners have private income, suggesting an improvement in their savings capacity over time. While pensioners will always be constrained in their ability to exercise choice in accessing a variety of care services for which a fee must be paid, the options available to them now are greater than they were before.

The Federal Government’s response to the IYOP is a National Strategy for an Ageing Australia, designed to better inform all Australians about the implications of ageing and to provide better information to assist individuals to make decisions

progression, with the decline in mortality accompanied by an increase in chronic illness and disability. That is, people are surviving but they experience longer periods of morbidity.

about their own ageing. The national strategy will be structured around a process of investigation and consultation, leading to the formulation of an agenda for action to be released towards the end of 1999. Broad public discussion is needed to ensure that the long term directions set by the National Strategy are grounded in the community, so key discussion papers will be released throughout 1999.

Income support

Other papers will be dealing in detail with the issues of income support for older people raised by population ageing, so I will note here only that governments, the community and the individual must share responsibility for increased income needs, (for instance, by reversing the trend towards early retirement of the past few decades and ensuring improved retirement savings). For example:

- governments need to ensure that there are no structural disincentives to later retirement (and indeed some have been removed in the past few years), as well as adequate incentives for individual savings and later retirement;
- the business community has a clear role in supporting later workforce participation with more flexible work practices and retraining opportunities for older workers; and
- a role for the individual in preparing for and delaying retirement, then self-funding a high standard of living in retirement, will need to become part of our thinking.

Residential aged care

This is well understood as being the area where growth must be minimised. In addition to older people consistently preferring care in the home, the cost of residential care is very high, with the average nursing home resident costing \$30 000 per year. The structural reforms to residential aged care under way extend the user pays system with accommodation charges that will help raise funds needed to provide adequate nursing home/hostel accommodation and upgrade existing facilities. These arrangements mean a partial shift in responsibility for the costs of care from government to those older people with sufficient means to contribute, as well as a greater role for government, the community and families in providing alternative care of the frail aged in their own homes.

Care of frail older people at home

As discussed already, care in a form that older people prefer and which is sustainable in the context of growing dependency needs, will mean increasing care

in the home. Recently, \$280 million has been committed as part of the Federal Government's 'Staying at Home' package to address existing unmet demand for community care services to support older people in the home. This is aimed, for example, at doubling Community Aged Care Package places over a four year period. Additional funding was also included in the last Budget to expand the Domiciliary Nursing Care Benefit system, including providing a payment to carers of people with dementia.

Design of support services will play a role in extended home care. For example a specific funding allocation has been made under the 'Staying at Home' package to help carers with incontinence management, one of the threshold conditions leading to residential care need. Two of the targets in ongoing reform of the HACC program are to provide early assistance to older people who are beginning to need care to avoid any serious or premature deterioration in their condition, and to better assist people with complex care needs to remain independent.

Coordination between types of care will be crucial to ensure that individual care is holistic and that resources are employed most efficiently. 'Coordinated Care Trials' being conducted currently will assist governments and non-government providers in making gains in this area. The trials are to test whether better health and well-being can be achieved for people with complex or chronic care needs, most of whom are elderly, by greater flexibility in the use of existing funds.

In the trials, funds (that otherwise would have been spent on health and community services for clients in each trial) are pooled from Commonwealth and State/Territory programs and used to provide the most appropriate services according to a care plan developed between the client and a care coordinator (usually the client's general practitioner). The trials involve over 16 000 people either receiving coordinated care or in control groups, and will provide over two years data for evaluation.

Although initial results of the trials will not be available for some months, they have been successful in developing new cooperative relations between health professionals in providing care, as well as greater Commonwealth/State collaboration in joint development of possible frameworks for more client centred care. There is also anecdotal evidence of improved outcomes, such as fewer hospitalisations and improved use of community care to maintain people in their own homes.

In line with commitments of the Prime Minister, the 1999-2000 Commonwealth Budget will provide for additional coordinated care, giving particular emphasis to the care needs of disadvantaged elderly people.

It is well recognised that respite care will play a central part in successfully expanded community care. Additional funding was committed in the last Budget to boost in-home respite care for carers of people suffering from dementia. Government and the community will need to respond to the varying needs of informal care-givers (for example, working families providing informal care for older parents). Despite increased participation of females in the workforce, the number of frail older people (as well as those with disabilities) being cared for by family carers in the community has reached historically high levels, as has the number of carers who combine their caring role with other responsibilities, for instance paid employment or multiple caring roles (including care for young children). Importantly, employers will need to take a greater role in providing flexible and 'family friendly' working arrangements to assist people in successfully combining work and care roles.

Government and community support to assist families to function and survive has obvious social and economic benefits in the short and long terms, but in this context is also relevant in relation to the increasing trend of divorced people entering old age alone without the physical and financial support of a partner. The results of the last National Social Science Survey show that older people are healthier and happier if married (Kelly and Evans 1999). Partly in response to survey results showing significant numbers of divorced people believing that their marriages could have been saved with help, the Commonwealth Government has recently boosted marriage and education relationships services with a new education program targeting people at different transition stages of relationships, such as birth of the first child, combining work and family, blended families and the role of fathers.

Healthy ageing

Government and individuals have a role in minimising dependency by ensuring that older people can age actively and healthily. The contribution of governments lies in educating older people in healthy lifestyles which will contain or delay their care needs; examples include the Queensland Government's '60 and Better' program (aimed at increasing lifestyle awareness and encouraging greater community participation) and Victoria's 'Positive Ageing' Project (encompassing illness and injury prevention strategies) and an 'Older Workers are Valuable Workers' campaign (aimed at changing business attitudes towards employing older people). The Commonwealth's 'Active Australia International Year of Older Persons' project, launched last month, aims to increase the involvement of older people in regular physical activity. It is also intended to encourage mutual responsibility for the health and wellbeing of older Australians, by encouraging not only older people to be more active, but also encouraging community groups to provide opportunities for this to occur.

12.4.2 Sharing increasing care responsibilities for children

Child care needs are not expected to increase in the way that those of older people will. Appropriate sharing of child care is relevant in this context however, because child care potentially competes with other roles that families may increasingly take on as the population ages. Concern is emerging that we need to watch that the effects of population ageing do not place competing pressures on families, and on females in particular.

Familial and individual self-reliance and demographic compression

Briefly, the demographic compression which has occurred this century — whereby males are entering the workforce later, experiencing lower full time employment, leaving the workforce earlier and living longer — needs to be considered in terms of the capacity of parents to support young adult children for longer, as well as to save for their own retirement. While females have experienced a significantly increased labour force participation and employment rate since the 1940s, the extent to which this will enable compensatory income transfer to the young and better retirement savings may presumably be (negatively) affected to some extent by the lower rate of full time employment among females and the increasing incidence of middle-age and old-age people living alone, potentially affecting their capacity (if not their willingness) to support adult children.

Potentially more important is the ‘intergenerational confluence’ concern, whereby the upward shift in age at labour force entry and later child bearing will reduce the period of time between parents being freed of dependents (and thus being more able to save for retirement) and their own retirement age. Also relevant is that for the baby boomer generation onwards, the last few years spent in the workforce are projected to overlap increasingly with commencement of dependency, physical and/or financial, of parents. This phenomenon is particularly expected to ‘squeeze’ females, the alternative caregiver of choice of older parents.

Research in this area is in the early stages and needs more study to better determine the implications, including for vulnerable groups such as those on low incomes where the above would potentially have inequality travelling down generations.

12.4.3 Flexibility in care roles

A number of commentators have identified the potential importance of flexibility in care roles in the future, and the importance of maximising the potential of our changing society. This will require innovative policy development by government

and the community. By way of an example, at the same time as females are being 'squeezed', the declining participation of older males in the workforce would appear to present an increasing availability of males to meet informal care needs. This presents attitudinal issues, with males potentially reluctant to take up the role, and the elderly themselves reluctant to receive it.

Further, while demographic changes are producing increasing dependency ratios, so are they resulting in less grandchildren per grandparent, and in grandparents who are enjoying healthier and longer retirements. Together with the recently introduced government subsidies for informal child care, this could result in an increased role in child care by older people. Of note, 1997 ABS (1999b) survey results show that grandparents provided care in almost 70 per cent of households which received informal care for a child aged 11 and under.

Thinking in the area of care of the frail aged must of course acknowledge the inherent difference between child care and aged care. There is clear general acceptance of parents' obligation to care for their minor and even older children, recognised by various government provided support entitlements and somewhat reinforced by legal sanctions for parents failing to provide care. However, the familial relationship between, and recognised obligations of, adult children in relation to aged parents is different. This is reflected in attitudinal research results of De Vaus (1997, p.79) showing that while Australians generally believe they should provide assistance to and contact with elderly parents but place less emphasis 'on living nearby and accepting potentially intrusive responsibilities such as giving up work or living in the same household'.

12.4.4 Monitoring of care quality

The cornerstone of a care system increasingly featuring self and family provision will be the monitoring and protection of care standards, which are the ultimate responsibility of government. Considerable attention is being paid across the public sector to the issues surrounding accountability, regulation and standards monitoring in an environment of various competitive arrangements in service delivery.

Mechanisms are needed to be better able to monitor care standards and accountability in the home and community. Development of this capacity began in the 1980s following the growth in the amount of non-government service delivery, with development of national or state standards and other pressures for accountability both to funders and consumers.

Recent developments in aged and child care include the following.

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- The residential aged care measures announced in 1996 included an accreditation system to improve care and residents' quality of life, and the establishment of an independent agency (the Aged Care Standards and Accreditation Agency) to operate the new arrangements. As part of an ongoing process of reform of HACC services, the Australian Institute of Health and Welfare (AIHW) has developed a standards monitoring instrument and is developing a consumer satisfaction measure, both for assessing HACC services.
 - In 1994, a Quality Improvement and Accreditation System (QIAS) was introduced, requiring long day care centres to assess and improve their performance against 52 principles of quality care. Funding has been provided to other child care sectors to develop their own quality assurance systems.

Government must ensure that the vulnerable are protected — people in rural areas, Aboriginal and Torres Strait Islanders, frail older people without family and poorer people. Detecting and intervening in abuse of children and the elderly is and will continue to be a critical role for government and the community. While in the past few decades our society has become more aware of the negative effects of over-intervention by government in areas such as family functioning, there is increasing recognition that the challenge lies in a balance between state support and intervention on the one hand and individual and family self-care and autonomy on the other. Repeated deaths in recent years of abused children and the outcries that followed have produced pressure for more and earlier government intervention.

12.4.5 A greater role for the business community

The Federal Government has of late advanced its view that there is a greater role for the community and business to play in care provision, both in financial support and direct delivery. The Business and Community Partnerships initiative is about attempting to build new and better partnerships between business, government and the community. It calls for greater recognition of existing contributions by community organisations and businesses and greater status for philanthropy. While the business sector already supports the work of the community sector — for example, through provision of pro bono support, sponsorship activities, monetary contributions and the like — partnerships are seen as potentially enabling a broader approach, using the community sector's networks and involvement across the range of activities and community projects, to provide insights into the needs of specific communities and the development of solutions to problems.

Two resulting partnerships so far are:

- the National Australian Bank assisting the Salvation Army in financing their homelessness network to boost bequests by investment planning; and

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- the Australian Bankers' Association in partnership with a number of organisations representing older people (such as the National Seniors' Association and the Council on the Ageing) to help older people with new banking technologies.

12.4.6 The individual and volunteering

Volunteer work in Australia supports a substantial proportion of community welfare services, particularly through non-government agencies, with older people and children being major recipient groups. A 1992 study by the Victorian Government found that half of the expenditure on community services in that State in 1989-90 was undertaken by non-government organisations, and that volunteer input was worth an estimated \$140 million to those organisations (cited in AIHW 1993). The ABS conservatively estimated the value of volunteer work in the welfare and community services field at \$1 500 million nationally for 1995-96 (cited in AIHW 1997).

This huge contribution is something we will rely on as the overall care needs of the frail aged increase; indeed ageing, particularly healthy ageing, should theoretically increase the already large voluntary contribution of retirees. However, volunteerism is not something that can be taken for granted. Governments and business will need to foster volunteer work with necessary incentives (as well as by removing disincentives, such as the recent change to social security provisions to allow people aged 50 and over to continue to be eligible for benefits while undertaking full time voluntary work), by ensuring volunteers working conditions and with other measures to enhance the status and attractiveness of voluntary work.

12.5 Summary

The appropriate roles for the individual, the family, community and government in care provision will always be evolving. On an individual basis, appropriate care will vary according to care needs, personal wealth and the type of family and friend support available. Families will always be responsible in the first instance for their children, while older people will continue to be primarily responsible for their own care and, if appropriate, that of their spouse. With improving health among older people, the 'young old' will increasingly be able to provide informal care to frail older friends, supplementing in some cases informal care provided by adult children. For those with advanced dependency needs, increasing individual wealth will enable many to purchase care services. At the same time, current trends will see the market increasingly providing more individual choice in care services, assisted by

government funding and program changes. The role of government and the community in underwriting individual and family care — by protecting the vulnerable, providing workplace and other supports, and monitoring care quality — will continue to be essential.

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Both Michael Fine and Lynelle Briggs' papers have described the demographic and social antecedents to the current concerns of providing care for the young and the elderly. They have also emphasised the trends in government policies for the provision of child and elder care to increasingly rely on individuals and their families to either provide more of this care themselves or to augment their contribution to the costs of such care.

Most of these scenarios, however, assume a healthy later life for potential carers, the availability and willingness of extended family networks and continuous secure employment with adequate remuneration during prime working age years and beyond that will enable males and females to accumulate financial resources to provide a range of services for their own older years.

Accumulating income for later life

As noted by the authors, alterations in pension entitlements and the cost of health and aged care resources, may encourage males and females to delay retirement in order to ensure adequate provision for their own old age. The prolonged education and increase in unemployment and underemployment for young adults may also render early retirement a less feasible option for those now turning 50 and older, if these older parents need to continue to contribute to their adult children's or grandchildren's financial support and to nursing and health care of their aged parents. If present trends of underemployment and insecure employment persist, the ability of younger cohorts to ensure adequate income and housing in their own later life years may also be jeopardised.

In the Australian Institute of Family Studies' Australian Family Life Course Study (AFLCS) conducted in 1996, 45 per cent of males and three-quarters of females who were retired had retired prior to age 60. In contrast, of those who were currently in the paid workforce, over two thirds of males and half of females anticipated retiring after age 65. The majority of employed these respondents also agreed 'that people should contribute something to their retirement years'.

If males and, particularly females, do remain in paid work up to or past traditional retirement ages, thus altering the present trend towards early retirement, their capacity for family involvement and caring, either grandchild care or care for frail elderly and ill family members, will be constrained.

Extended employment past the traditional retirement ages will also have an impact on the number of people available as volunteers providing a range of ‘free’ personal services to those in the community who rely on their care and support.

Caring responsibilities

If the age of those in the workforce increases, their own health and the health of family members may change and affect the balance between employment and family dynamics. While only a small proportion (13 per cent) of those who were currently employed in the AFLCS identified themselves as the main carers of an elderly, ill or disabled family member, additional family caring tasks in the future were presaged.

Around 23 per cent of both employed males and females said that either they or their partner had long term health problems or disabilities, a situation which foreshadows times when providing care or being cared for might be necessary and work attendance or concentration on work for respondents or their partners would be affected. Not surprisingly, serious health problems tended to increase with age. Around 20 per cent of employed males and females or their partners aged 35–44 years had long term health problems or disabilities, with this proportion rising to 34–36 per cent for males and females respectively at age 55 and over.

Around 44 per cent of employed males and 49 per cent of females stated that their parents or in-laws had health problems or disabilities. Depending on whether their parents have a partner capable of caring, there are other family members to provide support or community facilities are available, these employed adult children are likely to have to assume some caring or management of care tasks as their parents’ conditions deteriorate. The ability to organise caring obligations with work schedules and commitments will become important.

Older employed respondents were significantly more likely to have parents that had long term health problems or disabilities. Between 34–39 per cent of males and females aged under age 34 had parents with health problems compared to 54–58 per cent of males and females aged 55 and over.

As marriage and childbirth are delayed and longevity increases, more females and males may find themselves in multigenerational caring situations with both child and elder care responsibilities. Many of these ‘sandwiched’ family members, generally considered to be in the mid-life stage of ages 40–65 will be, or will be expected to be employed.

As noted in both papers, the workplace provision of flexible working hours and leave to care for family members, both the young and the old, are essential if

employment and family caring responsibilities are to be integrated. Nearly 100 per cent of AFLCS employed respondents aged 25–70 said that family leave was an important work condition.

Even more crucial to the ability to combine employment and caring is the amount of time available. Long working hours do not provide time for caring. In the AFLCS, around two thirds of male employees and three quarters of self-employed males worked in excess of 41 hours per week, as did 19 per cent of employed females. Those working long hours also reported that work interfered with home life and they had insufficient time with family. Long and pressured work environments also reduce the number of employed people of all ages who would have the time or energy to volunteer or to be the volunteers on whom many young children and older people rely, as Briggs noted.

Similarly, community resources such as day care and respite care centres, home help and maintenance services are considered necessary supports for employed caregivers.

Intergenerational exchange and support

The capacity of family members to provide caring and support for each other is dependent, firstly on having relatives. Relatives then have to be capable of caring, be willing and are available. Willingness and availability may be able to be encouraged, maintained or coerced, as the authors have stated, to the extent that other sources of support are made available, accessible, appropriate and affordable.

As mentioned, studies overseas and in Australia consistently demonstrate that families do care and support the ill and the aged and dependent children. In the AFLCS, of respondents who were aged 50–70 with adult children over age 18, over 70 per cent gave financial support and over 80 per cent gave practical support to children. Also, 78 per cent of these parents received practical assistance and 81 per cent received emotional support/advice from their adult children. Not surprisingly given the ‘young–old’ age range of these parents, only 23 percent received financial help. Over one quarter of later life respondents also received practical support, and a fifth received financial support, from their parents.

Of those respondents aged 50–70 who had a living parent or parent-in-law (approximately one half), 73 per cent gave their elderly parents emotional support or advice, 63 per cent gave practical help and 33 per cent gave financial help.

As Briggs noted, higher divorce rates, later age at marriage and lower marriage and fertility rates, along with increased geographic mobility, means that there is not

always a family member to assist with an individual's caring needs. Who, for example, feels responsible for an ex-father-in-law, for a step sister seldom seen? In the AFLCS, where parents had been divorced, fathers especially were less likely to receive emotional, practical or financial supports from their adult children.

Conclusion

Shared responsibility between families, community, the market sector and government, as Briggs describes, is a philosophical approach that I would not want to refute, even ascribe to, albeit with some caveats. Families, for example, rely on secure employment and incomes for an adequate standard of living (although how adequate is defined is arguably debatable) and if they are to combine work with family caring responsibilities, then working conditions must be such that they enable these two roles to be met without negative consequences for current and future financial security.

I agree with Fine that given the diverse structure, composition and aspirations of contemporary families, a wide range of accessible, affordable and appropriate supports are essential if family members are to be encouraged to take on or complement responsibilities for caring, particularly for the aged, in a way that reflects positive social capital. It is however, the personal touch and presence of service providers and pleasant and kindly physical environments, not just technology and access to Internet information that are essential, a point he also makes.

Services, especially those that are of the quality we all want for ourselves and our loved ones are costly. We as a community do have to be prepared to pay our share, but it appears that skewing the balance towards market principles of profit and cost-effectiveness, 'maximum yields' and level playing fields has seldom achieved this goal when caring and support to the dependent young, ill and elderly are involved. Briggs' support for the need to monitor standards of care in the home and community and to develop mechanisms of accountability for the new mix in delivery of services is to be commended.

Discussant — Mandy Leveratt

I would like to start by saying how welcoming it was to hear Paul Johnson say yesterday that he did not believe that population ageing necessarily constituted a crisis. This for me raises the question of the language we use in relation to social issues and how we then interpret and act upon those issues. One example of this is the way we talk about the aged. Much of the literature still treats them as a homogeneous group. Again, Johnson's paper made the crucial point that the issue is not ageing *per se* but the purchasing power of older people; in other words, the issue is one of poverty.

The language of ageing

When it comes to the question of independence and dependence and the balance of responsibilities between families, individuals and governments, we need again to be alert to our use of language and to take on board the historian Barbara Taylor's (1983, p. 159) warning that 'words like ideas are historical phenomena; they are also historical backgrounds in which conflicting intentions and meanings struggle for space'.

Lynelle Briggs wrote:

... growing national and personal wealth and continued growth in care service provision by the non-government sector will mean that individuals can increasingly care for their children when young and for themselves in older age by choosing and paying for services rather than relying on government.

Briggs' paper also states that there is 'a growing recognition of the greater benefits of individual and family autonomy and self-provision'. This seems to me, in part, to be a restatement of the view that dependence upon governments is inherently bad and that people should take more responsibility for themselves

This raises a number of questions. Why is dependence upon the state considered inherently bad and yet dependence on the family is not? Many females would argue, for example, that dependence upon the state is far preferable to being subject to the arbitrary whims of their male partners. In addition, one of the major manifestations of dependency in western societies — dependence on a wage — is actually articulated as a symbol of independence and this should alert us to the ideological nature of words and their meanings.

I want to turn now to this language as it applies to older people specifically, and I must stress that I am only talking about low income older people who enter retirement without owning their own home. The Brotherhood of St Laurence has been conducting a number of research projects in this area and, although these projects are not large scale, I think some of the findings are highly pertinent to today's discussion.¹

First, we found that negative images of ageing through the use of words like 'burden', when coupled with a lifetime of disadvantage, resulted in an internalisation of this negativity which manifests itself in several ways.

One mechanism used by those interviewed was to separate themselves from other older people by saying that they did not fit into the category. In other words, they objected to being linked to stereotypes of ageing. This suggests that we do not really know enough about what it means to be old and more research needs to be conducted to address this issue.

A second manifestation was a refusal of services, even though their lives would have been considerably improved had they received them; thus they were underutilising the services to which they were entitled, in part because they did not wish to be perceived as a burden. Instead, they argued, they wanted to be independent. Herein lies one of the dangers of positing older people and population ageing in general as a crisis or problem. It may be in this instance that people who have come from very disadvantaged backgrounds can only exercise autonomy or independence in this negative manner. We should be mindful of this possibility.

Briggs' paper also mentioned governments' commitment to positive or healthy ageing strategies. While these are to be welcomed, particularly when it comes to a revaluing of older people in our society, such strategies will be meaningless for low income older people unless they are also accompanied by adequate income support policies which provide the material means whereby they can engage in positive ageing activities.

A second finding of our research was that current government policies — both Federal and State — were, in combination, restricting access to services. In the area of Home and Community Care services, many providers in Victoria have introduced priority of access policies which determine access according to assessed functional need. This has resulted in restrictions being placed on those with low needs. This policy strikes me as utterly non-sensical, in terms of long term benefits and costs. It is surely more important to allow greater numbers of people relatively low levels of support rather than waiting for them to slide over into high need. This leaves low

¹ Recent projects include Leveratt (1999 and forthcoming); Hawkes (forthcoming).

income older people with few or no choices as they cannot afford to buy services in the marketplace.

Yet, as Briggs stated, additional government funding is going into Coordinated Care Trials, Community Aged Care Packages and the like which are designed primarily for people with complex care needs. In Victoria, for example, the whole of the aged community and mental health sectors are about to undergo major reform, ostensibly on the basis that those with complex care needs require better service coordination.

The stress on the role of families in informal care giving is of little or no relevance to the people we interviewed. Most had no family and where they did they had often had no contact for many years. In relation to the role of private provision of services, Michael Fine's paper has made the observation that this is hardly a new phenomenon in Australia. People with the means to do so have always been able to purchase the services they need and will always continue to do so. For low income older people, private provision of services has been mainly experienced as a consequence of the introduction of compulsory competitive tendering in local government, and local councils are the main providers of home and community care services here in Victoria.

Some have reported that the quality of the service had declined while others found the change in personnel disturbing. What was important to them, perhaps equally as important as the actual service itself, was the relationship of trust they had built up with the worker. This relationship had frequently been broken with the introduction of Community Care Trials and increased casualisation of the workforce. I agree with Fine's paper that older people's preferences have always been for their family members to perform intimate services of care but in their absence, older people prefer a worker who remains with them in the longer term. Fine also made the important point that there has been no evidence to show that government provided services have resulted in a diminution in the provision of informal care by family members. To the contrary, families are more likely to granny-dump in the absence of such services.

In the case of low income older people who do not have family support to turn to, there is some evidence also that government provided support has not undermined their desire for self-sufficiency. What they do require, however, are policies which, in a holistic manner, facilitate rather than obstruct access to services and that those services are provided in a non-stigmatised manner. We need to banish the dichotomous and damaging language of dependence and independence in favour of a discourse which promotes participation. We also need to examine whether targeting policies have reached their limit and become both inefficient and ineffective.

Policy issues

There are a number of possibilities in terms of policy directions. First, provision of services could be made universal. Second, the definition of 'need' could be widened to go beyond the medical model and encompass financial disadvantage. Third, the implementation of adequate income support policies which would really enable low income older people to exercise choice. Fourth, greater value could be placed on workers in support services in terms of wages and conditions in order to improve the quality of care.

I do not believe governments are going to turn back to universal services, however much some of us might desire that, but some combination of the other three policies might achieve greater access to quality services for low income older people.

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- (forthcoming), *The Meaning of Independence For, and Use of HACC Services by, Low-income Older People*, Research project in progress (funded by Department of Human Services) by the Brotherhood of St Laurence, Melbourne.
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General discussion

The discussion covered a range of issues, which included:

- government intervention in relation to decision making and funding;
- family provision of aged care;
- other options for aged care;
- health expenditure;
- gender inequity in health care provision;
- projection of social expenditure; and
- the term 'dependency'.

Thinking about government intervention: who makes decisions and who pays

One participant noted that it is important in approaching the question of aged care to consider who makes decisions and who pays.

Economic theory suggests that *informed* consumers decide. Elderly consumers may be able to make informed decisions about their care early on, but it is often more difficult as people become more frail. This suggests a need for government intervention to protect consumers. In addition, elderly people sometimes transfer their decision making responsibility to representatives (via power of attorney) who need to be held accountable. With particular reference to Australia, it was suggested that, at present, consumer information about aged care is inadequate and the costs for individual consumers of gathering information relating to care are very high. Little generic information is available.

Market failure in the private insurance market for long term care also suggests a need for government intervention. The UK Royal Commission on Long Term Care recently considered this issue.

Family provision of aged care

Concerns were raised about the increasing emphasis by governments on family care provision. It was suggested that families may be limited in the amount of aged care they are able to provide, being less able to provide more demanding types of care

such as nursing and more technical services. In addition, as people get older, there are fewer family members available who are able to provide care. Reference was made to McDonald and Kippen's paper which showed that those aged 65 are more likely to have access to family assistance than those aged 80. ABS data suggest that the majority of the moderately, severely and profoundly handicapped do not have a co-resident (family) carer. Thus, government emphasis on encouraging family care provision excludes those without families and also excludes families without the financial, social or personal resources to provide aged care.

Other options for aged care

Fine suggested that deinstitutionalisation and the switch to community care for mental health patients — which for many meant no care at all — provides a salutary lesson for the provision of aged care. He also noted that funding of aged care in Japan involves those 40 and over paying long term care insurance and those under 40 making no such contributions. This system appears popular with the electorate. Lastly, Fine observed that cashing out residential care entitlements could add to competition between service providers of aged care. There is little competition currently, as a result of a lack of supply. However, if sufficient consumers cashed out their residential care entitlements and used them to find alternative home base care, then current private service providers would need to innovate and upgrade their service to compete.

Health expenditure

Another participant pointed to a possible trade-off between achieving savings in health care expenditure and maintaining a healthy population, and suggested that government policies that aim to achieve savings in health expenditure by targeting complex care, rather than providing basic floor coverage, have hidden associated costs. Four problems associated with targeting complex care were outlined. First, failing to provide simple care initially may lead to an increase in demand for complex care. Research by Anna Howe found evidence that provision of initial care could reduce the probability of admission to residential care by 30 per cent. Second, targeting provision of complex care provides a (perverse) incentive to increase care needs so as to qualify as a complex case. Third, case management is only cost-effective for people requiring complex care and is not necessary for primary care patients who can direct themselves between different services. Basic floor coverage can lead to efficiencies by limiting the need for case management. Lastly, transferring expenditure from basic floor coverage to complex care adds to social anxiety as a result of the difficulty of obtaining care until the case reaches complex stage.

Gender inequality in health care provision

The issue of gender inequality was also raised, with one participant noting that the burden of caring for older people falls for the most part on females, while at the same time, Australian females are increasingly joining the labour force, as well as providing the majority of child care and undertaking household tasks. While the tendency for females to provide care may derive from consumer preferences for female carers, if this is not matched by female preferences to provide care, there may be a case for a campaign to change social attitudes towards care provision — that it is an acceptable male role — and to persuade Australian females to partner with younger males rather than with older males!

However, as a cautioning note, another participant revealed that common stereotypes are hiding the trend (now emerging) for males to provide more care. Males seem to provide around 30 per cent of care to older people. It was suggested that there is a ‘hierarchy’ of preferences, with partners (of either gender) being the preferred carer, followed by a daughter (if a partner is not available), followed by a son.

Projections of social expenditure

A participant alluded to the problem that projections of social expenditure often assume current expenditure levels per age group will be relevant to future cohorts. However, in health care, for example, people are living longer due to medical and general technological advances, so older cohorts in future may not require the same health expenditure per head as older cohorts today. Another participant indicated that projections of social expenditure depend more on assumptions about productivity and that a decrease in disability by age group over time has a big impact on expenditure on long term care, but not much on health spending.

The view was expressed that changes over time in cohort-specific expectations and behaviour cause problems for modelling that is not behaviourally based. Given the focus of micro-simulation modelling in particular on constraints, and given that people change their behaviour when constraints change, this is an important problem.

Terminology

Fine noted in passing that ‘dependency’ is a term not often used by gerontologists or those working with older people because it has negative connotations.

13 Ageing and the cost of health services

Jeff Richardson and Iain Robertson¹

13.1 Introduction

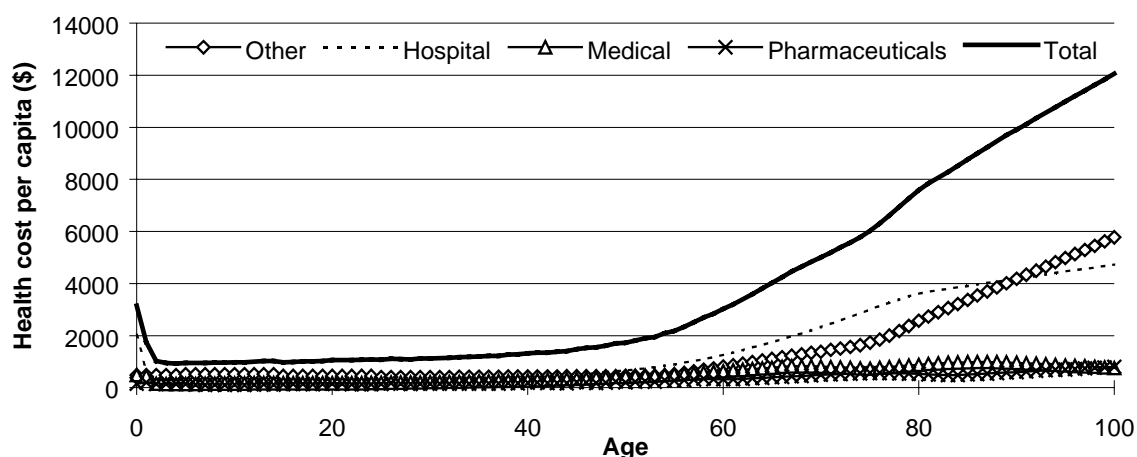
The issue to be discussed in this paper is whether or not the ageing of Australia's population is likely to increase the cost of health services to the point where it represents a problem for the economy or for public policy. The answer to this question depends, in part, upon social and political factors: whether the Australian public, collectively, wishes to use its resources on health services and whether or not it wishes to finance these through the public or private sectors. In part the answer depends upon a technical issue, namely, the cost of future health services and it is commonly assumed that these will be driven relentlessly upwards by the increasing demands of the ageing population and that the resulting cost burden will be exacerbated by the decreasing proportion of the population that is economically active and capable of supporting the needs of the elderly.

Figures 13.1, 13.2 and 13.3 represent the basis for these concerns. The elderly consume significantly more resources than the young, and this is particularly true for those above age 65 (figures 13.1 and 13.2). From this, it appears reasonable to infer that the demand for health services will rise steadily in the next half century as the proportion of the population aged above 65 rises. The second consequence of this ageing will be a reduction in the proportion of the population that is aged 18–64 and, consequently, the proportion that is likely to be economically active (figure 13.3).

¹ We would like to thank Dr John Goss of the Australian Institute of Health and Welfare (AIHW) for his prompt assistance in providing the OECD data for this paper.

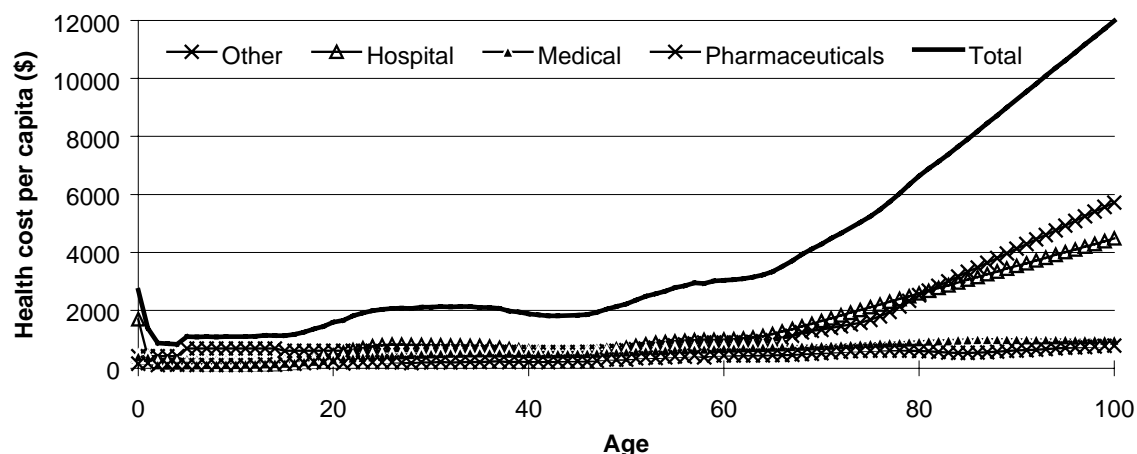
Despite this evidence it is not necessarily true that future costs will be dominated by ageing and it is possible — as a matter of logic — that ageing *per se* may have no effect. The existence of a cross-sectional distribution of health costs as shown in figures 13.1 and 13.2 does not imply that over time aggregate health costs will be determined by the age composition of the population and the costs per age cohort shown in these figures. The belief that there is a fixed medical need for each cohort of the population and that there is a well defined set of services required to meet these needs has been labelled by Evans (1984) as the ‘naive medical model’. The

Figure 13.1 Best-estimate simulated healthcare cost per capita by type of expenditure and age, 1994-95 – males



Data source: Based on AIHW data, reported by Dr J Badham.

Figure 13.2 Estimated health care cost per capita, by type of expenditure and age, 1994-95 – females



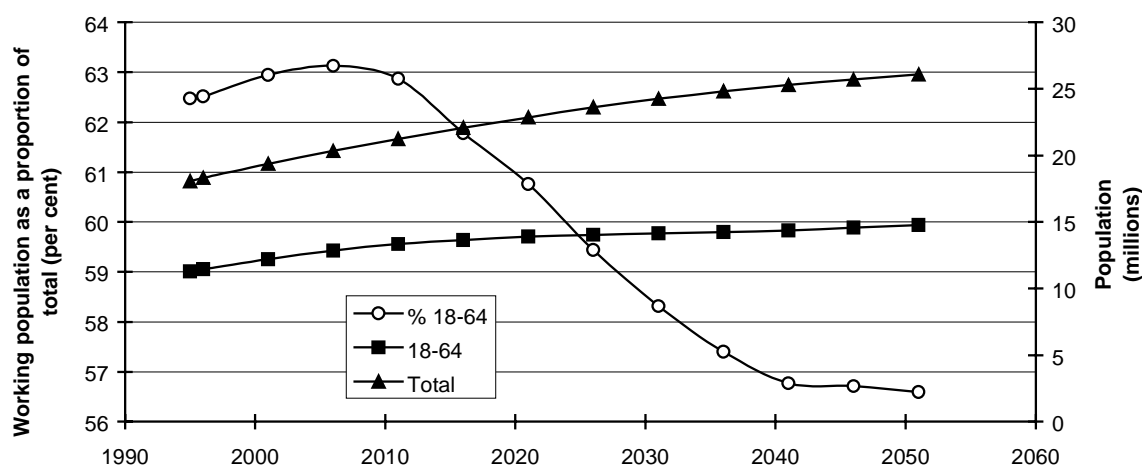
Data source: Based on AIHW data, reported by Dr J Badham.

deterministic view that health expenditures are defined fairly precisely by technical factors is simply wrong. (The issue is discussed further below.) In principle, the cost profiles displayed in figures 13.1 and 13.2 are compatible with an historical pattern of aggregate costs which rises or falls independently of the demographic composition of the population. For example, a change in the age structure that would, *ceteris paribus*, increase aggregate costs by 10 per cent could be accompanied by a downward shift in the cost profiles of 10 per cent. More generally it is possible that aggregate costs may be determined by factors that are independent of the demographic profile and that the age profile simply determines the distribution of the predetermined expenditures. It is for this reason that an analysis of the impact of the ageing population must consider not simply the effects that would occur if health costs per age cohort followed a given cross-sectional pattern; it is important to consider the likelihood of this occurring — that is, the likelihood that ageing will indeed drive health costs.

For this latter reason the present paper considers five questions.

1. How much will health expenditures increase by if they are driven by ageing only?
2. How much will health costs increase by if they are driven by ageing and by other factors that follow their historical trend?
3. What evidence is there that ageing drives health expenditures and will continue to do so?
4. Is it desirable that age should drive health expenditures and that we should create

Figure 13.3 Projected persons aged 18–64 as a share of total population, 1990-2060



Data source: ABS.

capacity to accommodate the demands of the ageing population?

5. What other factors will determine future health care costs and what is the importance of ageing *per se* relative to these other factors?

13.2 Projecting health care costs

The implications of present spending patterns for future health care costs have been analysed in a number of studies (EPAC 1988; Goss et al. 1994; National Commission of Audit 1996; Badham 1998; Goss 1998). A common methodology has now been employed with variants. In this, spending for each age–sex cohort in the future is assumed to be determined by the pattern of spending in a base year, and future expenditures are estimated by summing the expenditures of the future cohorts. As the proportion of the population in the elderly cohorts rises, this implies increased health expenditures. Fuchs (1984) has noted a likely error with this methodology, viz, that expenditures are more likely to be related to the number of years to death than to the number of years since birth. Consequently, with an increasing life expectancy, the expenditures of a given age cohort are likely to decrease. Both Goss et al. (1994) and Badham (1998) explicitly adjusted their estimates to take this factor into account. Another significant adjustment is to assume that the expenditures of each cohort will continue to rise as they have done in the past. (This process is described by Badham (1998) and documented in the Australian Private Hospitals Association (APHA) model available on the web site.)

The most influential of these studies by the National Commission of Audit (1996) concluded that health expenditures are likely to rise to 17 per cent of the gross domestic product (GDP) by 2040. Consistent with this, Badham's study implied an expenditure of 12.9 per cent of the GDP by 2021. Goss (1998) and Howe (1997) are both sceptical of these conclusions, and argue that, because of the influence of other factors, these results are unreliable.

The results presented in this section were derived using the model described by Badham (1998) and made available at the APHA website (1999). In summary the following assumptions and procedures were employed.

1. The pattern and level of expenditure per age–sex cohort in 1994 were used as the basis for future projections as this is the only year for which comprehensive data are available, and all Australian expenditures and costs throughout the paper are adjusted to 1994 prices.
2. Population projections to the year 2051 were obtained from the Australian Bureau of Statistics (ABS).
3. All of these results were subjected to the 'Fuchs adjustment' as used by Badham.

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4. Based upon the five year forward projection of Access Economics (1998) a GDP growth rate of 3.1 per cent per year was initially assumed and then adjusted for the declining participation rate which was assumed to follow the age structure shown in figure 13.3. The initial GDP growth rate was varied upwards by 0.5 and downwards by 0.5 and 1.0 per cent per year. Relevant data for the time periods under consideration are summarised in tables 13.1–13.3.

Five sets of projections were carried out: (i) 1994 cohort expenditures were applied to hypothetical scenarios in which the total population and GDP were unchanged but the *proportion* of the fixed population in each cohort was equal to the proportion in future age–sex cohorts in the ABS population projections (the ‘ageing only’ scenario); (ii) these ‘projections’ were repeated but with the total population increasing as forecast by the ABS and with GDP rising as described above; (iii) cohort expenditures (which are held constant in the first two sets of calculations above) were assumed to rise at a rate equal to the average of the historical ‘excess’ rate of inflation in the health sector² and the assumed rate of GDP growth per capita.³

5. Badham’s default option for cohort projection was adopted, viz, the apparent age–sex component of growth in health expenditures for the period 1981–94 was subtracted from total growth to obtain the average historical growth in expenditures within each age cohort. This average growth rate was then assumed to continue until the year 2051.
6. The default option described above was replaced by the assumption that expenditures for those aged above 65 grew at twice the rate of expenditures for those below the age of 65.

The five sets of results from the scenarios described above are reported in table 13.4. First, when the only source of expenditure growth is ageing (‘Ageing only’ in the table) and there is neither population nor GDP growth, health expenditures rise from \$37.53 billion in 1995 to \$52.6 billion in 2051, with most of this increase occurring in the decade to 2006. By this year health expenditures would have risen to 10.35 per cent of the unchanging GDP. In the following 45 years to 2051, this would incrementally increase to 11.78 per cent.

When both population and GDP growth are added to the model (results B) health expenditures as a percentage of GDP decline with each of the four rates of economic growth that have been employed. This indicates that a GDP growth in this

² The excess inflation is the increase in the cost of a unit of health output after adjusting for the general rate of inflation as measured by the GDP deflator (AIHW Health Expenditure Bulletins).

³ This is the rate shown in the table less the population growth rate.

scenario significantly exceeds the effect of population and ageing on health expenditures.

Table 13.1 Percentage of health expenditure^a generated by age group, 1995–2051

	0–4	5–19	20–44	45–64	65–74	75–84	85+
1995	5.9	11.0	29.4	23.0	15.1	11.9	4.5
2006	4.4	10.5	26.9	27.1	13.0	12.4	5.6
2021	3.7	9.2	23.1	27.0	17.6	12.8	6.6
2036	3.4	8.5	21.5	24.0	17.1	16.2	9.4
2051	3.2	8.2	20.8	23.6	15.8	16.4	11.9

^a Assuming growth in costs of expenditure sectors continues at current level.

Table 13.2 Projected growth in population, health expenditure and GDP in Australia, 1995–2051

	1995	2006	2021	2036	2051	Average annual growth rate 1995 – 2051 (%)
Population	18.1	20.3	22.9	24.8	26.1	0.66
% population aged 18–65	62.5	63.1	60.8	57.4	56.6	
GDP (\$ billion)	488.4	676.3	1 110.7	1 858.5	2 980.0	

Table 13.3 Growth in population health expenditure and GDP in Australia, 1981–1994

	1982	1985	1988	1991	1994	Average growth rate 1981–94 (%)
Population (M)	15.2	15.8	16.5	17.3	17.8	1.35
% aged 15–64	60.5	60.8	61.8	62.4	62.4	0.28
GDP (\$1994)	318.2	366.3	403.2	423.3	473.7	3.37
Real total health expenditure (1994\$ billion)	23.6	27.3	31.5	34.6	38.9	4.24
Health expenditure as % of GDP	7.4	7.5	7.8	8.2	8.2	0.84
<i>Annual growth rates (%)</i>						
Population growth rate (%)	1.8	1.3	1.7	1.2	1.0	
GDP (%)	–2.2	4.4	2.7	1.8	3.5	
Real total health expenditure (%)	1.9	5.7	5.2	3.8	5.3	

^a This assumes growth in costs of expenditure sectors continues at the current level.

Table 13.4 **Predicted future health expenditures calculated from population size, ageing and historical trends (1994 \$billion)**

		1995	2006	2021	2036	2051
A. Ageing only	Health cost (A\$ billion)	37.53	46.27	49.36	51.67	52.60
	Health % GDP	8.40	10.35	11.05	11.56	11.78
B. Ageing plus population growth	Health cost (A\$ billion)	37.53	52.14	62.51	71.03	75.96
GDP growth ^a 2.1% p.a.	Health % GDP	8.40%	9.28%	8.15%	6.78%	5.31%
GDP growth 2.6% p.a.	Health % GDP	8.40%	8.75%	7.14%	5.52%	4.02%
GDP growth 3.1% p.a.	Health % GDP	8.40%	8.26%	6.26%	4.50%	3.04%
GDP growth 3.6% p.a.	Health % GDP	8.40%	7.79%	5.49%	3.67%	2.31%
C. Ageing + population growth + excess inflation	Health cost (A\$ billion)	37.53	52.14	62.51	71.03	75.96
GDP growth 2.1% p.a.	Health % GDP	8.40%	9.92%	9.71%	9.15%	8.24%
GDP growth 2.6% p.a.	Health % GDP	8.40%	9.59%	9.05%	8.22%	7.14%
GDP growth 3.1% p.a.	Health % GDP	8.40%	9.28%	8.44%	7.40%	6.20%
GDP growth 3.6% p.a.	Health % GDP	8.40%	8.99%	7.89%	6.67%	5.39%
D. Ageing + population growth + uniform cohort trend	Health cost (A\$ billion)	37.53	65.66	107.86	172.82	274.63
GDP growth 2.1 % p.a.	Health % GDP	8.40%	11.69%	14.06%	16.49%	19.19%
GDP growth 2.6% p.a.	Health % GDP	8.40%	11.02%	12.32%	13.43%	14.52%
GDP growth 3.1% p.a.	Health % GDP	8.40%	10.40%	10.80%	10.95%	11.01%
GDP growth 3.6% p.a.	Health % GDP	8.40%	9.81%	9.48%	8.94%	8.36%
E. Ageing population growth + differential cohort trend	Health cost (A\$ billion)	37.53	69.07	124.94	238.38	494.35
Growth >65 = 2*growth <65						
GDP growth 2.1% p.a.	Health % GDP	8.40%	12.29%	16.28%	22.75%	34.54%
GDP growth 2.6% p.a.	Health % GDP	8.40%	11.59%	14.27%	18.53%	26.14%
GDP growth 3.1% p.a.	Health % GDP	8.40%	10.94%	12.52%	15.11%	19.82%
GDP growth 3.6% p.a.	Health % GDP	8.40%	10.32%	10.98%	12.33%	15.04%

^a GDP growth is assessed to commence at the rate shown in each row and then is reduced as the participation rate of the workforce declines. Predicted costs (C) = costs based on 1995 costs for each population cohort which increases each year by ½ (0.1 + %growth of GDP/capita).

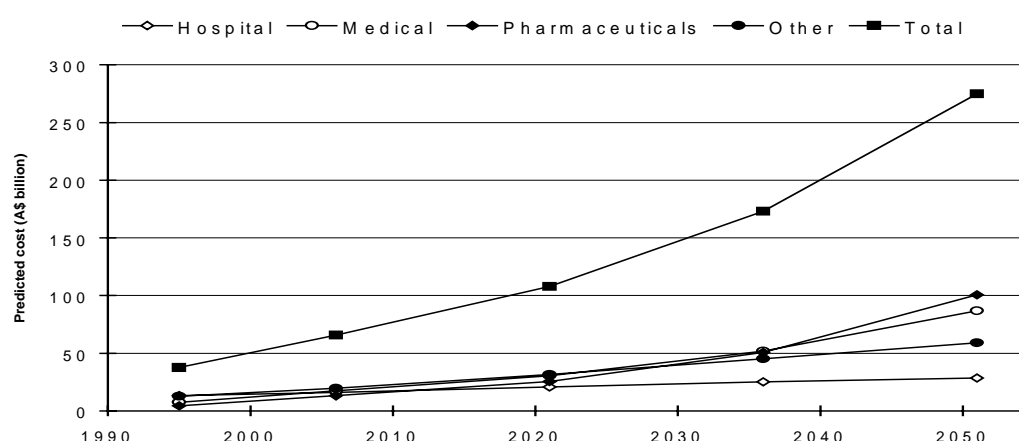
It is likely that per capita health expenditures within each cohort will rise because of the 'excess inflation' in the health sector if wages rise more rapidly than productivity. Between 1975 and 1996, the excess inflation was 0.1 per cent per year (AIHW 1998). If this rate is assumed to continue then by 2051 health expenditures would be only 5.76 per cent greater than the rates shown in block B in table 13.4 (that is, expenditure would have risen from \$75.96 billion to \$80.34 billion) and, with a GDP growth of 2.1 per cent per year, health expenditures as a per cent of GDP would rise from 5.31 per cent to 5.62 per cent. That is, the impact would be negligible.

It is, of course, possible that a rate of excess inflation as low as 0.1 per cent could not be sustained and that the historical rate was depressed by the unsustainable increases in hospital productivity that have accompanied the application of global budget caps. Results in block C in table 13.4 increase the rate of excess inflation as described above so that the rate is an average of the historical trend and the assumed growth of GDP per capita. With this assumption, health expenditures as per cent of the GDP still decline except in the scenario with the lowest rate of GDP growth. When the expenditure in each age cohort is assumed to continue to expand along its 1981–94 growth path (block D), expenditures by 2051 are about 260 per cent greater than in the first scenario in which cohort expenditures were fixed (block B). When the assumption of constant growth across cohorts is replaced by the assumption of a growth rate which is twice as great for those aged above 65 as for those aged below 65, then expenditures rise by another 80 per cent.

These results illustrate several important conclusions. First, and most importantly, the pure 'age effect' is comparatively unimportant. If ageing were the only source of expenditure growth, the relative size of the health sector would significantly decline as GDP would be expected to rise more rapidly than health expenditures. Second, the chief determinant of the size of the future health sector will be within cohort growth. Third, the size of the health sector is sensitive to the relative growth rates of different cohorts. If, as is likely, new technologies permit the more rapid growth of expenditures on the elderly, then the health sector could expand more rapidly than with the same average growth of cohort expenditures. Fourth, the economic burden of the health sector will very largely depend on the rate of growth of the economy. This is the conclusion also reached by Howe (1997). Part of the explanation for the relatively modest effect of ageing on health expenditure is that expenditure in the elderly, even though high on a per capita basis, forms a relatively small proportion of total health expenditure. Table 13.1 shows that a 73 per cent increase in the percentage of total expenditure devoted to those aged over 75 will produce a 12 per cent increase in the percentage of expenditure on all age groups, assuming that growth in cohort expenditure continues at the present rate.

Figure 13.4 represent the disaggregation of future expenditures with the baseline scenario in which all cohort expenditures rise at their trend rate but are adjusted to allow for the ‘Fuchs effect’.

Figure 13.4 Predicted growth in total health expenditure disaggregated by sector Australia, 1995-2051^a



^a Figure 13.4 represents the ‘base case’ of GDP growth of 3.1 per cent and uniform cohort growth equal to averaged cohort expenditure growth, 1981–94.

13.3 Does ageing drive health expenditures?

The inevitability and importance of an ageing effect may be tested with four sets of readily available data. These relate to (i) time series Australian expenditures; (ii) cross-sectional Australian expenditures; (iii) cross-sectional international data; and (iv) time series cross-national expenditures.

13.3.1 The historical experience

The methods that have been employed to forward project health expenditures were applied to historical data to determine the accuracy of the resulting projection. Results shown in table 13.5 and figure 13.5 are based on the assumption of fixed per capita expenditures within cohorts, actual rates of population growth and ageing and actual GDP growth. In view of the previous conclusions, the results are unsurprising. If ageing had been the only drive factor in the health sector then health expenditures would be now a significantly lower percentage of the GDP. Of the \$15.7 billion increase in expenditures (in 1994 constant dollars), only \$6.2 billion or 40 per cent of the increase could be attributed to ageing. A minimum of 60 per cent of the increase must be attributed to other factors and even this may be a significant overstatement of the importance of ageing if, as discussed below, ageing did not

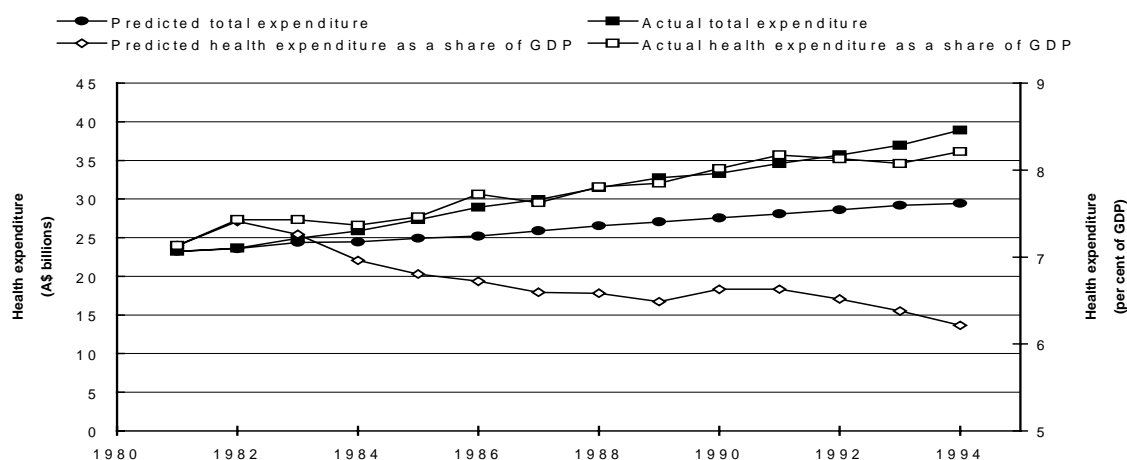
drive expenditures but occurred coincidentally at the same time as expenditures were independently driven by other features.

Table 13.5 Predicting historical expenditure from population size and ageing

	Unit	1981	1985	1990	1994
<i>Total expenditure on health</i>					
Predicted	A\$ billion	23.20	24.93	27.55	29.43
Actual	A\$ billion	23.20	27.33	33.32	38.90
<i>Health expenditure as share of GDP</i>					
Predicted	%	7.13	6.80	6.63	6.21
Actual	%	7.13	7.46	8.02	8.21

Figure 13.5 Validation of the ‘needs methodology’

Predicted versus actual growth, 1981–94



13.3.2 Australian cross-section data

It is possible to argue that the previous results are an unreliable test of the importance of ageing. Expenditures over time may be dominated by the introduction of new technologies which, once they exist, will be used by all age cohorts and, consequently, the effect of ageing cannot be considered independently of the introduction of new technologies. If this argument were correct, it would be expected that cross-sectional expenditures would be closely related to the demographic profile of regions and especially so after standardising for other sources of demand for health care.

This possibility was tested by comparing the use of general practitioner services per capita with the predicted use based on the age–sex composition of the 186

Australian statistical subdivisions. Per capita use of general practitioner services in each statistical subdivision were obtained for 1996 from the Commonwealth Department of Health and combined with other socioeconomic and demographic data (see Richardson 1998). This permitted the comparisons reported in figures 13.6 and 13.7 and table 13.6.

Figure 13.6 Actual versus age–sex predicted use of general practitioner services, by statistical subdivision across Australia, 1996

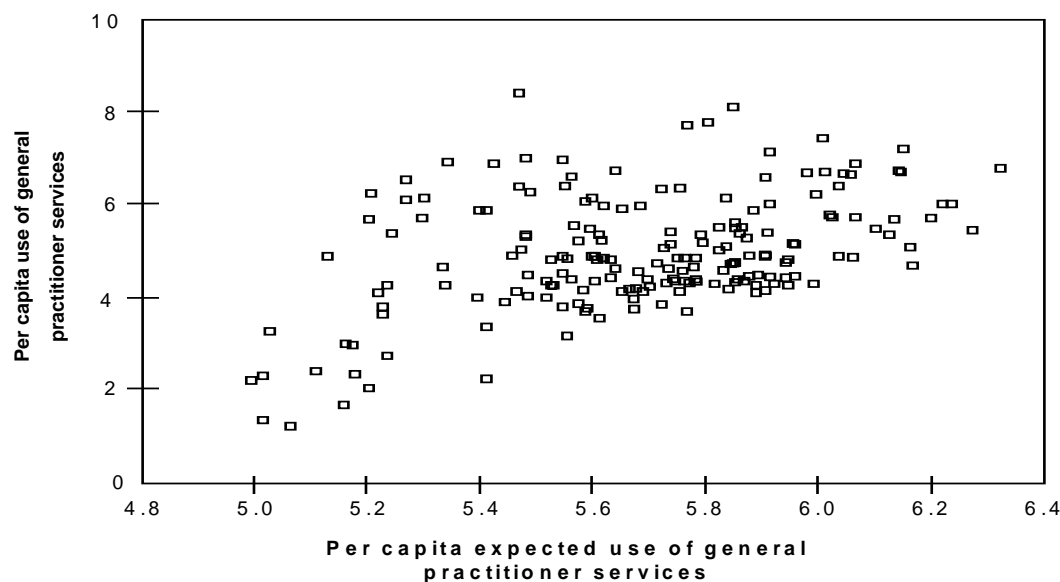


Figure 13.7 Residual from double log regression omitting \bar{Q} (GP)

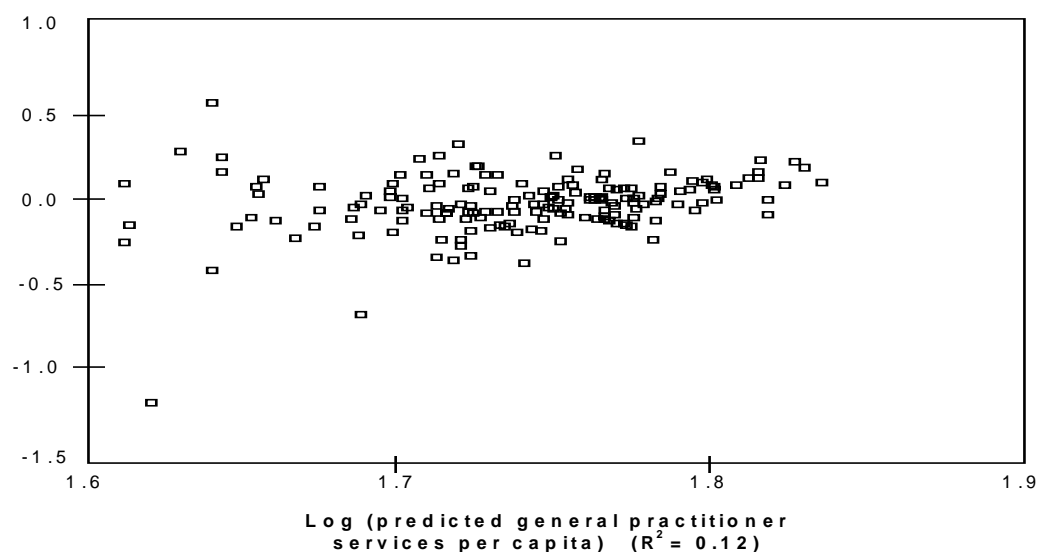


Table 13.6 Regression of GP use per 1000 persons on age–sex per 1000 persons

<i>Dependent variable: Ln Q(GP)</i>				
	(1)		(2)	
<i>Variable</i>	<i>B</i>	<i>P</i>	<i>B</i>	<i>P</i>
% Indig	–2.10	(0.00)	–1.51	(.00)
URBAN	0.08	(0.00)	ns	
Ln (HOSP)	–0.02		–0.01	(0.09)
Ln (Net fee)	–0.16	(0.00)	–0.14	(00)
Ln (GP)			0.41	(00)
	1.11	(0.00)	ns	
Ln \bar{Q} (GP)				
Constant				
R ² (adj)	–0.187		1.25	
	0.78		0.89	

Key: % Indig = Aboriginals as a percent of the population
 URBAN = SSD in an urban location
 HOSP = Public hospitals in the SSD
 Net fee = GP fee less rebate
 GP = GP/1,000 population
 \bar{Q} (GP) = Age sex predicted use of GP services

The first of these plots actual against expected use of general practitioner services. The resulting correlation coefficient of 0.138 indicates that only 2 per cent of the variance in the use of these services could be attributed to age and sex. This rises to 12 per cent after taking the logarithm of both variables.

The regressions in table 13.6 report the importance of age–sex predicted use of general practitioner services, \bar{Q} (GP), after standardising for other relevant variables that were found to be significantly related to the use of the services.⁴ The best fitting models included aboriginality as an index of socioeconomic status; urban versus rural location; the existence of a public hospital (and consequently an out-patient department providing primary care) and the out-of-pocket net fee paid by the patient. After standardising for these variables in a double log model, the age–sex predicted use of services was statistically significant. Its coefficient implies that a 10 per cent increase in predicted use of services is associated with an 11.1 per cent increase in actual use. The hypothesis could not be rejected that a 10 per cent increase in predicted would lead to a 10 per cent increase in actual use.

⁴ Other notable variables which were not significant included income per capita and the percentage of services that were bulk billed.

As it is possible that the significance of $\bar{Q}(\text{GP})$ is attributable to correlation with other variables (multi-colinearity), a second test was conducted in which $\bar{Q}(\text{GP})$ was omitted from equation 1 and the resulting residuals were regressed against $\bar{Q}(\text{GP})$. The result, shown in figure 13.7, is that 12 per cent of the variance of the residual is explained. As the residual represents only 28 per cent of overall variance this indicates that the age/sex variable explains approximately 3 per cent of total variance.

Two caveats to this result are of importance. First, the inclusion of the variable in equation 1 only increased the explanation of observed variance by 3.4 per cent. Second, equation 1 is misspecified as its residual closely correlates with the supply of general practitioners. When this variable is included (equation 2) the age–sex predicted use of services ceases to be of importance. This result is repeated when the general practitioner supply and net fees are endogenised in a two stage procedure (Richardson 1998).

In sum, the Australian cross-sectional data suggest that, in the case of general practitioner services age and sex may help to explain service use. However, its explanatory power is small and the data, as analysed in equation 2, are consistent with the hypothesis that they have no explanatory power. The simple correlation shown in figure 13.6 may be attributable to a tendency for general practitioners to locate their practice in areas with a more elderly demographic profile and for the service use to be the direct outcome of this decision rather than the demographic characteristics *per se*.

13.4 Cross-sectional cross-national data

In the introduction it was noted that the existence of a cross-sectional relationship between age/sex and health expenditures within a country need not imply that there is a relationship between national expenditures over time. For the same reason, the within-country relationship need not imply a cross-national correlation between nations. That is, if age and sex do not drive expenditures, then no relationship would be expected between national expenditures per capita and the demographic composition of countries.

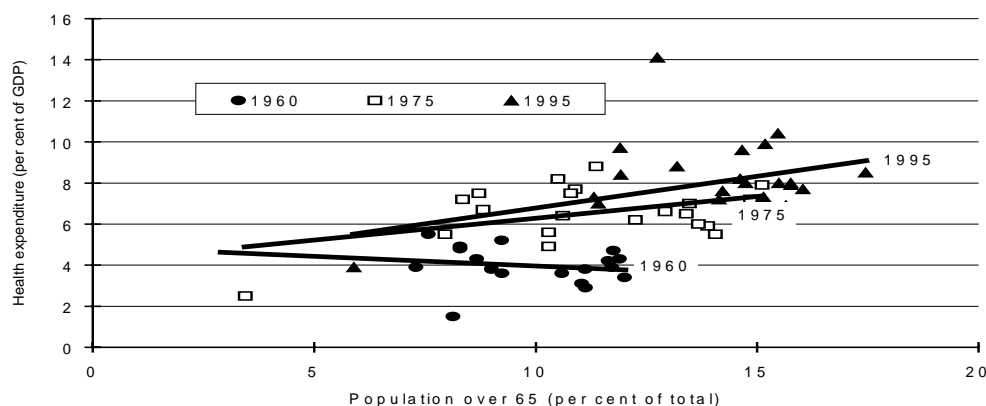
This hypothesis can be tested using publicly available OECD data on health expenditures in member countries. These were used in combination with three measures of the demographic composition of the population, viz, the per cent of the population aged over 65 and aged over 80 and an index of expected relative expenditures per capita (HP) which was obtained by weighting the proportion of

each countries' population in each age/sex cohort by Australian expenditures in these cohorts in 1994-95.

Figure 13.8 presents a simple comparison of health expenditures as a share of GDP against the first of the age variables, viz, the proportion of the population aged over 65. This reveals no correlation in 1960, a weak and statistically insignificant correlation in 1975 and a weak and statistically significant relationship in 1995. The comparison is confounded by the dominating influence of GDP per capita on health expenditures. Simple regression of these variables results in the relationships shown in figure 13.9. For all three years GDP per capita is a statistically significant determinant of health expenditures as a share of GDP. The analysis indicates a structural shift in the relationship between 1960 and 1975 but no further change between 1975 and 1995. Results of the inclusion of both GDP and the age variables in the regression are shown in table 13.7. The significant conclusion to be drawn from this table is that none of the demographic variables helps to explain the variation between national health expenditures as a share of GDP. As with the previous analysis, regressions were estimated with the demographic variables omitted, and residuals were compared with the age variables. Results were uniformly insignificant.

The conclusion to be drawn from these cross-sectional comparisons is that age cannot be regarded as a significant determinant of national health expenditures. Large differences in demographic structure are consistent with little or no difference in health expenditures per capita. This conclusion was also reached by Gerdtham et al. (1994) in their analysis for the OECD.

Figure 13.8 Population over 65 and health expenditure
Percentage of GDP



Note: Straight lines are linear trends.

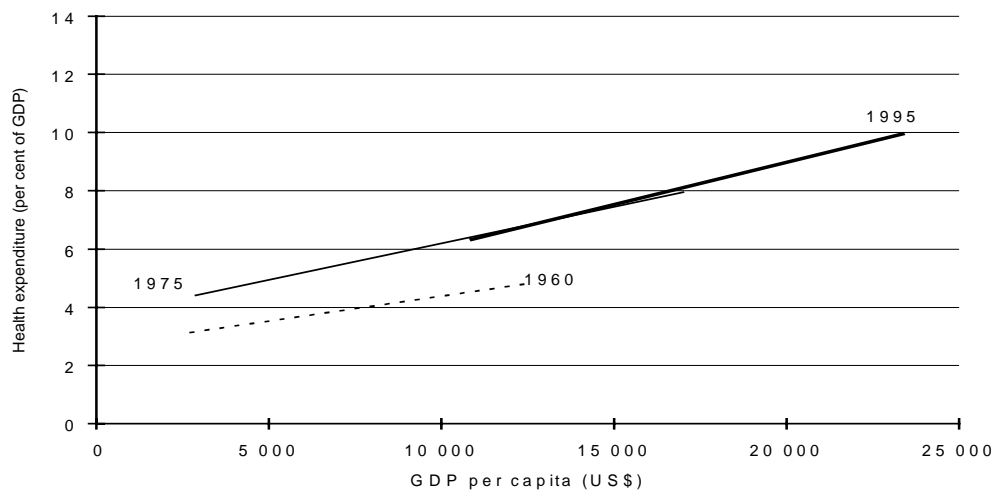
Data source: OECD health data (1998).

13.5 Cross-national time series data

The previous conclusion is consistent with the possibility that idiosyncratic historical factors dominate the cross-sectional relationship between nations but that over time demographic changes determine the relative growth of health expenditures in different countries. This was tested using the third and most comprehensive of the demographic variables, namely, the health expenditures predicted from each country's demographic structure and from 1994-95 Australian expenditures in each cohort. The percentage increase in actual expenditures between 1960 and 1995 was compared with the percentage increase predicted from this third demographic variable before and after standardisation for the percentage increase in the GDP and the increase in population. One of the resulting comparisons is shown in figure 13.10 and the regression results in table 13.8. None of these comparisons found any relationship between the change in the demographic variable and the increase in health expenditures. The result again suggests that demographic variables are either of minor or no importance in explaining the relative growth of health systems.

Figure 13.9 **GDP per capita and health expenditure**

Per cent of GDP, currency conversion uses purchasing power parity



Data source: OECD health data (1998).

Table 13.7 Regression results:^a health expenditure and various independent variables

Health expenditure as a percentage of GDP, 21 OECD countries, 1960, 1975, 1995

<i>Regression</i>	<i>1</i>		<i>2</i>		<i>3</i>	
<i>H % GDP</i>	<i>Coeff (b)</i>	<i>p =</i>	<i>Coeff (b)</i>	<i>p =</i>	<i>Coeff (b)</i>	<i>p =</i>
Independent variables						
% over 80 1960	-32.0	0.64				
% over 80 1975	48.9	0.40				
% over 80 1995	33.4	0.49				
% over 65 1960			-11.09	0.41		
% over 65 1975			9.92	0.33		
% over 65 1995			8.07	0.56		
HP 1960					-2.229	0.21
HP 1975					1.127	0.49
HP 1995					1.386	0.58
GDP p.c.1960	0.176	0.102	0.179	0.084	0.184	0.069
GDP p.c.1975	0.213	0.055	0.213	0.023	0.231	0.012
GDP p.c.1995	0.397	0.003	0.406	0.001	0.422	0.001
constant 1960	3.15	0.026	3.72	0.022	6.99	0.055
constant 1975	3.18	0.01	3.01	0.015	1.48	0.65
constant 1995	0.54	0.78	0.28	0.89	-2.00	0.72
R-squared	0.767		0.773		0.774	
Het. Test p =	1.000		1.000		0.594	
OV Test p =	0.166		0.131		0.154	

^a Regression 1: $H \% GDP = b . \% \text{ over } 80 \text{ } 1960 + b_1 . \% \text{ over } 80 \text{ } 1975 + b_2 . \% \text{ over } 80 \text{ } 1995 + b_3 . GDP \text{ p.c. } 1960 + b_4 . GDP \text{ p.c. } 1975 + b_5 . GDP \text{ p.c. } 1995 + \text{constant } 1960 + \text{constant } 1975 + \text{constant } 1995$

Regression 2: $H \% GDP = b . \% \text{ over } 65 \text{ } 1960 + b_1 . \% \text{ over } 65 \text{ } 1975 + b_2 . \% \text{ over } 65 \text{ } 1995 + b_3 . GDP \text{ p.c. } 1960 + b_4 . GDP \text{ p.c. } 1975 + b_5 . GDP \text{ p.c. } 1995 + \text{constant } 1960 + \text{constant } 1975 + \text{constant } 1995$

Regression 3: $H \% GDP = b . H.P \text{ } 1960 + b_1 . H.P \text{ } 1975 + b_2 . H.P \text{ } 1995 + b_3 . GDP \text{ p.c. } 1960 + b_4 . GDP \text{ p.c. } 1975 + b_5 . GDP \text{ p.c. } 1995 + \text{constant } 1960 + \text{constant } 1975 + \text{constant } 1995$

H % GDP = health expenditure as a % of GDP

% over 80 and % over 65 = the % of the population aged over 80 and 65

HP = health expenditure in 1960, 1975 and 1995 predicted from the populations of the 21 OECD countries in those years multiplied by the age and sex cohort costs for Australia in 1995.

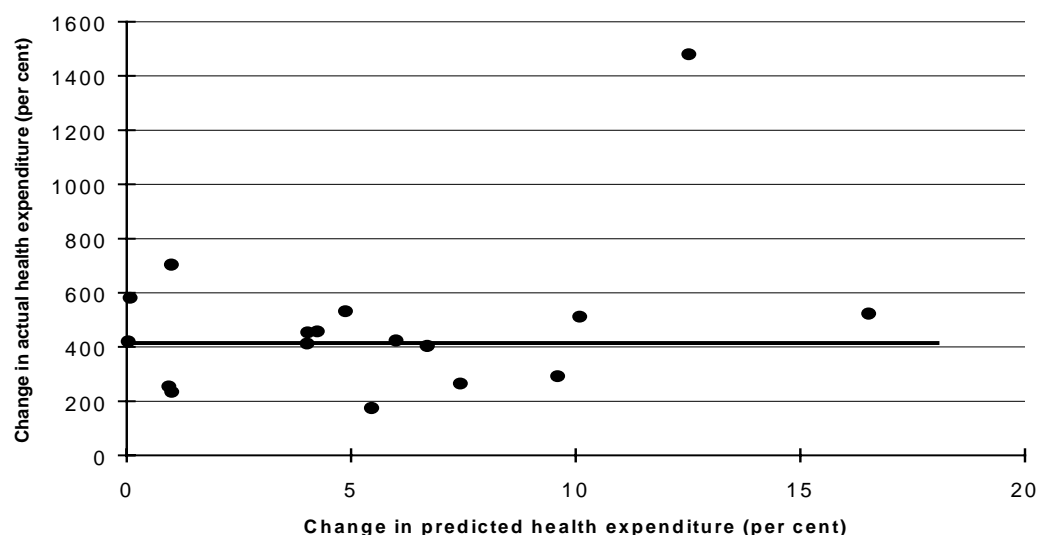
GDP p.c.1960 = GDP per capita in 1960

Het. Test = Cook-Weisberg test for heteroscedasticity, Ho: Constant variance

OV Test = Ramsey RESET test using powers of the fitted values, Ho: model has no omitted variables

Source: OECD health data (1998).

Figure 13.10 **Change in health expenditure compared with the change in age/sex predicted expenditures, 21 OECD countries, 1960–95**



Data source: OECD health data (1998).

13.6 Should health sector capacity anticipate demographic changes?

Evidence presented in the last section must lead to the conclusion that the simple needs model based on demographically based need and need based expenditures cannot explain the relative per capita costs of different nations or the relative change in their costs over time. Nevertheless, it is possible to argue that despite the vagaries of history and despite the idiosyncratic factors driving different national health schemes, expenditures are or should be subject to a ratchet effect. Once a pattern of resource use has been established, it will be difficult and undesirable to alter that pattern, at least in the short run. That is, as the population ages we should not spend less per age cohort and, consequently, we should minimally increase capacity to facilitate the continuation of existing medical practices.

Table 13.8 Regression^a between the percentage change in health expenditure per capita and the percentage change in various variables

21 OECD countries, 1960–95

<i>Regression</i>	<i>4</i>		<i>5</i>		<i>6</i>	
<i>% change in health expenditure US\$</i>	<i>Coeff (b)</i>	<i>p =</i>	<i>Coeff (b)</i>	<i>p =</i>	<i>Coeff (b)</i>	<i>p =</i>
Independent variable						
% change over 80 1960–95	0.900	0.37				
% change over 65 1960–95			–0.06	0.95		
% change in HP 1960–95					–0.505	0.93
% change GDP 1960–95	3.28	0.006	1.96	0.001	1.96	0.001
constant	–119.5	0.40	142.4	0.12	140.2	0.09
R-squared	0.454		0.578		0.576	
Het. Test p =	1.000		0.646		1.000	
O.V. Test p =	0.138		0.291		0.277	

^aRegression 4: Residual $\Delta_{GDP} = b \cdot \%$ change over 80 1960–95 + constant

Regression 5: Residual $\Delta_{GDP} = b \cdot \%$ change over 65 1960–1995 + constant

Regression 6: Residual $\Delta_{GDP} = b \cdot \%$ change in H.P 1960–1995 + constant

% change in health expenditure US\$ = the % change between 1960 and 1995 in the health expenditure per capita in constant US\$

% change over 80, 1960–95 and % over 65, 1960–95 = the % change between 1960 and 1995 in the % of the population aged over 80 and 65

HP = health expenditure predicted from the populations of the 21 OECD countries in those years multiplied by the age and sex cohort costs for Australia in 1995

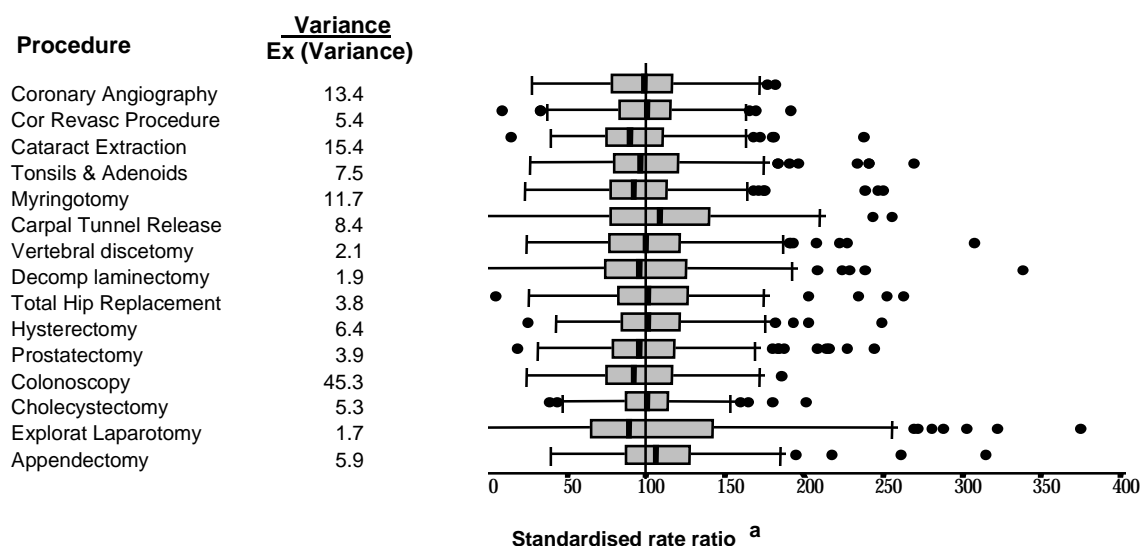
Het. Test = Cook-Weisberg test for heteroscedasticity, Ho: constant variance

OV Test = Ramsey RESET test using powers of the fitted values, Ho: model has no omitted variables.

Source: OECD health data (1998).

This argument is an unconvincing basis for a significant shift in policy for three reasons. First, and as described in section 13.2, ageing *per se* in the absence of other drive variables could be accommodated with modest expenditure growth and a declining share of the GDP spent on health services. Second, while there is, by construction, an ‘average practice’, there is little evidence that there is any particular pattern of treatment that could be described as ‘normal’ or ‘accepted’ which might, therefore, be used as the basis for expanding capacity. Results of a recent analysis of small area variation in rates of service use are reproduced in figure 13.11. In this, the age–sex predicted use of various services in each Victorian statistical local area

Figure 13.11 Standardised rate ratios for various operations in Victoria
Comparison between statistical local areas and whole State



^a Median, range, 25th and 75th centiles for statistical local areas, standardised to Victorian State ratio = 100. Extreme values greater than three times 50th-75th and 25th-50th centile intervals are recorded as separate points.

Data source: Richardson (1998).

are set equal to 100 and the actual rates for the State statistical local areas are plotted for a number of well defined hospital services. Results indicate highly erratic practice patterns with variation between statistical local areas of 400–600 per cent being the norm. Part of this erratic behaviour could, in principle, be attributed to random variation: the low probability of an individual needing these services and the comparatively small population in each statistical local area. Using State average use of each service and the assumption of a Poisson distribution it is possible to predict the expected variance that would arise from age/sex and population only. In the second column in figure 13.11 the observed variance between statistical local areas is divided by this expected variance. If variation was entirely explained by age/sex and random chance then this ratio would be one. The smallest ratio reported indicates a variance of 70 per cent greater than expected and, in the case of colonoscopy, a variance which is 4530 per cent of expectation. This does not indicate an established pattern of service use which could be the basis for the expansion of medical capacity.

Similar variation in service use has been observed between OECD nations (MacPherson 1990) and is not, apparently, associated with corresponding differences in health outcomes.

Third, and especially in view of the previous result, medical services should only be expanded if there is good evidence that additional services and their associated costs will be matched by additional benefits. While there are, of course, numerous

examples of individual services whose expansion would be of unquestioned benefit it has been difficult to demonstrate a relationship between increasing global costs and population health (Taylor and Salkeld 1996). As the majority of health services that are provided have not been subject to systematic evaluation, this disappointing result is not, perhaps, surprising. This conclusion suggests that further expansion or even the maintenance of present expenditures should be dependent upon the outcome of reasonable evaluation or, minimally, critical review.

13.7 Summary and discussion

The purpose of this paper was to determine the likely impact of ageing on future health expenditures. The chief analytical concern has been to determine whether or not increases in expenditures predicted from the simple aged based needs model are likely to translate into an effective demand for health services. As part of the analysis of this broader question, the following conclusions have been drawn.

Application of the simple needs model suggests that the impact of future ageing on the need for medical services will be so small that, in the absence of other factors, the size of the health sector would diminish in relation to the GDP.

Scenarios exist in which the size of the health sector would significantly expand and represent a greater burden to the economy. The magnitude of the predicted burden is sensitive to the assumptions made about GDP growth, the average growth of cohort expenditures and the relative growth of different cohort expenditures. These important variables cannot be predicted from future demographic changes and it must therefore be concluded that any future problems arising from health sector expenditure will be primarily due to non-demographic factors.

Determining future cohort expenditure growth is problematical. There are no compelling reasons for believing that they will follow an historical trend as the historical trend has been determined by (poorly analysed) idiosyncratic decisions of the past.

Application of the population needs model to historical data indicates that it would have had very limited explanatory power with respect to the growth of past expenditures. Further, it is possible that apparent need grew coincidentally with expenditures and was not a causal factor. That is, the attempt to validate the methodology through historical analysis failed.

Australian cross-sectional data suggest that the use of general practitioner services is only very loosely associated with the local demographic profile. Regression results are consistent with the conclusion that a 10 per cent increase in age–sex determined

need is associated with a 10 per cent increase in the use of general practitioner services. It is also consistent with the view that the causal mechanism is from ageing to the supply of doctors to the generation of demand. That is, need may only determine the distribution of doctors while aggregate medical costs are determined by the doctor supply.

Cross-sectional analysis of cross-national data indicates a limited simple association between the age of a population and its health expenditures but this association is only significant for one of the three time periods for which cross-sectional data were analysed. After standardising for GDP, this association disappears. This suggests that the simple correlation was the result of a coincidence of wealthy and older countries in this time period.

Analysis of cross-national time series data led to the rejection of the hypothesis that growth in demographically determined need has driven the growth of expenditures.

These results cast very significant doubt on the belief that age/sex based need has been or will be a significant determinant of the demand for health services. While it is still possible to argue that, as a normative proposition, the country should create capacity to accommodate future age/sex determined needs, the enormous variation observed in practice patterns across the country (and between countries) suggest that there is no established practice pattern which could be sensibly employed for such an analysis.

The results also imply that the assertion that, because of ageing, future health care expenditures will be beyond the capacity of the government budget is unambiguously false unless the budget is downsized to the point where this problem is self-fulfilling.

These conclusions raise the question of what has driven expenditures, if age and sex have been of limited or no importance. While detailed analysis has not been conducted in Australia, and is beyond the scope of this paper, the broad answer to the question is fairly clear. The usual variables focused on by many economists — price and personal income — are incapable of explaining a significant part of health sector growth. Price elasticities are too low and prices have changed too little (Richardson 1991). Personal income elasticities are similarly low and, in Australia, may be zero.

By elimination of other factors, the variables that have been significant on the supply side have been increased unit costs driven by the increase in provider incomes; the increased capacity to deliver services which have been determined by a diverse range of uncoordinated health and educational authorities and new technologies including the more intensive use of traditional therapies. This latter

factor is probably the most important 'autonomous' variable in the equation and the most difficult for a small country to control. It should not, however, be assumed that the inflationary pressures from technologies of the past will continue. Technology in the US is an endogenous variable and the US market has been undergoing a significant shift from one which rewards cost creation to one which rewards cost cutting.

On the demand side, the two significant factors have been the growth in national income and supplier induced demand. The former factor is distinct from the conventional 'income effect' of economic theory. As noted above, personal income elasticities are very low. More significantly, it has been government authorities that have been responsible for the major expenditures. While poorly articulated in the literature there is clearly an 'institutional income effect' which operates through the growth of budgetary allocations to health authorities that are roughly impropotional to income growth and adjusted upwards or downwards by either a 'betterment' or an 'efficiency' factor.

The analysis reported in the paper reinforces the dictum that prediction is hazardous, especially when it is about the future. Despite this, there is a serious possibility of health authorities adopting the results of the simple needs approach on the grounds that 'any numbers are better than no numbers'. In the present case this is not necessarily true. There is compelling evidence that the creation of capacity in the health sector will be self-justifying (Richardson 1998) and there is little evidence that the aggregate expansion of capacity creates benefits that warrant the costs (Taylor and Salkeld 1996).

In the absence of reliable needs based projections, policy guidelines with respect to the growth of the health sector must be general and qualitative. In principle, it would be desirable to have a needs based model which could project future requirements. From the evidence of small area variation within Australia and variation in procedure use between countries, it is clear that we do not have the basic parameters of such a model and that different medical practitioners are adopting radically different practices. The concomitant of this conclusion is that the theory and practice of 'best practice guidelines' and 'evidence based medicine' must be developed as a high priority and then incentives created for their implementation. As provider incomes are determined by the chosen practice pattern, this may prove to be the more challenging political issue. Once achieved, it will be possible to use (in principle) simple needs based models to recommend changes in treatment capacity. In the short run there appears to be little alternative to a continuation of the *ad hoc* approach to new technologies and to the changes in health sector capacities implied by these. Even this task is currently hindered by the lack of both epidemiological

and economic evaluation which is a prerequisite to sensible decision making in the health sector.

Appendix 13A

Methods, variables and data

Projection models

Data sources are listed in table 13A.1. They include the ABS actual and projected estimates of annual Australian population by sex and year of age, the ABS estimates of life expectancy for 1981–94, the AIHW estimates of total and sectoral (hospital, medical, pharmaceutical and other) health expenditure for 1981–94, the AIHW estimates of total and sectoral health expenditure per capita for the different age and sex cohorts for 1994 as reported by Dr Jenny Badham of the Australian Private Hospitals Association, and the ABS expenditure based estimates of Australian GDP for 1981–94. The population estimates are mid-year values, whilst the expenditure and GDP estimates are those for the July–June financial year (1981 = July 1981 to June 1982). Where sectoral expenditures per capita were reported for a range of years, a best estimate of expenditure for individual years of age was made (figures 13.1 and 13.2). The life expectancy difference from the base year of 1994 for each year of age in each projection year was determined by extrapolation, assuming no discontinuities across the age range. For each projection year between 1981 and 2051, the sectoral health expenditure per capita was adjusted to that of the year plus life expectancy difference above (for the earlier years) or below (for the later years) the corresponding value for 1994.

Retrospective Projection Model 1981–94. For each year, the model calculated an estimate (in 1994–95 constant Australian dollars) of the total and sectoral health expenditure for year of age and sex cohorts, adjusted for the annual change in life expectancy. A growth factor was included in the calculation for each of the health expenditure sectors, and this factor was adjusted such that the model estimates of the total health expenditure most closely approximated to actual total health expenditure. The sectoral health expenditure per capita was then multiplied by the population of each age sex cohort, and a total estimate of the annual and sectoral health expenditure obtained by summation.

Prospective Projection Model 1995–51. In the forward projection model, the same calculations were performed using the 1994–95 age cohort estimates of sectoral health expenditure and the ABS middle-case projections of the Australian population growth.

OECD regression analysis

Data were obtained from the 1998 compact disc of OECD health data. The figures for 1960, 1975 and 1995 were used. All financial numbers GDP were converted to constant 1995 US dollars, except for predicted health expenditure. Predicted health expenditure was calculated from the total age and sex cohort health expenditures in Australia in 1994-95, as reported by Dr Jenny Badham, multiplied by the age and sex population numbers of 21 OECD countries. The percentage change between 1960 and 1995 was calculated in: (i) predicted health expenditure; (ii) actual health expenditure as a per cent of GDP; (iii) GDP; and (iv) proportions of the population aged over 65 and aged over 80.

Statistical analyses were performed using Stata version 5.0 statistics/data analysis. Regression coefficients were calculated, with the validity of the linear regression assumptions being tested using the Cook-Weisberg test for heteroscedasticity and the Ramsey Reset test for omitted values.

Table 13A.1 **Data sources**

Data source	Data description
Australian Bureau of Statistics (ABS)	<i>Estimated Resident Population by Sex/Age, Cat. no. 3201.0</i> <i>Deaths: Expectation of Life and Life Table</i> <i>Death rates, Australia: Year Book Australia</i> <i>(1992, p. 9 and 1995, p. 15)</i> <i>GDP estimates in Year Book Australia 1998</i> <i>p. 712</i>
Australian Institute of Health and Welfare	<i>Australian Health Expenditure 1970-91 to 1984-85 (1988); Health Expenditure Bulletin Number, no. 11 (1995)</i> <i>Health Expenditure Bulletin, no. 13 (1997)</i>
Dr Jenny Badham, Australian Private Hospitals Association	<i>Estimate Age/Sex Segmental Health Expenditure: APHA Health Financing Model V2.0 (1998)</i>
Organisation for Economic Cooperation and Development	<i>OECD health data (1998)</i>

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14 Strengthening the financing of aged care in Australia

Anna Howe and Hugh Sarjeant¹

14.1 Introduction

14.1.1 The present system and its limitations

The present system for financing aged care in Australia is very heavily reliant on one source of funding — namely, current tax expenditures by the Commonwealth Government. State Governments make a much smaller contribution, again from current expenditures. As user co-payments are substantially drawn from the Age Pension, they are best regarded as indirect government transfers, and so also come from current Commonwealth expenditures.

This heavy reliance on a single source of funding poses a number of problems. First, decisions about funding of aged care are subject to short term budgetary conditions; as well as reflecting the political climate of the time, these decisions will be shaped by the level of intergenerational transfers that present taxpayers are willing and able to make. Second, the incentives associated with short term funding encourage providers to spend rather than to save and invest for the future, particularly with regard to future capital provision. A consequent third problem is that neither governments nor providers or individuals are encouraged to, or given a mechanism to, save for future liabilities, but remain reliant on intergenerational transfers rather than making investments over the lifetime of each generation.

¹ We express our appreciation for the costing data and other information provided by the following individuals and organisations: Maureen Lyster and Odette Wanders (Aged Care Australia); Tony Gribble and Imas Thompson (Anglican Homes); Michael Williams (Cantwells Real Estate); Lawrence Atley (CNG Atley); Derek Pitt (KLCK Architects); Elizabeth Short (Lynden Court Aged Care); Charles Lewis (Royal Freemasons' Homes of Victoria); Michael Dillon (Southern Cross Victoria Aged Care); Margaret Reimer and David Simmons (Uniting Church Lodge Program in Victoria).

This short term perspective and reliance on current funding is at odds with the long term nature of a number of aspects of aged care financing. Rather than being totally unknown and unpredictable, the future liabilities associated with the need to provide capital facilities, the projected growth of the aged population, and the likelihood of any individual needing to use some form of long term care over their lifetime are readily recognisable and reasonably predictable. As these elements of aged care funding can be estimated on the basis of agreed assumptions, they invite a more appropriate form of funding than the annual budget cycle permits.

It is this concern to address future costs that provides our rationale for considering alternative or additional approaches to funding aged care rather than the issue of whether or not the system is ‘in crisis’ now and regardless of how sustainable it is in the future.

We would go so far as to argue that raising community awareness of future liabilities and the need to make provision for them may generate acceptance of such measures — much as the debate over the adequacy of retirement incomes promoted acceptance of the Superannuation Guarantee Charge (SGC).

Against this background, the aims of this paper are:

- to estimate the level of future liabilities for aged care; and
- to consider some means by which other sources of funding could be developed to lessen reliance on current expenditures to meet these liabilities.

The key feature of a funding mechanism that would achieve this outcome is some element of saving which could achieve some replacement of transfers between generations with investments made over the lifetime within each generation. This paper aims to make a new contribution to the discussion of alternative means of funding aged care by presenting an estimate of the amount of savings that would be required from present earnings to meet the cost of future care, or a sufficient part of the cost, to make a funding system worthwhile.

While the approach that we present is broadly in line with proposals made in the Mid Term Review of the Aged Care Reform Strategy in 1993 for a social insurance approach to funding to aged care, linked to the SGC (Department of Health, Housing, Local Government and Community Services (DHHLGCS) 1993), our model has been developed primarily to demonstrate the components of a possible system and to explore the financing outcomes that result under different assumptions. We recognise that numerous design and implementation issues would need to be considered in making changes to financing arrangements. However, canvassing those issues is beyond the scope of the present paper.

14.1.2 Focus on aged care

The analysis presented in this paper is specifically focused on aged care provided through residential care and community care programs rather than the full spectrum of long term care including provision for younger people with disabilities.

While the consideration of a system of funding aged care separately from other long term care will give rise to questions about boundaries between systems, these questions are seen to be secondary to, and indeed the product of, other much more substantial differences between the systems of care that are to be funded.

In contrast to these differences, there are several good grounds for considering financing of aged care as an adjunct to retirement income provisions. The Australian system of financing retirement incomes is widely regarded as having considerable strength as it draws on four separate mechanisms to achieve the kind of multi-pillars approach endorsed by the World Bank (1994).

It was argued in DHHLGCS (1993) that as needing some form of long term care is a very likely experience in the later part of retirement, it is reasonable to link provision for this eventuality to retirement income arrangements. The SGC identifies a proportion of income to be saved in order to supplement the basic retirement income provided by the Age Pension, and a similar approach could be adopted to cover the cost of a defined period of future care. Further, just as the SGC is not intended to provide full retirement income, separate estimates can be made to cover varying proportions or components of the cost of aged care.

It is the element of future funding that is one of the main reasons for not linking provision for aged care to the Medicare levy, which is simply a hypothecated ‘pay-as-you-go’ tax, with present contributions paying for present use and involving substantial redistribution on the basis of need for health care. There are also other reasons relating to the different nature of aged care services that caution against linking their funding to the health care system. It is the present lack of clarity as to how services at the boundaries of acute care and aged long term care are to be funded that poses problems in service delivery, and separate funding systems are as likely to provide mechanisms and incentives for integrating service delivery as to pose barriers to this outcome.

The next section of this chapter outlines the key features of the proposed approach to financing aged care through a community based funded scheme. Demographic and social factors affecting the future need for aged care are then discussed and the methods of estimating the future costs of aged care are reviewed before the results of the model are presented. The results reported cover the total cost of aged care and four options for meeting this cost — pay-as-you-go, uniform funding, full funding

and individual funding. Further options for funding only part of the cost of aged care are then considered, focusing specifically on capital costs and inclusion of community care. It is concluded that the financing of aged care in Australia would be considerably strengthened by an additional funding pillar, preferably by way of a fully funded scheme; it would also be sound social policy to use this means of addressing the liabilities that will arise with future population ageing, and continuing debate of this policy area is foreshadowed.

14.2 Key features of proposed approach

The approach that we present focuses on community based funding for the whole population, and provides estimates of the future costs of aged care and the contributions that would be required from salary income to fund these costs at a given time. The computer model has been built around four main input elements and generates four sets of results using different funding options.

14.2.1 Input elements

The four input elements of our model are as follows.

1. The **need for and future use of aged care** for each age group is projected on the basis of:
 - (a) the size of each age group at the base year and in future, taking account of fertility and migration;
 - (b) the growth of the aged population, taking account of age specific mortality; and
 - (c) expected lifetime use of aged care services, focusing on residential care.
2. The **total cost of care** is estimated on 1998 constant costs, taking account of:
 - (a) the cost of care services such as nursing and personal care;
 - (b) board and lodging; and
 - (c) capital, both depreciation and new provision.
3. The **time frame** covered in the estimates presented here runs until 2051.
 - (a) This is the year by which the current adult population will have passed through old age. Young adults aged 30 in 1996 will reach 80 in 2046 while those aged 40 will reach 80 in 2036 and 95 by 2051. The model thus gives an effective account of future costs of care and funding requirements for the current workforce age groups.

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- (b) For the individual funding option, the period over which contributions are made can be varied, with payment of contributions to begin and end at different ages. The longest period for which results are presented is 35 years, beginning at age 30 and ending at age 65, and the shortest is 20 years, beginning at age 40 and ending at age 60.
4. The **income base** from which premiums would be paid is taken as national wages, estimated at \$300 billion in 1998, based on the following sources.
- (a) The *Insurance and Superannuation Committee Bulletin* (September 1997) indicates employer contributions of \$19.9 billion, at a time when employer contributions were 6 per cent of salaries, suggesting a total salary base of \$331.6 billion (19.9 million x 0.06 per cent of salaries).
 - (b) The June 1998 edition of the Australian Bureau of Statistics (ABS) *Labour Force Survey* states a total of 8 432 700 employed persons and the November 1997 edition gives all employees average weekly earnings of \$593.70, generating a total annual wage of \$261.2 billion (593.7 x 8.4 million x 52.18 weeks).
 - (c) The ABS Income Distribution publication for 1996-97 shows mean weekly income per unit of \$625, for 9 083 000 units, giving an annual total income of \$296 219 million.
 - (d) The 1995-96 National Accounts show a total of wages, salaries and supplements for all industries of \$240 162 million. Allowing for indexation of average weekly earnings (AWE) to June 1998 gives a current total of \$251 243 million.

Use of the national wage base for determining a contribution rate is similar to the SGC and the Medicare levy, and personal taxation, where it is the national income (as defined for the purpose at hand) which is used as the base for the levy.

While the income base in our model is limited to wage earners in the workforce, it is recognised that the income base could be extended to the total population to age 65 on an income tested basis. This extension would capture the increasing numbers who are withdrawing from the workforce before age 65 with relatively high retirement incomes, and could be justified on equity grounds as those remaining in the workforce on equivalent incomes continued to contribute. Noting that the German long term care insurance system collects contributions from those of pensionable age, and that this is also a feature of the proposed Japanese system, a further extension could be made to include a contribution on an income-tested basis to, say, age 70. Collection of contributions from these expanded income bases and over a longer period would reduce the contribution required from the wages base accordingly, possibly in the order of 10-15 per cent.

Further details of the input parameters used for estimating the future needs and use of aged care, together with details of the cost estimates, are presented in appendix 14A.

14.2.2 Outputs and funding options

Our model estimates two outputs:

1. the *fund required* to meet the total cost of care; and
2. the *rate of savings or premiums required* to meet the future cost, estimated as a proportion of national wages.

Our model enables projections for four funding options:

1. a *pay-as-you-go* model (PAYG), which estimates the amount needed to pay for the cost of services used in the year in which they arise; thus, for example, the amount to be raised from contributions in 2020 is the amount required to meet the costs of care in 2020. This approach is similar to that recently proposed by McCallum et al. (1998) for a separate system of funding the additional future cost of aged care, based on a identified contribution from taxable income;
2. a *uniform PAYG* model, which is adopted to moderate the uneven rates of contribution that would arise in a standard PAYG model due to the uneven growth of the aged population and consequent costs of care;
3. a *fully funded model*, which goes beyond the uniform PAYG model to accumulate sufficient funds to pay the remaining costs incurred in future years by the then retired population even when contributions cease; and
4. while we are primarily concerned with a population approach, with community based funding, an *individual funding solution* can also be estimated.

14.3 Future need for and use of aged care

14.3.1 Population growth and population ageing

The demographic basis of demand for aged care stems from the high probability that sizeable proportions of present adult cohorts will reach age 80, and that substantial number will live beyond that age. It is this pattern of normal survival to very old age that should make provision for aged care a much more widespread matter for concern than it is among present adult age groups.

Growth

Growth of the total population over the next 40 years is considered in our model as we take account of both contributors to funding, aged under 65, and beneficiaries who in the main will be aged over 65, and especially over age 80. The baby boom cohorts that reached middle age through the 1990s are of particular interest as there will be an ageing boom as these large cohorts reach retirement around 2010 and advanced old age from around 2030.

The base population used for our projections is the 1997 population estimated by applying the Australian Life Tables for 1994-96 to the 1996 Census data for individual ages, to age 110, with an adjustment factor applied to match the ABS Series III Projections for 1998. Projections were then made to 2051 and matched with the ABS projections. The population data for 1997 and 2051 are set out in appendix table 14A.1.

Mortality

Given the size of present adult cohorts, mortality rates set the first parameter for estimating the cost of aged care as they determine the proportion of each cohort that is likely to survive to the age at which care may be needed. In Australia in 1994-96, life expectancy at birth was 75.2 years for men and 81.1 years for women. Even with no further improvements in life expectancy, just over half of all Australian girls born in the mid-1990s can expect to reach age 80 and over. More immediately, with figures for further life expectancy at age 65 of 15.8 years for males and 19.6 for females, it can be expected that more than half the current middle-aged and older cohorts (over 40 years) will reach age 80 and over in the next three decades.

Improvements in mortality were allowed in our projections to give an approximate match with the ABS 1997–2051 Series III projections, as detailed in appendix 14A. There has been some recent discussion of the need to allow for greater improvements in mortality at very old ages (Higgins 1998), and it is these cohorts which are of greatest relevance to the present exercise.

While fertility and migration have an impact on the proportion that the aged will comprise of the total population, fertility has no effect on the main figures of interest here — namely, the number of survivors at old ages from cohorts already born and aged at least 25 years and over. As most migration is at younger ages, future migration of individuals under age 30 will not contribute substantially to the need for aged care until some 50 years hence, and older age migration is small and will have only a minor effect. The fertility and immigration assumptions used in our projections are detailed in appendix tables 14A.2, 14A.3 and 14A.4.

Gender differences

Gender differences are a conspicuous feature of life expectancy at birth and at older ages. Greater female survival and the associated lower likelihood of having a spouse caregiver available in very old age contribute to females higher likelihood, compared of using aged care services. A major feature of any system of aged care funding is thus a substantial redistribution from men who have participated in the paid workforce to women who have not. One option in our model enables estimation of the savings that either a man or woman would have to make to cover their different expected levels of aged care service use, and we then make calculations for a person, to average out these gender differences.

14.3.2 Likelihood of using aged care

Lifetime probability

Estimates of the lifetime probability of using nursing home or hostel care have recently been reported by the Australian Institute of Health and Welfare (AIHW) (1997). The AIHW estimates have been made on the basis of present use of the existing level of provision by the current resident population and aged population. The age distribution, gender balance and dependency profile of these populations is thus taken into account.

The likelihood of using either a hostel or nursing home is higher for females than for males, and shows steep gradients over the older age range (table 14.1). Focusing on nursing home use, males have a 21 per cent chance of use over a lifetime, increasing from 27 per cent at age 65 to 40 per cent at age 80 and 61 per cent at age 95. For females, the lifetime chance is 35 per cent, increasing from 41 per cent at age 65 to 61 per cent at age 80 and 95 per cent at age 95. Chances of hostel use are lower than those for nursing home care, and the gender differences and age gradients are less pronounced.

In contrast to these figures showing quite high probabilities for the use of residential care over a lifetime, only a small proportion of the aged population are in residential care at any one time. Currently, only some 9 per cent of the Australian population aged 70 and over is in residential care. It is this latter figure that has given rise to the common but erroneous view that use of residential care, or aged care services more generally, is the experience of only a minority. When lifetime probabilities are considered, using residential care becomes much more of a majority experience, especially for females.

Table 14.1 Likelihood of using residential care over a lifetime and at older ages (per cent)

	<i>Lifetime</i>	<i>At age 65</i>	<i>At age 80</i>	<i>At age 95</i>
<i>Hostel care*</i>				
Males	13	17	27	41
Females	28	33	51	45
Persons	21	25	42	44
<i>Nursing home care*</i>				
Males	21	27	40	61
Females	35	41	61	95
Persons	28	34	53	86

* Estimates include both permanent and respite care.

Source: AIHW (1997, p. 251)

Health and social trends affecting use of residential care

As is the case for use of health care services in general, future use of aged care services is unlikely to be simply a continuation of present patterns. Trends in health status and social changes affecting the availability of family care might well be expected to bring about changes in future use of aged care services. However other considerations suggest limits to the scope for such change.

With regard to *changes in health status*, the available evidence suggests that recent improvements in life expectancy at older ages in Australia have seen some improvements in disability free life expectancy rather than extended periods of severe handicap (Mathers 1997). To the extent that use of residential care is associated with severe handicap, these trends suggest that projections based on current utilisation patterns may overestimate rather than underestimate future use, but their main effects are more likely to be associated with earlier changes in the onset and course of chronic disease than in the use of residential care which is concentrated in a short period near the end of life.

Using US data to model lifetime nursing home use under assumptions of better health, Laditka (1998) has shown that better health did not change the proportion of later life spent in a nursing home or the percentage of cohorts who enter nursing homes. It appears that improvements in morbidity, handicap and mortality in younger old age will rather mean that more reach very advanced ages, and it is at these ages that use of residential care prior to death becomes most common, but seemingly stable.

Use of nursing home care appears to be related less to where and for how long people live with severe handicap, and more to where they die. Data for 1996-97 show that close to 90 per cent of nursing home stays of residents admitted for

permanent care end in death (AIHW 1998), and several indicators suggest that use of nursing home care associated with imminent death has been very stable for some time. It is estimated that deaths in nursing homes in 1996-97 accounted for just over 25 per cent of all deaths over age 55, a figure little different from the findings of a 1982 study (Howe 1982), allowing for some conversion to nursing homes of what were then other facilities providing equivalent long term care, such as small rural hospitals. The proportion of all deaths occurring in nursing home compared to hospitals increases steeply with advancing age, largely due to transfers of patient with very poor prognosis from acute care to long term care. Some two thirds of all nursing home admissions occur on discharge from nursing homes, and while this figure has remained stable over the last decade, it could increase if changes in hospital use generate more discharges of very old patients to nursing homes. It is thus changes in these care practices that will affect use of nursing home care as much if not more than trends in handicap.

Turning to the effects of *social changes* on the likely availability of family care, a number of limiting factors can again be noted. First, while much is made of increases in female workforce participation, these rates are already high in Australia, having increased from 36 per cent in 1966 to 55 per cent in 1996, with a projected further increase only to 60 per cent by 2005. Participation rates for females aged 50–55 are higher, at 65 per cent, and are projected to increase to 75 per cent, but actual and projected participation rates fall markedly from age 55–60, to around 40 per cent, and are very low over age 60. Second, a substantial proportion of women's workforce participation is part time. The importance of flexible work arrangements that allow work and caregiving to be combined is highlighted in the Victorian Carers Project which found that carers who worked had better wellbeing than those who did not, with carers reporting that work provided relief from caregiving (Murphy et al. 1997).

Third, the experience of multiple demands of child rearing, work and care for elderly parents has been shown to be the exception rather than the rule. A detailed Canadian analysis (Rosenthal, Martin-Matthews and Matthews 1996) has shown that for each five year cohort of women from age 35–65, the highest proportion who had a dependent child in the household, who had a job, and who provided care to a parent, was 6 per cent, at age 40–44. The authors note that their analysis was only for those with living parents, so the proportion for the total population would be even lower. Generational patterns of child bearing and the timing of workforce participation mean that these roles tend to be sequential rather than overlapping. As Australian demographic and social patterns are broadly similar to those of Canada, these findings can be applied locally, and while the nature of future social changes and their effects on family care for frail elderly parent may be difficult to predict, it is likely that the scale of such effects would be marginal and gradual.

Estimated bed day use

On the basis of the AIHW probabilities, we have estimated bed use for each age and gender group, and our model provides for care covering bed use set out in table 14.2. Three features of these figures warrant note.

First, variations in gender differentials over the age range are consistent with other data (AIHW 1998), with higher use for males than females at age 60–64 but with female's use then increasing at a greater rate as age advances to almost double that of males from age 80.

Second, these figures refer to estimated use for the whole population and so do not represent the length of stay of those who are actually admitted. Length of stay in residential care has been shown to be highly skewed, with most nursing home residents having short stays and a small group having long stays; however, the small long stay group, around 10 per cent, have been found to account for more than half of all the bed days used (Liu 1996). Changes in the length of stay distribution, especially a reduction in the long stay group, would thus have a more significant impact on total bed day use than would changes in probability of admission. Recent research however suggests that identifying those likely to have very long stays at the time of assessment and directing them to alternative modes of care is not an easy task (Howe and Gray 1997).

Third, a number of further indicators point to considerable stability in the use of nursing home care over the past ten years. First, the rate of admissions from among the population aged 70 and over has remained virtually stable from 1988-89 to 1996-97, at around 30 admissions per 1000. Over that period, the ratio of bed provision declined from 60 to 48 beds per 1000 aged 70 and over, and this admission rate has been maintained only by increased turnover in the available beds. Increased turnover has in part been attributed to growth of respite care admissions, in line with policy measures to promote respite care, including a higher respite care benefit. Assessing the impact of respite admissions on overall use is however confounded by two factors: first, some of the increase appears to be due to the

Table 14.2 Estimated bed day use per year, age and gender

<i>Age group</i>	<i>Females</i>	<i>Males</i>
60-64	2.7	3.0
65-69	2.7	2.7
70-74	6.7	5.8
75-79	18.4	12.2
80-84	47.8	27.8
85-89	99.6	58.7
90-111	176.1	105.3

identification of a proportion of the short stay admissions that were already occurring as respite admissions, and second, some 40 per cent of respite admissions became permanent at the first admission, with subsequent stays approximating those of permanent residents (Choi and Lui 1998). Further, while an increase in respite admissions would be expected to increase the proportion of short stays in the distribution of length of completed stays for all nursing home use, this distribution has hardly changed. A review of data on all separations available for seven of the nine years above shows that the proportion of stays of less than eight weeks and greater than five years remained remarkably constant, at around 38 per cent and 10 per cent respectively. This stability suggests that, notwithstanding policy driven changes in provision and use of respite care, other factors affecting use of nursing home care at the end of life create a steady state.

Using current utilisation for the projection of total costs and the associated funding rates presented below can be considered as providing best first estimates. It is recognised that changes in health and social factors may well change patterns of use, but any attempt to predict these effects would introduce greater uncertainty. Projections on the basis of current patterns at least provide a known starting point for subsequent modelling under alternative scenarios.

Given the strong association between the use of nursing home care and deaths, the first point that might be addressed is to vary usage rates to take account of the changes in mortality that are allowed for in the ABS projections. Because our projections allow for declining mortality but use constant age-specific rates of use, they may overestimate the time spent in residential care. One alternative approach would be to make projections on the basis of projections of the number of deaths at different ages rather than population projections.

14.4 Estimating future costs of aged care

Three methods are available for projecting the future costs of aged care, each of which has a number of advantages and limitations. Comparison of estimates using the three different methods can however give some confidence in projections and point to the effect of factors accounting for any differences.

14.4.1 Projecting total expenditure

In 1995-96, expenditure on aged care by the Commonwealth, States and Territories totalled \$3185.7 million. An estimate for the current year made on the basis of projecting this figure at the rate of real growth experienced over the two years prior

to 1995-96, 8 per cent (following AIHW 1997, p. 267, table 8.20), yields a figure of \$4013.1 million (in constant 1995-96 dollars) for 1998-99.

The main advantages of this method are that it is based on published data and includes all aged care programs, that is, assessment, the Home and Community Care Program (HACC), Community Aged Care Packages and residential care. The main limitations are that:

- the figures for government expenditure do not include the contributions paid by individuals;
- the 1995-96 base year is prior to the introduction of the new funding arrangements in 1997 and the integration of nursing homes and hostels; and
- it is not possible to distinguish capital costs separately from the other costs of care.

The effect of including contributions paid by individuals is seen when the 1998-99 estimate of \$4013.1 million given above is compared with the estimate of \$4854.2 million made by McCallum et al. (1998). Allowing for their inclusion of individual contributions accounting for about 20 per cent of total expenditure and the 1997 changes, the two estimates are broadly consistent.

14.4.2 Cost of residential care per place

A second basis for estimates is to use the current cost per place in residential care and the proportion of all costs accounted for by residential care. The cost for residential care can be estimated using the benefit levels set for the Resident Classification Scale (RCS) and including the resident contributions and the accommodation charges (see appendix 14A), and so is both current and all inclusive. However, the limitations are that as the RCS distribution has not yet stabilised, it either has to be approximated or an average used, and the proportion of all costs accounted for by residential care may change either as a consequence of changes in use in response to the new charging arrangements or related policy changes such as the expansion of high level community care packages.

14.4.3 Actual cost experience

The third approach is to base estimates on the actual cost experiences of providers. While recognising that costs incurred by providers are broadly constrained by funding available and regulation of charges that can be imposed on individuals, the advantages of this approach are that it is current and reflects full costs, including

resident contributions and capital costs. The limitation is that costs per user are only readily available from residential care providers.

Approaches were made to a number of residential care providers in Melbourne operating both high level (previously nursing home) and low level (previously hostel) facilities and data obtained to enable estimates of care costs, living costs and a depreciation component for capital. The capital cost estimates were of particular interest given the focus on capital in the 1997 changes to residential care funding. The figures derived from the provider data and used for estimating the cost of residential care are set out in table 14.3.

The average actual cost per residential care place was estimated at \$665 per week. This figure is close to the funding for RCS level 4, which is \$635.81 per week including the resident fee and accommodation charge or concessional supplement. Given the small proportion of all residents at the higher RCS levels 1 and 2, compared to the larger numbers at lower RCS levels 5–8, this figure is accepted as a realistic average and so used for projections. The cost of sustenance or board and lodging is close to the standard resident contribution, linked to the Age Pension, and the capital cost in line with the accommodation charge or concessional supplement.

Table 14.3 Estimation of actual average costs of residential care

Space required per resident	
Building area per resident	50 sq. metres
Ratio of land to buildings	2
Land area per resident	100 sq. metres
Capital costs	
Land costs	\$50 per sq. metres
	\$5 000 per bed
Buildings	\$85 000 per bed
Effective life of buildings	25 years
Costs per person per week	
Depreciation	\$65
Sustenance/board and lodging	\$150
Care	\$450
Total	\$665

Details of the sources for the assumptions for capital costs are given in appendix 14A. The costs per week were derived from the accounts of five Victorian institutions.

The final elements in financial modeling are the rates of interest and wage and cost increases to be used. It is recognised that these elements are subject to determinants within and external to the aged care sector, and that the rate of increase in each and

the relativities between them could: change, for example, productivity improvements could limit the rate of growth in wages. For the purposes of an initial model, the figures have been based on precedent in related work (Walsh and de Ravin 1995), published sources, current experience and conventional conservative practice, and are as follows: interest 8 per cent; wage increases 4 per cent; and cost increases 4 per cent

14.4.4 Relationships between cost and use

A final point that needs to be made before presenting our results is that there is a multifaceted relationship between use of aged care and costs. Both government and individuals make choices in this area, with individual choices about using services influenced in part by the share of costs to be met from private resources relative to public subsidies.

As Gregory (1993) has emphasised, changes in the cost of aged care resulting from government policy decisions are far more erratic than the steady growth of the aged population. The period 1981–85, for example, saw a very rapid increase in the real cost per nursing home bed due to extra inputs, compared with a gradual growth of the aged population and a stable level of bed provision, but this cost growth moderated from 1995.

While it remains a task for the future to model costs under different policy scenarios, projections based on a continuation of present costs provide a necessary starting point for assessing the impact of alternative policies.

14.5 Results

14.5.1 Total costs

The results of our projections for total costs are set out in table 14.4.

Table 14.4 Total costs of care, 1988–2048 (1998 \$m)

<i>Year</i>	<i>Total beds</i>	<i>Capital required (\$m)</i>	<i>Care costs (\$m)</i>	<i>Total costs (\$m)</i>
1998	141 741	382	4 918	5 301
2008	188 473	463	6 540	7 003
2018	235 224	433	8 162	8 595
2028	308 376	950	10 701	11 651
2038	423 690	996	14 702	15 698
2048	519 631	871	18 031	18 902

Several points in these projections of total costs warrant note.

- Both care costs and total costs expand steadily, with a surge following 2030, which is about the time baby boom cohorts reach age 80.
- Capital costs vary as a proportion of total costs over time, with the peak about 2035.
- In real terms, the cost of residential care in 2048 may be more than three times the cost in 1998. Although actual dollar estimates differ somewhat, this scale of increase is very similar to McCallum et al.(1998) and others' estimate for 2046 of total expenditure of \$14 643 million (in 1994-95 constant dollars), which is three times their 1999 figure. It seems desirable to plan to address this expanding and predictable financial liability while those who will benefit are still able to contribute to the cost of their future care.

Funding options

The contributions required from national wages to meet the cost of aged care under the three options modelled are set out in table 14.5.

The rates determined for these options involve calculations based on present values. The present values of the costs are determined by discounting the projected amounts, and similarly the present values of the national wages base amounts are calculated. The funding rates are then the ratio of the two present values.

Table 14.5 Rate of contribution from national wages required to fund aged care for PAYG, uniform PAYG and fully funded options (per cent)

Year	<i>Required rate of contribution as a share of national wages</i>		
	<i>PAYG</i>	<i>Uniform PAYG</i>	<i>Fully funded</i>
1998	1.8	-	-
2008	2.4	2.0	4.8
2018	2.9	2.2	3.9
2028	4.0	2.5	3.7
2038	5.3	2.7	3.7
2048	6.4	3.0	3.6

Option 1: PAYG

The dramatic rise in the rate required for a PAYG model is a result of the assumptions used, but serves to demonstrate the prospect of a seriously increasing burden of the cost of aged care on the community.

These results are broadly consistent with those reported by McCallum et al. (1998), allowing for differences in methods of projections, assumptions made, and time scales of projections. Their projections give a total contribution rate of 3.2 per cent of participating taxable income (excluding those earning less than \$25 000 and those under age 25) for 1998, rising to 3.39 per cent by 2011. In order to fund the *growth* in expenditure from 1999, they propose an average contribution of 1.1 per cent.

Option 2: uniform funding

One way to level out the impact of the cost would be to set up a fund, much like a defined benefit superannuation fund. Contributions are made into the fund, costs are met from the fund, and interest is earned on the balance. If contributions were made as a uniform percentage of total earnings, without requiring a positive fund balance at the end of the period, the rates required would be as set out for option 2 in table 14.6.

Compared to funding on a PAYG basis as presented in option 1, the option of a uniform funding basis evens out the rate of increase as the higher rate earlier on builds up a fund to cover later liabilities.

Option 3: full funding

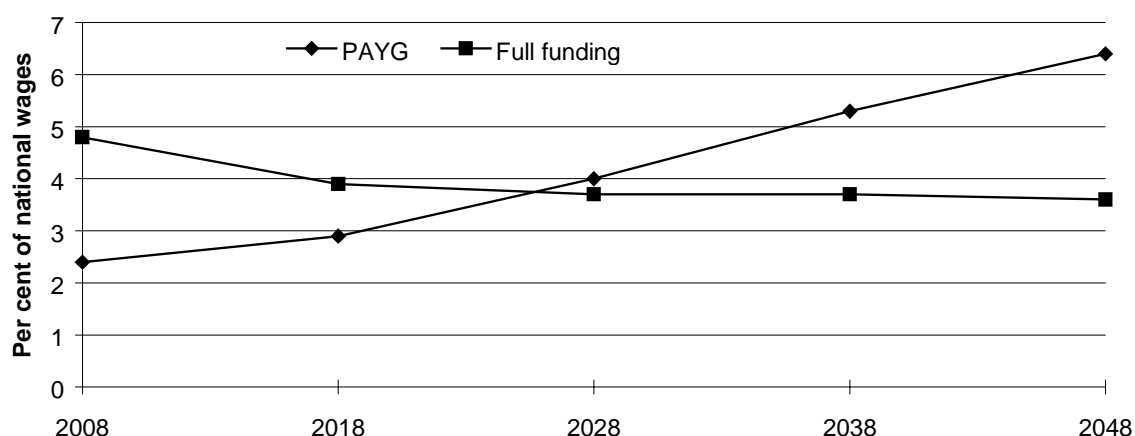
A third funding option would be to increase the contribution rate, so that by a certain time a fund would be in place to cover the future financial needs of that part

of the population then aged over, say, 65. Thus, to reach a fully funded position by 2035, the rate needed on a PAYG basis in 2035 is paid now. The result is set out as option 3 in table 14.6, and a comparison with the PAYG option is graphed in figure 14.1.

Features of the fully funded option include the following.

- It has higher rates than the uniform funding option to build up reserves.
- It has initially higher rates than the PAYG option but lower and more uniform rates in the longer term, reflecting the lower cost arising from having more time in which to create the required funds. The fact that this reduction is not steeper is a result of the increasing value of costs to be met.
- Compared with the other two options, the fully funded option achieves a reduction in intergenerational transfers.
- It also gives increased security of benefits which are fully funded until the contributing cohorts exit.
- The time at which the rate falls below the cost for the PAYG model is about the time that the wider health care system will face the greatest pressure from population ageing, increasing the importance of having a buffer for aged care.
- Over the long term, the fully funded option is less sensitive than the PAYG options to any variations from the rate of interest and wage and cost increases assumed in our model (see appendix 14A). The interest rate is irrelevant to the PAYG options and variations from the assumed rates of increase in wages and costs make no difference to the outcomes as long as costs and wages move together. The effects of any increase in costs ahead of wages would only be felt

Figure 14.1 **Contribution rates for pay-as-you-go and fully funded options, 2008–48, as a per cent of national wages**



gradually and would have to be sustained over a long term to have a substantial effect. For example, a 1 per cent increase in costs without a corresponding increase in wages would add 60 per cent to the contribution rate at the 50 year mark. The fully funded model is more sensitive to any reduction in the gap between interest earnings and cost and/or wages, but over the long term however, the impact on the contribution rate is less than for the PAYG model.

Option 4: individual funding

A community based solution seems desirable, given that:

- the need for and cost of care is independent of wealth (This is in contrast to most insurance, which is taking out in recognition of the size of financial liabilities);
- it is far more expensive for some members of the community than others and if left to the individual to choose, there would be an incentive for an individual to leave the problem to others.

However, an indication of the percentages of salary needed by individuals to make provision for their own aged care is given in table 14.6.

Results of this option show the following.

1. The much heavier cost to females is clear. This is a result of both their greater longevity and their greater usage of aged care.
2. The rates per person are the separate rates weighted by population. This gives the same result here as a straight average.
3. It should be noted that there are significant differences between the calculation methods used for population as against individual funding. For population funding, the income base used for premiums paid to funding, for example, national wages is assumed to grow at a uniform rate. For individuals, allowance must be made for cessation of premiums if the individual dies. PAYG and uniform funding have little meaning for individuals, as the ceasing age for

Table 14.6 Salary savings required for individual funding of aged care

<i>Start/finish age</i>	<i>Base Salary</i>	<i>Premiums assumed</i>		
		<i>Males</i>	<i>Females</i>	<i>Persons</i>
30-60	30 000	1.0	2.3	1.6
35-60	33 100	1.1	2.7	1.9
40-60	36 500	1.4	3.3	2.4
30-65	30 000	0.9	2.1	1.5
35-65	33 100	1.0	2.4	1.7
40-65	36 500	1.2	2.9	2.1

premiums will probably be long before residential care is required. Similarly, births and migration have no meaning for individual funding. Finally, the individual is presumed to be able to on-sell accommodation when it is no longer required, whereas in the other options capital costs are spread across all users.

14.6 Further options for funding full or part costs of aged care

While the results presented so far cover the full cost of aged care, there are some grounds for making future provision for only part of the total cost of aged care. Most generally, because of the number of assumptions that have to be made to determine premiums and the long lead time, there is likely to be some difference between the fund generated from premiums and actual costs at a future date. The consequences could be as follows:

- if the fund is below requirements, it will either need topping up from public or private funds, or quality of care will have to fall;
- if the fund exceeds requirements, quality of care might increase, there could be cost inflation, or some funds could be redirected to other purposes; and
- if the fund has been established to provide for the full cost of aged care, it may be locked in and prove difficult to supplement, or to redirect reserves to other uses.

14.6.1 Funding only capital and a standard base level of care

More specific grounds for funding only part of the full cost of care stem from the different nature of the components making up that full cost of care. Consideration of these issues identifies the components that might be most appropriately covered or excluded.

Basic living costs

Basic living costs are taken as covering board and lodging, including food, heating, clothing, and so on. In residential care, these costs can be grouped as hotel or infrastructure costs, and the basic resident fee which is set in relation to the Age Pension can be seen as meeting these costs in a manner similar to the Age Pension for those living in the community. The Age Pension accounts for around 18 per cent of the total cost of category 3 residential care (see appendix 14A).

This basic living cost component has three particular features:

-
- the Age Pension can be seen as setting a standard amount for these costs in line with community views of adequacy of standards of living;
 - almost all older individuals (excepting recently arrived migrants) will have an income equal to or greater than the Age Pension which can be taken into account in covering the cost of aged care, this cost component can be regarded as *a constant*; and
 - the level of this cost component will be largely determined by costs of living and pensions applying at any time in the future.

For these reasons, the basic cost of living can be exempted from the cost of care to be covered in advance. A further reason for exempting the component covered by the Age Pension is that it limits both the opportunity to use forward funding simply to substitute for the cost that would otherwise be linked to the Age Pension, leaving scope for additional charges to be made from the Age Pension or equivalent income, with a consequent inflation of the price of care unrelated to the actual cost of the board and lodgings component. Exclusion of the Age Pension allows a pension-linked copayment to be maintained, or if the Age Pension component is included, there should be an offset against the cost of pensions.

Cost of care

Cost of care will vary for individual residents at any one time, and will also vary over time. It is thus useful to distinguish the minimum care benefit as a base care cost, with all residents receiving at least that level of care, and a variable care cost equivalent to the difference between this base level and the cost of higher levels of care. Costs of care are the main component in the cost of residential care, accounting for 71.5 per cent of the total cost at category 3. Of the category 3 benefit of \$84.28, \$21.81 is identifiable as the cost of a base level of care, equivalent to the lowest level of RCS funding, and \$62.47 is the variable cost. The base level care cost thus accounts for 18.5 per cent of the total category 3 cost and the variable care cost accounts for 53 per cent. As both the standard resident contribution and the accommodation charge are constant, care costs account for higher and lower proportions at other levels of care.

Several features associated with the variations in care costs can be identified.

- Factors accounting for variations in care costs include the resident's level of dependency, the types of care deemed appropriate, and the cost of care inputs, reflecting wage levels in the health sector, contemporary nursing and care practices and technologies available.

-
- Estimates can be made on the basis of the cost of care for residents at the middle of the care classification range and at constant prices, but these factors have been found to be subject to considerable change over time (Gregory 1993). The health price index has increased ahead of the general consumer price index in recent years, so care costs might be expected to increase in future and are difficult to predict with a degree of precision.
 - Given that care costs are recurrent costs, mainly salaries, they will also reflect the more general economic climate at future dates.

Because of their variable nature, estimating costs of care over time are difficult, and any provision for care costs is likely to require supplementation to meet contemporary standards. It might be noted that in the unlikely event that provision was made to cover costs to a level higher than actual costs at some future time, the effect could be to inflate costs to absorb available funds. These considerations suggests that it may not be advisable to attempt to provide for the full care cost, but that it may be more appropriate to cover at least a base level of care which would provide a floor under higher levels of care.

Capital costs

Capital costs involve both the cost of land and the cost of buildings, and construction of new facilities as well as refurbishment of existing facilities. Since late 1997, an Accommodation Charge has been included in the cost of residential care. Set at \$12 per day, this charge accounts for 10.2 per cent of the total cost for a category 3 resident.

Six features of the capital costs of aged care make it especially appropriate for provision through a forward funding scheme.

First, there appear to be limitations in the extent to which providers are able or willing to use funds for long term capital development, even when funding has allowed for this purpose. The state of present facilities indicates that there has been considerable variation in the provision that providers have made for capital maintenance and refurbishment. Capacity to use profits and to raise funds for future new development is also variable, and in particular, areas which are unattractive to providers in both the private and not-for-profit sectors have remained underserved.

Second, the large amounts involved in capital outlays require that government or industry have some means of making forward commitment. In the past, this has been done by government grants from a capital program, and fund raising and borrowing by operators. Capital grant programs have been especially subject to fluctuations

from year to year, in line with government policy changes and other political and economic influences.

Third, capital expenditure is long lasting compared to recurrent expenditure on board and lodging and care. Typically, capital facilities are considered to have a lifetime of 40–50 years, with refurbishment once over that lifetime.

Fourth, unlike the other cost components which are spent on individual residents, capital facilities are shared across many residents and beyond the occupancy of any individual resident, making a pooled funding arrangement more appropriate than an individualised one.

Fifth, capital funds for provision of new facilities need to be centrally managed at least in part to achieve planning goals for the equitable distribution of facilities in relation to need.

Finally, the attempt to require residents to fund a substantial level of capital through payments of accommodation bonds has proved highly unacceptable to the community and politically unsustainable.

Adjustments to estimates

If adjustments are made to exclude the Age Pension or equivalent component, the estimates of funding requirements presented above would be reduced by around 20 per cent. Exclusion of the variable component of the cost of care would result in a reduction of around a further 50 per cent on average.

Coverage of capital funding at 10 per cent of total cost and a standard base level of care at 20 per cent of total cost would be achievable with a contribution rate as low as only 30 per cent of the estimates presented above. On the basis of the estimates for the fully funded option (table 14.5), this rate becomes 1.4 per cent of national wages in 2008 and falls to around 1.08 per cent from 2028.

14.6.2 Inclusion of community care

While our model so far has focused on residential care, the cost of community care can be factored in. It is recognised that it is important to include provision to cover the cost of community care so as not to create a bias towards residential care. Determining the total cost of community care and making projections is however more difficult than for residential care due to the lack of a standard cost basis for funding services or a formula for user contributions. A simple alternative method can however be used to obtain a first approximation.

Community care currently accounts for around 25 per cent of total Commonwealth and State expenditure on aged care, depending on how funding for Community Aged Care Packages and assessment services are apportioned. The results obtained above could simply be inflated accordingly to cover total costs, or as this amount approximates the share of user contributions to residential care (around 20 per cent), the cost of community care could be seen as substituting for the effect of excluding user contributions through the Age Pension or equivalent.

14.7 Conclusions

Two sets of conclusions drawn from this analysis suggest that the model proposed could strengthen the financing of aged care in Australia in a number of ways.

First, with future liabilities for the cost of aged care set to increase at least three fold in real terms as present middle-aged cohorts progress to advanced old age, there are good grounds for taking steps to make some provision for these known future liabilities in advance. Although the results presented here are a first run of our model, we are able to conclude that:

- there are several options for strengthening financing arrangements for aged care to meet future estimated costs, ranging from a PAYG approach that is close to present financing from tax expenditures, to a fully funded model that is similar to a fully funded superannuation scheme;
- although only indicative, the rates of contribution we have estimated to cover the full cost of care range from a low of around 2 per cent for the early years of the PAYG and uniform funded options, up to 5–6 per cent for the early years of the fully funded option and later years of the PAYG option. These rates appear reasonable in relation to the Medicare Levy and the SGC;
- while a fully funded scheme was found to require the highest rate of contribution in the short term compared to the other options, the rates converged over time and this option gained an advantage in the longer term. A fully funded scheme also emerges as a preferred option on grounds of reduced intergenerational transfers and greater security of benefits; and
- within each of the options presented, there are further options as to whether the full cost or only part of the cost of aged care is to be met by the funding scheme, with the balance to be met by a mix of user contributions and tax expenditures. The need for long term planning for capital development, and the limited effectiveness of past and current arrangements to address this issue satisfactorily, identify the capital component of aged care financing as especially appropriate

for a funded scheme. A minimalist option covering capital and a base level of care would more than halve the rate of contributions required.

Second, our analysis suggests that consideration of a new approach to financing aged care on at least a partially funded basis would strengthen financing on four further grounds that are seen more generally as criteria for sound social policy.

1. It would provide for *diversification* rather than relying almost entirely on a single source of funding, just as retirement income provision has diversified away from reliance on the Age Pension.
2. It would make each generation more *independent* of other generations by replacing intergenerational transfers with transfers over the lifetime of each generation. By covering at least part of the cost of future long term care, a fully funded scheme would enable the now middle aged cohorts to balance any claim to be made on following cohorts against the commitment they had made to the future cost of their long term care.
3. It is also *separates* the time at which payments are made from the time at which care services are needed, drawing on income at the time of earnings and providing savings to purchase services at a time when resources are likely to be limited. This separation not only avoids the need to impose user charges at the time of use of services, but can also give more security of benefits by evening out fluctuations in the capacity of the community to fund current costs at any one time due to fluctuations in economic conditions and so gives a degree of stability. High economic growth makes a funded scheme all the more affordable, while low economic growth makes it all the more necessary.
4. A community based scheme is seen to be more *equitable* than the recently introduced user pays arrangements which fall unduly on a small group of the population and draw heavily on a much smaller income and asset base than a scheme funded from a national payroll base.

This paper has aimed to make a contribution to the growing debate about alternative approaches to financing aged care in Australia (see Howe 1997; Savage, Fine and Chalmers 1998). This conference is one of a number of forums in which these issues are being debated; other bodies involved include the Australian Association of Gerontology, Aged Care Australia (the major voluntary sector industry body) and the Institute of Actuaries of Australia (1999). At Commonwealth Government level, the formulation of a National Strategy for an Ageing Australia should provide a forum in which the debate can be taken up. Internationally, a forum is provided by the OECD which has begun to canvass the issues of long term care insurance in its wider reviews of policies for care of the frail aged (OECD 1996) and labour market and social policies (Kalisch, Aman and Buchele 1998), and further developments

can be expected in the forthcoming OECD report, *A Caring World: The New Social Policy Agenda*.

The approaches proposed in this paper are open to further development in many areas, and we hope to see other options and approaches identified in the continuing debate about financing of aged care.

Appendix 14A: Data and assumptions

Assumptions for population projections

Table 14A.1: Fertility rates per '000 females, low assumptions, by age group

Year	5-19	20-24	25-29	30-34	35-39	40-44	45-59
1997	19.5	63.1	114.9	105.6	44.3	7.6	0.3
1998	18.9	61.5	112.4	105.0	45.3	7.8	0.3
1999	18.4	60.1	109.8	104.5	46.3	8.1	0.4
2000	17.9	58.6	107.3	103.9	47.3	8.3	0.4
2001	17.3	57.1	104.8	103.2	48.2	8.5	0.5
2002	16.8	55.7	102.4	102.6	49.0	8.7	0.5
2003	16.3	54.3	100.0	102.0	49.9	8.9	0.5
2004	15.8	52.9	97.6	101.3	50.7	9.1	0.5
2005	15.3	51.5	95.2	100.7	51.4	9.3	0.5
2006	14.8	50.1	92.9	100.0	52.2	9.4	0.6

Source: ABS (*Projections of the Populations of Australia, States and Territories*, Cat. no. 3222.0).

Table 14A.2 Migrants (permanent arrivals) at each age group (per cent)

Age group	Females	Males
0-4	4.7	4.8
5-9	4.0	4.1
10-14	3.5	3.5
15-19	3.6	2.8
20-24	5.9	3.6
25-29	8.1	6.6
30-34	7.2	6.5
35-39	5.0	4.6
40-44	3.2	3.1
45-49	2.0	1.9
50-54	1.4	1.2
55-59	1.5	1.1
60-64	1.3	1.2
65-70	1.9	1.7
Total	53.3	46.7

Source: ABS (*Projections of the Populations of Australia, States and Territories*, Cat. no. 3222.0).

Table 14A.3 Annual total migration numbers, low rate

	1997	1998
Total migration	78 000	70 000

Source: ABS (*Projections of the Populations of Australia, States and Territories*, Cat. no. 3222.0).

Current funding arrangements for residential care

Table 14A.4 Benefits paid by residential care scale category, Victoria, 1998^a

Category	
1	108.50
2	97.94
3	84.28
4	57.31
5	34.29
6	28.41
7	21.81
8	nil

^a Categories 1–4 are approximate former nursing home levels. Categories 5–8 are approximate former hostel personal care and hostel care only (category 8).

Source: Commonwealth Department of Health and Family Services.

Basic resident fee

In addition to these subsidies, all residents pay at least the basic resident fee of \$21.52. Where the resident pays any additional means-tested care fee, this amount is offset against the subsidy paid, so total income to the home does not increase.

Other care fees

There are two further costs of care:

- from 1 April 1999, an extra \$5.37 per day care fee is paid either by the Federal Government as a Pensioner Supplement, which replaces Rent Assistance, or as an increase in the basic care fee paid by other residents; and
- additional Supplements are paid for special care items, such as oxygen. While these items can add to the cost of care for individual residents requiring them, only a small proportion of residents have these care needs and the addition to average costs is small.

Accommodation charge or concessional resident supplement

In addition, there is a \$12 per day accommodation charge, paid either by the Commonwealth as the concessional resident supplement, or as the means-tested accommodation charge.

Total costs per day

The total amount available per day to cover all costs is set out in table 14A.5.

Table 14A.5 Total amount available per day

	Category 3		Category 4	
	\$	%	\$	%
Care subsidy				
• base level (equivalent to category. 7)	21.81	17.7	21.81	22.6
• pensioner supplement/extra basic care fee	5.37	4.3	5.37	5.6
• variable amount	62.47	50.7	35.50	36.9
Total care subsidy	89.65	72.7	62.68	65.2
Basic resident fee	21.52	17.5	21.52	22.4
Accommodation charge	12.00	9.7	12.00	12.5
Total per day	123.17	100.0	96.20	100.0
Per week	862.19		673.40	

Building costs

Table 14A.6 Building costs^a

Year	Area (m ²)	No. of beds	Total cost (\$ '000)	Cost per bed	AWE ^b index	Area per bed (m ²)	Cost per bed (1998\$)
1993	1 552	34	2 567	75 500	1.1472	45.6	86 600
1993	1 485	30	2 418	80 600	1.1472	49.5	92 500
1993	3 223	60	5 601	93 350	1.1472	53.7	107 100
1994	1 298	30	1 994	66 467	1.1156	43.3	74 200
1994	2 565	50	4 083	81 660	1.1156	51.3	91 100
1995	1 288	30	2 182	72 733	1.0677	42.9	77 700
1996	2 283	48	3 661	76 271	1.0461	47.6	79 800
1996	1 407	30	2 822	94 067	1.0461	46.9	98 400
1996	2 655	52	3 973	76 404	1.0461	51.1	79 900
1996	2 167	45	3 199	71 089	1.0461	48.2	74 400
1996	2 021	30	2 970	99 000	1.0461	67.4	103 600
1997	2 017	45	3 117	69 267	1.0412	44.8	72 100
1997	2 461	52	3 637	69 942	1.0412	47.3	72 800
Average	2032	41.2	3 248	78 950		49.2	85 400

^a Costs of building are supplied by Mr Derek Pitt of KLCK Architects (12 cases) and Mr Lawrence Atley of CNG Atley. These are costs inclusive of consulting fees and furnishings, and thus represent a complete cost to the provider. Prices are indexed to 1998 using average weekly earnings. ^b AWE = average weekly earnings.

Sensitivity analysis for funding options

In table 14A.7, columns (a) and (d) are the rates presented in the paper for option 1 (PAYG) and option 3 (fully funded). The other columns show different scenarios for each option.

For option 1 (PAYG), comparison of columns (a) and (b) shows there is no real change if costs and wages move together, while column (c) shows that a 1 per cent increase in costs without a corresponding increase in wages increases the rate from 6.4 per cent to 10.4 per cent (an increase of over 60 per cent) at the 50 year mark.

For option 3 (fully funded) comparison of columns (d) and (e) shows that an increase in costs and wages without a change in interest generates an offset against interest earnings and requires an increase in rates to compensate, with the same effect being even more pronounced if there is cost inflation ahead of both wages and interest.

The long term effects are considerably less for the fully funded option than for the PAYG option.

Table 14A.7 **Sensitivity analysis for funding options**

	Option 1: PAYG			Option 3: fully funded		
	Interest/wage inflation/cost inflation			Interest/wage inflation/cost inflation		
	a	b	c	d	e	f
	-/4/4	-/5/5	-/4/5	8/4/4	8/5/5	8/4/5
2008	2.4	2.4	2.6	4.8	5.2	5.6
2018	2.9	2.9	3.6	3.9	4.3	4.7
2028	4.0	4.0	5.3	3.7	4.1	4.7
2038	5.3	5.3	7.9	3.7	4.1	4.8
2048	6.4	6.4	10.4	3.6	4.1	4.9

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Discussant — *Maureen Lyster*

Introduction

Rather than responding to the preceding papers, I wish to take the opportunity to speak on behalf of my constituents, the providers of both extended long term residential aged care in hostels and nursing homes, and care to thousands of Australians in their own homes. I have just one plea and that is that we all work more closely together. We are failing to take advantage of potential synergies in what we do.

The importance of informed decision-making by all participants in the aged care community cannot be overestimated, and the sort of work and thinking that has been brought together over these two days certainly will be invaluable for our own industry. Your own lack of certainty provides us with confirmation that we are not the only ones unclear about what the future needs, aspirations and realities will be.

Planning future investments

But I need to stress the importance of the predictions that you make, when we as an industry are making investment decisions. Very significant decisions about capital investment are being made right now, not least as an outcome of the residential aged care reforms initiated in August 1996. Currently there is nearly half a billion dollars worth of building going on in residential aged care. There are plans for more than a billion dollars worth of construction.

If there is to be a choice between the ‘coffin’ and the ‘beehive’ — that is, diminishing or increasing population projections — we may have to rethink some of that capital investment, not just the immediate investment, but over the next 10 and 20 years. It is imperative that we are able to share the information and the projections that you are generating. We are at fault because we have not sought your advice. But if we now recognise an omission I hope that we can do something about it, to ensure that your data become a part of our own investment forecasting.

These data are equally relevant to our workforce planning: comments were made yesterday about the multi-skilling of generally unskilled workers. Those issues will be imperatives for us, as is the need for more information about consumer preferences about which we collectively know very little. Obviously that will impact

on the range of service options and care options that we make available to older Australians now and, more importantly, over the next 20 and 30 years.

If the demand is going to be, as we anticipate, for care in the community, perhaps we should not continue to build to the current ratios. It may be that instead of 90 residential beds per thousand aged over 70, we will be looking at 40 or 50, and being far more creative about how we provide care in people's own homes and doing things that until recently have not been contemplated.

Informed decision making

I would also be keen to see more informed decision making by our politicians and the wider community. The information you have presented should have been taken into account by the Federal Government before they responded so promptly to the recommendations of the Commission of Audit. If there had been greater opportunity for the community to reflect on how and whether those recommendations were appropriate, the overall policy may have maintained greater rigour and integrity. As it happened, the Government found it had to backtrack on its proposal for implementing those recommendations, and thereby the integrity of the policy that it initiated in August 1996 was lost.

It is in our own interests to ensure that politicians are not put into a position where they are forced to respond, or worse that they are forced into a corner. If we are to have informed decisions and informed policy making by our politicians, we need to allow them the space to absorb the material that is put to them and to ensure that there is discussion among the community, so we are all guided into correct directions.

Consumers and taxpayers are a critical part of this equation. An informed electorate may not always be what politicians want but I believe it does usually result in a better policy outcome. Our electorate at the moment has been seduced by the notion that less taxation is good. I note that a conference participant yesterday said that the UK Commission had 'fudged' their recommendations on funding by, in essence, saying that the cost of care should be met from the public purse. That does not suit those taxpayers and economists who believe that tax should be reduced.

However, it just may be that such funding *should* come from the public purse. Perhaps the community has been seduced into believing that reducing taxation is the action of a 'good' government. Maybe the wrong message has been sold to people.

National strategy for an ageing Australia

Finally I refer to the National Strategy for an Ageing Australia. I very much hope that the outcome of these two days will be fed into that National Strategy, for all that you are saying shows to me the importance of a ‘whole of government’ approach. It is impossible to segregate this wealth of information into any one or even two or three portfolios, and I am very pleased that the government has been enthusiastic and indeed that they are going to ensure there is community debate about the way in which this strategy rolls out.

We will only be successful in forming accepted policy for an ageing Australia if we have not just a ‘whole of government’ approach but a ‘whole of community’ approach, which builds on, which welcomes, invites and gives you the opportunity to expand on your research.

Conclusion

Considered and objective research, projections and ideas about the ageing of our community needs to be influenced strongly by informed consumer choice, needs and aspirations — guided by the current and future practices of innovative care providers — then embraced and advocated by the prevailing political ideology. If we can achieve that, we will have achieved a great deal for our ageing population.

Discussant — *Bob Gregory*

The papers by Jeff Richardson and Iain Robertson, and Anna Howe and Hugh Sarjeant are important papers. To a considerable extent they capture many of the central features of the discussion of the past two days. They focus on the relationship between health expenditure and the ageing of the population.

This is an important area of research in which it is possible to scare people with silly pronouncements and exaggerated numbers. The National Commission of Audit (1996), for example, forecast health expenditure as a share of GDP increasing from 8 per cent to 17 per cent over the next 40 years and this projection was widely interpreted to be the result of population ageing. But a more careful analysis, and understanding of the methodology, indicates that population ageing, while an important contributor to health expenditure, could not by itself add anything like this amount to increased health expenditure. Indeed it is difficult to justify such an extreme projection. Both of these papers, therefore, are to be welcomed because they provide an opportunity to put the discussion of the relationship between health expenditure and population ageing onto a firmer footing.

Ageing and the cost of health services

I first consider Richardson and Robertson's paper. Their paper addresses the following question: is the ageing of the population likely to increase the cost of health services to the point where it represents a problem for the economy or for public policy? Their answer is no.

I agree with the main messages of the paper and, if understood properly, the paper should generate widespread agreement. But the paper is not completely clear, and some of the analysis is a little complicated, so let me explain the central ideas.

Ageing and health expenditure — methodology

The first issue is what methodology should be adopted to help decide whether an ageing population could be an important contributor to health expenditure? This question can be answered in many different ways.

The best way to begin is to calculate average health expenditure for each age group for the latest year of data. Then change the age distribution to that which is forecast to prevail in 2040 and multiply the average expenditure of each age group by the

new age distribution. All other factors are kept fixed, including GDP. This is a straight forward *ceteris paribus* calculation. When this calculation is completed it is obvious that the population age distribution matters. If per capita health expenditure of the aged is greater than average then, in the absence of any other change, increasing the proportion of old people must increase health expenditure.

How much does ageing matter? The authors demonstrate that replacing the current age structure by that which is forecast to prevail in 2040 adds about one quarter to health expenditure. Health expenditure as a share of GDP would increase from about 8 per cent to 10 per cent, *ceteris paribus*. Population ageing matters and is obviously important. Note that this 2 percentage points is about one quarter of the 9 percentage point health care expenditure increment estimated by the National Commission of Audit (1996) projection.

But this approach is very mechanical and assumes that nothing else changes except the age structure. What is the next level of sophistication that might be adopted?

The next step is to take account of other factors which might increase health expenditure in the future and to estimate the role an ageing population might play in these projections. The two important additional factors included are changing health expenditure within each age cohort and the growth of GDP.

If the health expenditure growth rates *within* each age cohort over the past 10 years are projected into the future, and combined with the changing age structure, then approximately 80 per cent of the increase in projected health expenditure originates in the trend toward higher expenditure within each age group. The change in age structure accounts for the other 20 per cent of the change. Ageing *per se* is not an important influence.

As a third step it is important to develop a feel as to whether this forecast of the relative insignificance of the changing age structure might be approximately correct. To do this let us ask a slightly different question. What has been the source of large increases in health expenditure in the past?

When this question is addressed the paper demonstrates very convincingly that it is difficult to link changes in the age distribution directly to changes in aggregate expenditure. This proposition can be found either implicitly or explicitly in many other papers presented at this conference and has been the topic of much of our discussion. Consider three examples.

In Bruce Bacon's paper in this publication, there are data which indicate that in 1976 per capita health expenditure increased by \$130. In the following two years health expenditure increased by \$80 per capita, and in the next four years there was

no increase. These different changes from one year to the next are not the result of everybody suddenly growing old in 1976, not growing old so much in 1977 and 1978 and then not growing old at all for four years.

The paper by Michael Fine in this publication presents the following facts: between 1972 and 1983 Australia increased the stock of nursing home beds by about 20 000, and between 1983 and 1994 Australia added approximately 1800 nursing home beds. And yet between 1972 and 1983, the number of people aged 70 and over, did not grow at 10 times the rate as between 1983 and 1994. The provision of nursing home beds and therefore aged care expenditure — aged care expenditure per bed is just over \$30 000 — was not directly related to population changes.

Similar conclusions of the relative unimportance of cohort effects are found in Fine's discussion of child care. Note the figure which presents changes in child care expenditure through time. There are large increases in child care expenditure over the years 1991–98 but there are not large increases in the number of children. Changes in the number of children do not explain changes in child care expenditure, just as changes in the number of aged people do not explain changes in aged care expenditure. In many areas of public expenditure, changing cohort size, by itself, is not an important contributor to expenditure changes.

Determinants of health expenditure within cohorts

The major issue in health expenditure, as in so many parts of government expenditure, is what determines expenditure within each cohort rather than the impact of the changing age structure on expenditure. This is a very important message which should be repeated and repeated because so many lay people find this message difficult to believe.

So what determines expenditure within each cohort? This is perhaps the most important question and it is in finding answers to this question that the papers of this conference and the literature generally have not been satisfactory. In the Richardson and Robertson paper, and that of Bacon, there is reference to changes in technology and changes in demand as the driving forces for within cohort expenditure. But the work remains to be done to fully explain what these factors are, how they change through time and how they are influenced by policy. To some extent the authors of these papers have been forced into fighting a phoney war as to the role of ageing whereas the real battle lies in explaining within cohort expenditure.

GDP growth and health expenditure

Finally, there is a special problem encountered in Richardson and Robertson's paper in estimating future GDP and relating it to health expenditure. Remember the object of much of the analysis is to forecast health expenditure as a share of GDP. The method adopted in this paper is to first estimate expenditure on health care. Then, as a second step, health expenditure is kept fixed at the projected levels and the authors then vary the GDP forecasts to calculate the predicted share of GDP devoted to health care. Health expenditure and GDP are treated as though they were independent. This is a very bad assumption and it explains why the authors produce strange results, such as when the rate of growth of GDP increases the share of health expenditure in GDP falls. There are projected GDP growth rates in the paper which show that health care expenditure can fall to 2 per cent of GDP. If GDP grew even faster than that assumed in this forecast, then the health expenditure share would fall below 2 per cent.

This approach to forecasting the health expenditure share of GDP in two separate and unrelated parts would be correct if it was true that long run growth rates of GDP have no implications for health expenditure. But, in fact, in the medium to long run GDP growth feeds back very strongly and in a positive way into health care expenditure. For example, if GDP growth rates increase because labour productivity increases throughout the economy then all workers would expect and receive real wage increases. Health care workers would share in these increases. As they share in wage increases health costs increase, and this acts to maintain health expenditure as a share of GDP. Indeed, in my view, statements such as 'if ageing were the only source of expenditure growth the relative size of the health sector would significantly decline', and 'the economic burden of the health sector will vary largely dependent upon the rate of growth of the economy', are not correct and are misleading as statements of likely future outcomes.

My conjecture would be that the relationship between GDP growth rates and health expenditure growth rates would be about one to one and, if anything, there would be a very weak positive relationship between GDP growth rates and the health expenditure share of GDP. The relationship between GDP growth rates and health expenditure is a topic yet to be fully explored. A lot will depend on the particular pattern of technical change.

Strengthening the financing of aged care in Australia

I now turn to Howe and Sarjeant's paper which focuses on that part of health expenditure that might be expected to be the most sensitive to the ageing of the population — the provision of government financed residential aged care in nursing

homes, hostels and at home. Their paper covers many financing plans and clearly spells out the issues. In the short time available I can only comment on what seems to me to be particularly special about the paper.

Population change and aged care expenditure

The authors begin by applying different age structures to average aged care expenditure of each cohort to forecast residential care expenditure as the age structure changes. This is the first step that I described earlier. This calculation suggests that if the age structure changes in the way predicted, and expenditure is fixed for each age group, then expenditure will increase between three and four fold, *ceteris paribus*. This is a very large effect. Should a change of this magnitude frighten us? The authors believe that it might present a problem. I believe that the answer is no, for the following reasons.

First, although it might be thought that the scope for resource saving by better aged care policies might be limited, there has been considerable substitution between forms of aged care in the past which could have allowed the cost of aged care to fall considerably. The history of aged care expenditure has been similar to that of other health expenditure areas. Within cohort expenditure has been more important than the ageing of the population (Gregory 1993). In the future the key issue will be the same as in the past. What can be done to control *within* cohort expenditure? There will continue to be a high level of substitution between different forms of aged care and policy changes will be able to offset to a considerable degree the additional cost of ageing.

Second, even if there were no opportunities for cheaper and better aged care policies to reduce the cost of aged care, could the Australian community afford a three to four fold increase in aged care expenditure as a proportion of GDP? The answer, of course, is that the Australian community can afford the increase in expenditure if it wants to afford it. Aged care as a proportion of GDP is not large, and the change in the forecast expenditure share of GDP could be easily accommodated within the existing structure of public finances.

But the authors ask two important and interrelated questions. The first question, which is not very explicit, is when the time comes will society be prepared to pay the extra cost of aged care? There is a presumption in the paper that the answer is no. This is not so clear to me. As the population ages and the demand for aged care increases, so does the number of political votes of the older age groups. The older age groups and their relatives are likely to vote for more aged care and this desire is likely to receive increasing weight in the political process. How this will evolve is clearly a matter of judgment.

Public versus private funding

The second question they pose is particularly interesting: in anticipation of a problem in the distant future, should policies be adopted now that are different from those policies that would be adopted in response to the immediate set of problems?

The authors believe that government is likely to continue to place too low a priority on aged care for their taste, and therefore they propose that the government introduce an aged care fund now to accumulate funds so that resources will be available when the increased demands for aged care occur. This is an innovative suggestion which deserves more discussion and no doubt will receive more attention as the population ages. Whether government should try to build up a fund now is a complex question which involves issues with a high judgment content.

The first issue that must be discussed, so it can be put aside, is why not leave aged care expenditure to private insurance as is being increasingly advocated by some groups? If we did privately insure how much might it cost? Consider an example. The paper suggests that for a female aged 40 who will contribute for the next 20+ years, the average cost would be about \$1000 per year. What is your best guess at the number of 40 year old females who would be prepared to pay this? My guess is very few. It has proved very difficult to encourage individuals to take out private health insurance. For a male aged 40, the insurance would cost about \$350 per year. My opinion is that aged care will continue to be financed by government or by families at the time that the expenditure is incurred and there is little scope for private insurance. Even when the probability of entering a nursing home at some time over the lifetime is as high as 35 per cent for females and 21 per cent for males, most people refuse to accept these probabilities as applying to themselves. I am sure that one third of the women in this room do not believe that they will spend some time in a nursing home.

Now, a key issue raised in this paper is that even if individuals will not privately insure, will they agree to do so through the public sector by a process of earmarking funds for aged care? Is the political process sufficiently different from private decision making that the public would agree to an aged care levy? I am sceptical about the political feasibility of this suggestion.

This proposal naturally raises the question as to whether the process of earmarking funds should be extended. Would increased hypothecation improve the public finance system? The government already partially earmarks some expenditure. Medicare and superannuation are two examples. How far down the earmarking track should we go? I have never been in favour of further hypothecation because it builds some political constraints into the system and, in the Australian context, the taxes rarely meet the full expenditure (the Medicare levy, for example, is only a fraction

of health expenditure). It has always seemed cleaner to me to collect the taxes separately from the expenditure. Earmarking expenditure is more common in the United States where local communities usually vote on the education budget, for example.

Conclusion

To conclude, these are two interesting papers which are rich in content and very wide in coverage. In the time available I have only been able to comment on a few of the interesting points they have raised.

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General discussion

The discussion covered issues relating to:

- health expenditure as a proportion of GDP;
- issues associated with private health/aged care insurance;
- human resource issues;
- funding models for health and aged care; and
- intergenerational issues;

Health expenditure as a proportion of GDP

Discussion centred on the robustness of the estimates of the ratio of health expenditure to GDP presented in the Richardson and Robertson paper. One problem concerns the prediction of the rate of growth of GDP a long time into the future. Forecasts used in the paper were higher than some presented earlier in the conference.

A related problem lay with the decoupling of health expenditure growth from GDP growth when, as mentioned by several participants, a feedback mechanism exists between the two. The link from GDP to health expenditure reflects the fact that, health being a relatively labour-intensive service, economy-wide increases in labour costs would be reflected in that sector as well. The growth differential between GDP and health/aged care costs is what really matters in terms of the projections. However, predicting health care costs is difficult, partly because they are driven primarily by non-age-related factors. Depending on the assumptions made, it is possible for health expenditure to rise or fall as a proportion of GDP.

On the matter of costs, a participant remarked that although growth in health costs was mainly driven by technology and government policies, the impact of ageing was far from trivial in absolute terms, amounting to approximately \$10 billion per year.

Issues associated with private health/aged care insurance

The ability of private health and aged care insurance to relieve the pressures on public funding was explored at length. It was generally agreed that public underwriting of private insurance would almost certainly lead to an increase in the unit costs of services, which would rise to match the availability of resources. In

terms of aged care insurance particularly, one participant suggested that it was likely to remain unattractive for private sector providers because future use probabilities were subject to much uncertainty. Note that the welfare gains from insuring were not in question, only the proposition that the private sector could play a part.

A participant remarked that private insurance premiums for males would likely be higher if they reflected the true cost of the services currently provided for free by females, especially in terms of caring for the elderly.

Human resources issues

Beyond the ability to fund future health and aged care expenditure, it was suggested by a participant that a more daunting matter is the likely shortage of workers to supply the required services, caused by the predicted increase in the dependency ratio. Bodies are needed, not piles of money. To this, Sarjeant replied that ‘piles of money is a good start’. Howe elaborated, noting that money could be used to entice or keep older workers in the workforce, employing them to care for the elderly. Whether the funds are provided privately or publicly is a secondary matter, but the future ability to pay for services currently provided for free (aged care) seems to be an unavoidable issue. A participant added that, if the national saving performance is increased from its current level, greater returns from domestic and overseas assets would allow the freeing-up of labour resources to provide aged care services.

Funding models for health and aged care

Howe argued that, at the very least, new funding arrangements should be put in place to fund capital expenditure in the aged care sector. This was motivated by the need to promote stability and long-term planning, by providing the sector with a ‘buffer’ against yearly variations in government support and the difficulty in charging clients at the time of use (sale of dwellings, etc.). Another participant replied that, under the present system, capital expenditure needs are adequately provisioned for the medium-term, and that, in future, those needs are likely to be increasingly met by income from the clients themselves, under income-testing provisions.

A wide ranging discussion of funding arrangements for the health/aged care sector followed, during which the following views were expressed.

- The lack of a tradition of funded schemes in Australia may hinder the introduction of aged care account-type arrangements, especially if these are subject to the same policy uncertainties as the superannuation sector.

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- Given its history (the coincidence of the baby boom and mass immigration), Australia is likely to be relatively more affected by the imbalance between successive generation sizes. Given that imbalance, it would be prudent to explore now new policy options promoting greater self-sufficiency in old age. At the moment, assets of the elderly are mostly locked up in their dwellings, which is not ideal from an aged care funding perspective.
 - People are against self-insurance for aged care *per se*. But they are willing to self-insure for retirement in general, through their savings, and to then use part of these savings to pay for their aged care needs. From this perspective, the present system appears to be somewhat satisfactory. However, a participant noted the difficulty in asking people to make important financial decisions at a time when they may be least able to do so lucidly, and also the prevalence of the view that ‘it’s not going to happen to me and if it does, the government will pay’. This view underscores the gap between individual perceptions of future care needs and the reality of those needs, and the need for a realignment of funding mechanisms towards greater cost awareness.
 - A privately funded insurance scheme would only be beneficial if it could overcome demonstrated government failure. However, a market-based scheme may remove the political risk associated with government funding, by providing more enforceable contracts than those between successive generations.
 - An aged care account, similar to superannuation, would be advantageous in that it would simultaneously move the economy closer to its optimal level of saving and achieve greater intergenerational equity. It would also remove the temptation for governments to dip into it for political ends.

Intergenerational issues

According to some participants, issues of intergenerational transfers and equity are at the heart of the debate on funding alternatives. Accordingly, these issues attracted extensive discussion, during which the following points were made.

- Regarding funding for aged care, the choice is between income transfers *across* generations (the current pay-as-you-go [PAYG] system) and *within* generations (the fully funded model). Advocates of the latter option cite the need for intergenerational equity, whereby a small younger cohort should not be made to pay for the care needs of a large older cohort. Proponents of PAYG schemes argue that they can be preferable to fully funded ones if the rate of GDP growth is greater than the real interest rate. The question of whether this rule applied to successive generations of varying size was discussed inconclusively.

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- If future generations are really so small and/or so poor that they are unable to pay the required level of taxes, then it is not just aged care funding which is at risk but also defence services, the diplomatic corps, etc. Singling out aged care as the only area of deficiency is an odd argument. To this, a participant replied that aged care costs, unlike defence, are more readily attributable to a given generation.

15 The implications of ageing for education policy

Penny Taylor, Patrick Laplagne and Craig de Laine¹

15.1 Introduction

The ageing of the Australian population over the next 50 years suggests that public spending on education will decline as a proportion of gross domestic product (GDP) (see papers by Johnson and Creedy in this publication). However, historical data and assumptions underlying such projections do not allow for a number of competing influences on education spending which could limit this projected decline — not least, barriers to reallocation between sectors within the education portfolio due to the structure of responsibilities across different levels of government. Further, population ageing has given rise to concerns about economic growth, and the distribution of resources and investments in education provide one of several policy alternatives for alleviating these concerns. Depending on their nature, therefore, changes to education policy could arrest or even reverse the projected decline in public expenditure on education as a proportion of GDP.

This paper considers both macroeconomic and microeconomic issues related to population ageing and the implications for education policy (see also Mason and Randell 1997).

From a macroeconomic perspective, one of the principal factors driving concerns about population ageing relates to the projected rise in the economic dependency ratio² (Bacon 1997; Creedy 1998; simulations in section 15.2 of this paper for

¹ The views expressed in this paper are those of the staff involved and do not necessarily reflect those of the Productivity Commission. The authors gratefully acknowledge the assistance and advice received from the Commonwealth Treasury's Retirement Income Modelling Unit in carrying out the simulations presented in this paper. The authors have also benefited from comments by two Commission referees and discussions with their colleagues. However, any remaining errors are their own.

² Henceforth abbreviated as EDR and defined as the ratio of persons not working to employed (full time and part time) persons aged 15–64, expressed as a percentage.

estimates). This implies that fewer workers will be available to produce goods and services for the population as a whole. The fairly predictable nature of demographic change — even if net migration is included — means that a fall in the proportion of persons aged 15–64 in the population is not seriously in question (see appendix B). Economic changes, by contrast, are inherently more unpredictable. However, if present trends are indicative of future conditions, lengthening periods of education, earlier retirement and falling overall labour force participation rates will also contribute to a decline in the share of employed workers in the population.

Projections by the Organisation of Economic Cooperation and Development (OECD) suggest that such a decline could be detrimental to Australia's economy, in the form of a slowdown in the rate of growth of GDP per capita (OECD 1998a). This slowdown is primarily attributed to a slowdown in labour force growth due, in part, to a continuation of the trend towards early retirement. A compounding factor mentioned by the OECD is a slowdown in labour productivity growth, caused by lower capital intensity, itself the result of a decline in the national saving rate and hence, investment in physical capital. Finally, the OECD (1998a) predicts that population ageing will lead to a deterioration in public finances, as the weight of social expenditure (pensions, health, aged care) in the budget increases significantly.

One form of investment — human capital investment — has the potential to moderate some of the negative effects that have been predicted to occur as a result of population ageing. Following human capital theory (Becker 1964), education and training are thought to improve an individual's skills and thus their productivity. Further, individual labour force participation rates and retirement age increase with educational attainment. Thus, education and training may alleviate the detrimental effects of the labour force growth slowdown on GDP per capita growth. In addition, they may alleviate the predicted deterioration in public finances by lessening the need for social transfers in old age. This would occur if higher levels of education enabled future retirees to exercise greater claims on future output (for example, through the ownership of assets or property rights). In this sense, additional investments in self-education may provide people with a kind of 'retirement self-insurance'.

From a microeconomic viewpoint, population ageing may affect private incentives to invest in education and market failures traditionally associated with education and training. Ageing may also give rise to other types of market failure. Such failures may imply that greater than anticipated public expenditure on education will be necessary.

Overall, therefore, there are some reasons to question the *a priori* expectation that public expenditure on education will necessarily fall as a percentage of GDP as a

result of population ageing. However, ageing may also generate pressures for increases in public expenditure more generally (see, for example, the paper by Creedy and the paper by Howe and Sarjeant in this publication), highlighting the need to consider public expenditure on education in the context of competing demands for public funds across the government as a whole.

The objectives of this paper are twofold. First, the paper sets out to assess the potential for increases in educational attainment to alleviate any possible negative effects of population ageing on overall economic welfare. While such a policy would entail increases in public expenditure, only the benefits of such an approach are considered in section 15.2. That section contains a range of simulations that examine, other things held constant, the effects of improving educational attainment on the economic dependency ratio (EDR), labour productivity and income growth over the next 50 years. Second, in section 15.3, the paper seeks to examine the impact of population ageing on private incentives to invest in education and the likelihood of market failures arising. Some implications for education policy and public expenditure on education, as well as policy issues for related portfolios are then discussed. Another form of private human capital investment — that by an older cohort in the education of a younger cohort (see the paper by Dowrick in this publication) — is not considered in this paper. Key conclusions are drawn in section 15.4.

15.2 Educational attainment and economic outcomes

As mentioned earlier, a major concern raised in the context of population ageing is that of a lower aggregate growth performance of the economy. Yet, as Dowrick argues in this publication, this need not translate into a decline in output per capita growth if one or more of the following changes occurs: (i) population growth declines even more than output growth; (ii) saving, physical investment and labour productivity increase; (iii) labour force participation increases; and (iv) investment in human capital increases. The last point specifically is investigated in this section, although it bears a strong relation to points (ii) and (iii).

The traditional view of a rise in the EDR is that claims on the output of workers (the younger cohort) arising from the consumption of non-workers (the older cohort) may have negative repercussions on saving, investment and growth. However, this may not eventuate if the younger cohort is more productive as a result of physical capital bequeathed by the older cohort, or increased investment in its own human capital. In either instance, the younger cohort would be better able to meet the claims on output of the older cohort without being worse off in terms of its own consumption and investment possibilities. Further, if human capital deepening

results in greater labour force participation and employment rates, three out of the four sufficient conditions for continued output per capita growth (mentioned earlier) will be met.

This said, the education–productivity link underpinning human capital theory is not entirely clearcut (see EPAC 1993 for a review of the literature). Signalling theory suggests that education does not improve the productive capacity of individuals but assists employers in assigning people to jobs by signalling innate ability. In this case, increasing educational attainment for an entire cohort will not improve job prospects and earnings across the board. Greater levels of educational attainment — beyond that required as a signal — would simply be a waste of resources.

Nonetheless, the economic importance of education has been given renewed prominence in the ‘new growth theory’ (Romer 1990). This theory emphasises the role of the education–knowledge–technological change–productivity chain in explaining long run economic growth. In brief, education promotes productivity and growth directly and indirectly: the direct effect is due to the addition to the stock of human capital, while the indirect effect stems from the contribution that human capital makes to the stock of knowledge.

The view that education and training contribute to employability and productivity underlies the simulations presented in section 15.2.2. Background information on educational attainment in Australia is provided in section 15.2.1.

15.2.1 Background

The correlation between educational attainment, labour force status and income in Australia is summarised in table 15.1. It shows that:

- the likelihood of being employed full time greatly increases with educational attainment. This is true for both genders and for all age groups (grouped age data not shown); and
- gross income from all sources is greatest for those with higher levels of educational attainment. Again, this is true for both genders and for all ages. Subject to the above caveat about signalling, this higher income could reflect greater productivity.

Increasing educational attainment may therefore help restrict the predicted slow-down in economic growth, through increased employment rates and greater labour productivity during the working life. In addition, a greater overall level of income means a larger tax base, hence making it easier for governments to raise the funds necessary to meet the greater level of social expenditure thought to be required by an ageing population. Finally, the higher value of lifetime income achieved by educated workers may improve their ability to be self-funded in retirement, thus reducing the demand for pension income.

The numerical simulations in section 15.2.2 use these correlations to examine the impact of greater educational attainment on the economy. Previous research has also identified several other correlations between education and labour market performance. These include:

- the greater educational attainment, the greater labour mobility (ABS 1998), which may increase labour market flexibility and reduce unemployment;
- the chances of re-entering the labour market at some stage following an initial retirement increase with education. High educational level and professional skills are the strongest predictor of post-retirement employment (Wolcott 1998);
- the more educated a person is initially, the greater the likelihood that he or she will undertake training on a regular basis during his/her working life, thus reducing the likelihood of skill atrophy, unemployment and early retirement (Groot 1997; Hight 1998; OECD 1998a); and
- the more educated parents are, the more educated their children, on average (see OECD 1998b, p. 48). Also, the more educated a firm's manager, the more likely

Table 15.1 Educational attainment, full time employment and income
Civilian population aged 15–64, Australia

<i>Educational attainment</i>	<i>Females</i>		<i>Males</i>	
	<i>Employment^a</i>	<i>Income^b</i>	<i>Employment^a</i>	<i>Income^b</i>
	1997	1996	1997	1996
	%	\$	%	\$
Degree or higher ^c	56	765	83	983
Diploma ^c	45	620	79	820
Vocational ^c	38	510	79	659
No qualifications ^c	25	487	57	587

^a Proportion employed full time. ^b Gross weekly income from all sources in 1996 of those in full time employment. ^c 'Degree or higher' includes bachelor degrees, higher degrees and postgraduate diplomas; 'Diploma' includes associate and undergraduate diplomas; 'Vocational' includes skilled and basic vocational qualifications; 'No Qualifications' refers to persons without post-school qualifications (but includes those attending educational institutions).

Data sources: ABS (unpublished Census data 1996; unpublished Labour Force Survey data 1997).

the firm's employees are to undergo training.

These correlations are not able to be modelled in the present simulations. They would nonetheless add to the beneficial impact of greater educational attainment on the economy and welfare generally.

Educational attainment in Australia

The highest level of educational attainment by age and gender is shown in figure 15.1 in four successive periods from 1984 to 1997. Several changes are apparent, particularly an increase in the share of those with degree or higher qualifications, away from other types of post-school qualifications. This has been especially true of the period 1993–97 and for males. Overall, there has been little or no variation in the proportion of the population without any post-school qualifications in each age group, particularly during the 1990s. This is not to say that Australia's human capital is not increasing. Technically, changes illustrated in figure 15.1 must stem from a combination of: (i) people increasingly choosing to enrol in degrees or higher *instead of* diploma or vocational qualification courses; and (ii) people 'upgrading' their qualifications from diplomas, say, to degrees. Both types of change should imply an increase in human capital.

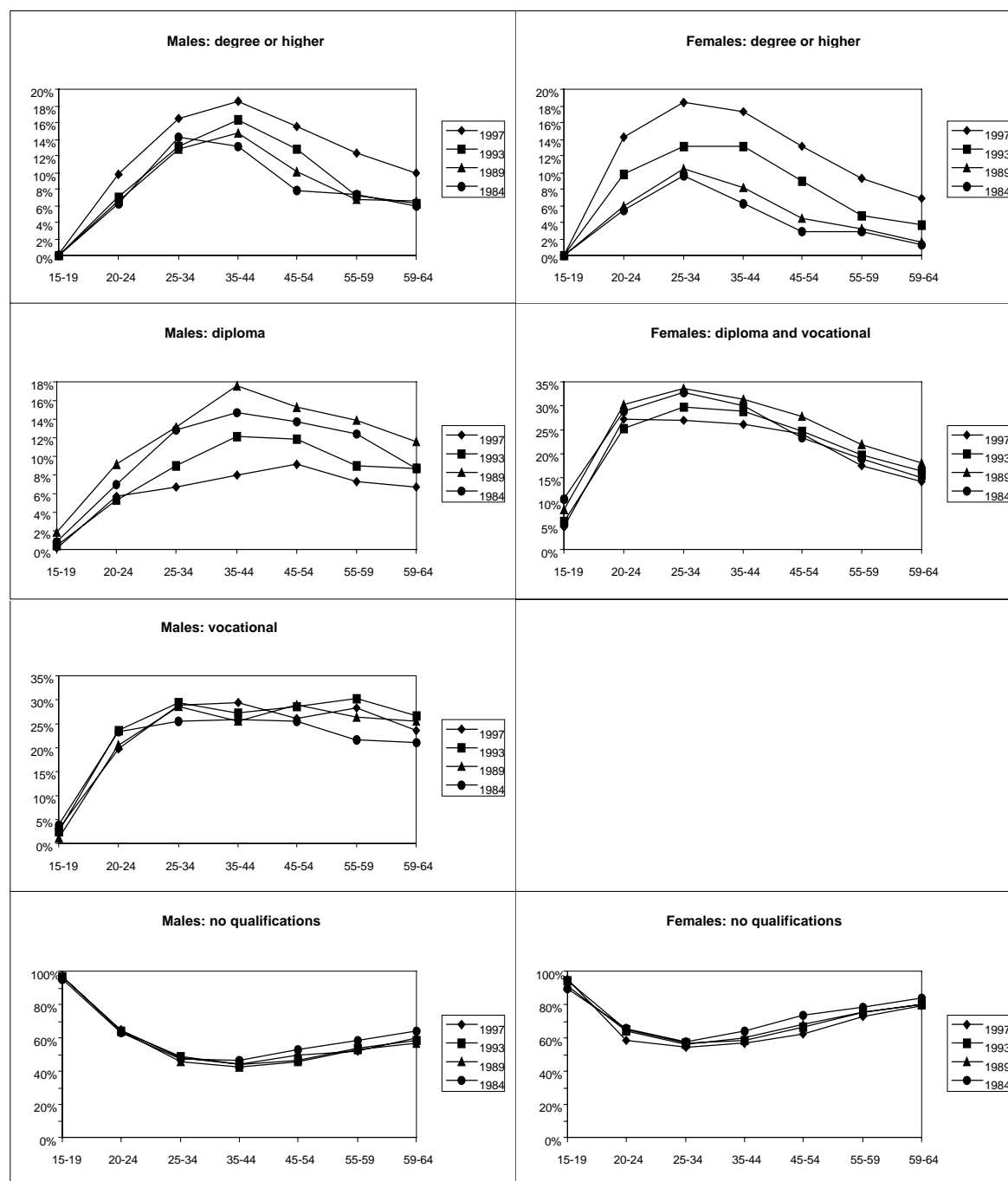
On a related point, if more high school students are opting to complete year 12 rather than undertake vocational training after year 10, human capital accumulation is underestimated in the taxonomy used here. This is because students ending their schooling after year 12, despite having typically undergone more schooling than their counterparts with basic vocational qualifications,³ are deemed to be less qualified. In reality, these students may have acquired similar skills (for example, keyboarding) to their vocational counterparts, which is why the OECD puts both groups into the same 'upper secondary education' category (OECD 1998b).

Nonetheless, educational attainment in Australia lags behind some OECD countries. In the US, for instance, 26 per cent of the civilian population aged 15–64 hold degree or higher qualifications, while 52 per cent hold vocational qualifications (OECD 1998b). Equivalent figures for Australia are 15 per cent and 32 per cent respectively. In Canada, 31 per cent hold diploma qualifications, while this figure is only 10 per cent in Australia. As the US and Canada are the OECD leaders in the categories mentioned, the gap between Australia's experience and what may be termed 'world best practice' is clear.

³ These require six months to one year of full time study or equivalent.

However, this relative attainment gap experienced by Australia may decrease in future due to the significant increase in participation in education and training

Figure 15.1 Highest educational attainment, by age^a and gender^b, (per cent)



^a Educational attainment data for persons aged 65 and over are unavailable. ^b Data for Diploma and Vocational attainment of females have been aggregated to avoid definitional problems arising from the 1993 adoption of a new Classification of Qualifications by the ABS. As some diplomas undertaken by females prior to 1993 were subsequently reclassified as certificates, the pre- and post-1993 series are not comparable.

Data source: ABS (unpublished Labour Force Survey data).

during the 1990s. From 1989 to 1997, the number of students taking part in higher education and vocational education and training (VET) increased by 49 per cent and 57 per cent respectively (ABS cat. no. 6278.0; DETYA, unpublished data; NCVER, unpublished data). There may, however, be reasons why greater participation will not lead to commensurate increases in educational attainment. While these are outside the scope of this study, they include lower completion rates and increased non-degree enrolments.

15.2.2 Simulations

The numerical simulations presented in this section are only illustrative, due to the large number of underlying assumptions and the length of the timeframe involved. Further, the simulations rely on projections, rather than on forecasts. That is, they are based on the extrapolation of existing statistical trends, with no attempt made to incorporate behavioural relationships into the analysis. In the event of unforeseen behavioural changes, entirely different results could ensue. However, since the effects of ageing are commonly encapsulated in numerical indicators — the EDR, the labour force participation rate, etc. — it is important to try and quantify the effects of greater educational attainment in this area.

The transparency of any economic projection rests on a statement of:

- the state of play at the beginning of the projection period;
- the nature and size of the drivers of change; and
- the mechanism through which these drivers are thought to affect the simulated variables.

These points are addressed below, while further details can be found in appendix 15A.

In this paper, the state of play consists of the levels of educational attainment achieved in 1997 and the associated labour force status and income levels. A subset of these data is provided in table 15.1. The complete data set is drawn from unpublished data from the ABS Labour Force Survey.

The key assumption underlying the simulations is that the likelihood of being employed (full time and part time), unemployed, or not in the labour force for each of the four levels of educational attainment (as well as age and gender) retain their 1997 values in future. For example, the proportion of females aged 45–54 with degrees or higher who are not in the labour force was 12 per cent in 1997 (data not shown) and is assumed to remain constant over the entire projection period. These

1997 labour force status proportions are then applied to the changing age and gender structure of the population between 1997 and 2047, at five yearly intervals.

Demographic change is therefore the main driver of the simulations results. In addition, a range of hypothesised changes in the rates of educational attainment by age group are simulated. They are summarised briefly below. Detailed underlying assumptions are provided in appendix 15A. The six simulations are:

- *simul1* — this is a ‘baseline’ simulation, which measures the change in the EDR and associated variables when educational attainment rates by age group and gender retain their 1997 values. This is equivalent to assuming that all age cohorts from 1997 perform in the same way in regard to their acquisition of educational qualifications. The result is a ‘natural increase’ in overall educational attainment, because relatively less educated cohorts are being progressively replaced by better educated ones;⁴
- *simul2* — this simulation attempts to measure the effects of Australia reaching world best practice in terms of the proportion of its population with degree or higher qualifications. In practice, this means emulating the US value of 26 per cent;
- *simul3* — this represents a more ambitious simulation of world best practice, which assumes, in addition to the improvement simulated in *simul2*, that the combined proportion of the civilian population aged 15–64 with diploma or vocational qualifications also reaches that observed in both Canada and the US, which implies an increase of 42 per cent in the relevant attainment rates (see appendix 15A);
- *simul4* — in this simulation, an attempt is made to measure the effects of qualification ‘upgrading’ — that is, the systematic promotion of 10 per cent of holders of a particular type of qualification (except degree or higher holders) to the next higher level. This upgrading is assumed to affect age groups up to the peak age group (inclusive) only. This scenario means, for instance, that 10 per cent of persons aged 25–34 with no qualifications will now hold a vocational qualification;
- *simul5* — in this scenario, the effects of so-called ‘second chance’ education are considered. This scenario takes the form of qualification upgrading of the magnitude described above, but now targeted at persons aged 45 and over only; and

⁴ This process can be understood by reference to the top left hand side panel of figure 15.1. Given a 18.6 per cent rate of degree or higher attainment for males aged 35–44 in 1997, the comparable rate for males aged 45–54 in 2007 will be at least 18.6 per cent (see appendix 15A for details).

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- *simul6* — this simulation is intended to measure the effects of a policy consisting of the retraining of older (aged 45 and over) unemployed workers with no post-school qualifications. It is assumed that 10 per cent of such workers acquire vocational qualifications in each five year period.

Finally, the mechanisms through which the hypothesised changes affect the variables of interest are as follows. As the age and gender structure of the population changes, the educational attainment structure changes endogenously with it (*simul1*). In addition, as described above, exogenous changes in educational attainment are introduced in simulations 2–6. The combination of demographic change and educational attainment ‘shocks’ alters the breakdown of the overall population between the four labour force states. To retain the example used earlier, if the number of females aged 45–54 expands, so will the number holding degree or higher qualifications, as will the number who are not in the labour force. Thus, the population of each possible sub-grouping (32 in total) can be calculated for each five year period between the base and horizon years. Results are then aggregated for the population as a whole to arrive at total employed, total unemployed, etc. From these aggregate figures, the EDR can be calculated (see appendix 15A for details of the methodology).

Further, since each possible sub-grouping is associated with a specific level of income per head (in 1996 dollars), knowledge of these populations allows the calculation of income accruing to the entire civilian population aged 15–64. This then allows the calculation of income per worker and income per head figures for that population. Further, by assuming a constant 1996 income per head for the population aged 65 and over in future periods, income per capita for the entire population can be estimated as well.

Simulation results

The main results of the simulations are summarised in table 15.2.

Simul1 (the baseline scenario) shows that, over time, the proportion of the working age population with post-school qualifications increases from 40 per cent in 1997 to 46 per cent in 2047, on the strength of better educated cohorts passing through the relevant age groups. In the present model, this has a number of flow-on effects, such as a reduced unemployment rate and a greater proportion of full time workers. Further, the fall in the labour force participation rate associated with population ageing is cushioned by the greater proportion holding post-school qualifications. In spite of this, the EDR increases by 26 percentage points, from 122 to 148. This means that the natural increase in educational attainment simulated here cannot prevent the rise in the number of non-workers relative to workers. It can, however,

moderate it in the sense that a ratio calculated without reference to increasing attainment would necessarily be higher than in *simul1*, other things equal.

This moderating effect is even more in evidence in the two world best practice scenarios (*simul2* and *simul3*). The assumed proactive education policies result in a sizeable reduction in the EDR relative to *simul1*, particularly in the case of *simul3* (down from 148 to 140 or 136). This beneficial result is brought about by the combination of lower unemployment rates and higher labour force participation rates. These changes are the direct consequence of a much greater proportion of the population holding post-school qualifications (67 per cent in *simul3*, against 46 per cent in *simul1*).

The benefits of achieving world best practice are only partly reflected in the

Table 15.2 Simulation results^a

		<i>Initial^b</i>	<i>Simul1</i>	<i>Simul2</i>	<i>Simul3</i>	<i>Simul4</i>	<i>Simul5</i>	<i>Simul6</i>
	<i>Unit</i>	1997	2047	2047	2047	2047	2047	2047
<i>Labour force characteristics</i>								
(of population aged 15–64 except where otherwise stated)								
Population (total)	'000	18 482	24 726	24 726	24 726	24 726	24 726	24 726
Labour force	'000	9129	10 863	11 163	11 310	10 993	10 968	10 868
Employment	'000	8331	9961	10 308	10 488	10 099	10 066	9965
Part time	'000	2130	2540	2574	2593	2545	2576	2542
Unemployment	'000	798	902	856	822	894	902	902
NILF ^c	'000	3189	4088	3832	3641	3957	3983	4083
LFPR ^d	%	74.1	72.7	74.4	75.7	73.5	73.4	72.7
UNEMPR ^e	%	8.7	8.3	7.7	7.3	8.1	8.2	8.3
%Q ^f	%	40.4	45.7	55.4	67.4	51.4	50.2	46.0
%Pt ^g	%	25.6	25.5	25.0	24.7	25.2	25.6	25.5
<i>Economic dependency ratio^h</i>	%	122	148	140	136	145	146	148
<i>Incomeⁱ variables^j</i>								
(Percentage change over 1997 value)								
Income (15–64) / pop (15–64) ^k	%		2.2	10.1	12.6	4.1	4.2	2.3
Income (total) / pop (total) ^l	%		2.3	8.8	10.9	3.8	3.9	2.3
Income (15–64) / EMP (15–64) ^m	%		3.8	8.1	8.6	4.2	4.7	3.8

^a The results presented in this table are illustrative only and are not forecasts. ^b Initial (1997) figures are the same for all scenarios. ^c Not in the labour force. ^d Labour force participation rate. ^e Aggregate unemployment rate. ^f Percentage of the civilian population aged 15–64 with post-school qualifications. ^g Percentage of employed persons working part time. ^h Calculated as {[population (total) – Employment (15–64)]/employment (15–64)}. ⁱ Gross average weekly income from all sources. ^j Indicators of living standards. ^k Income accruing to the population aged 15–64 divided by that population. ^l Income accruing to the total population (estimated by assuming a constant 1996 income per head of population over 65) divided by that population. ^m Income accruing to the population aged 15–64 divided by employed workers in that population.

Source: PC estimates.

moderating influence that greater educational attainment exerts on the proportion of non-workers to workers. In addition, as the bottom part of table 15.2 shows, economic performance is positively influenced by an increase in educational attainment. In both *simul2* and *simul3*, income per employed worker and the two measures of income per head increase significantly more than in *simul1*. This may be interpreted as average labour productivity rising with educational attainment, thus allowing income per head estimates to exceed those in *simul1* by 6–10 percentage points, depending on the simulation and the definition of the population chosen (table 15.2). In practical terms, this is equivalent to a gain of between \$21–\$46 (in 1996 dollars) per week and per person over the baseline case.

The remaining simulations confirm the capacity of greater levels of educational attainment to moderate the rise in the EDR, to enhance labour productivity and to increase income per head. Depending on the type of policy envisaged, these benefits are more or less pronounced. Second chance education (*simul5*) has the most favourable effects of the remaining simulations, closely followed by qualification upgrading (*simul4*). In contrast, retraining (*simul6*) in the format assumed here has no significant impact on the economy. However, direct comparisons between policies are not possible, since the cost of their implementation is certain to differ. This issue is discussed in section 15.3.

Conclusion

The simulation results suggest, *all else equal*, that increases in educational attainment may be able to moderate somewhat the effects of population ageing on the standard of living of all Australians. The most favourable results are those of *simul2* and *simul3*, which see Australia reach parity with world leaders in terms of educational attainment. If rates of educational attainment observed in North America were able to be emulated, and if the 1997 labour force status proportions attached to the various qualification (as well as age and gender) groups were maintained in future, employed workers would become relatively more numerous and more productive, thus cushioning the negative effect of population ageing on the growth in income per head predicted by some authors (OECD 1998a). In practical terms, achieving the attainment rates of *simul3* would be equivalent to postponing the rise in the EDR by approximately 20 years.

The next best simulations — *simul4* and *simul5* — also suggest the existence of benefits flowing from improved educational achievement, albeit of a smaller order of magnitude. By contrast, *simul6* entails negligible benefits only. This is consistent with other assessments of the employment prospects of older workers, should they gain vocational qualifications (OECD 1998a). This, and the more general issue of retraining of older workers, will be examined in greater detail in the next section.

Finally, overall results must be put in perspective. If the whole array of factors influencing labour force participation, unemployment and labour productivity is allowed to vary and to interact, different results emerge. The OECD (1998a) for example, predicts an unemployment rate of 5 per cent from 2005 and an average growth rate in real GDP per capita of about 1 per cent per year over the period 2010–40. Thus, the income per head of Australians by the middle of the next century is certain to be significantly higher than implied in table 15.2. Nonetheless, the simulations in this section have shown that greater educational attainment could contribute to this improvement.

15.3 Implications of ageing for education policy

The results in the previous section raise the issue of whether or not education policy should aim to further encourage investments in education as a response to population ageing. However, policy implications should not be drawn from these simulations alone for several reasons.

First, the simulations underestimate the actual effect of education on the chosen indicators of wellbeing, partly because they do not account for the connection between education, training and economic growth or allow for labour force participation by those aged over 65. In addition, the simulations do not consider the fact that investments in education are costly, involving reductions in potential output while individuals study (when they could otherwise be at work), and because education itself uses up scarce resources. These costs must be taken into account in measuring the economy-wide benefits of further investments in education.

Second, the EDR is only an indicator and is not a measure of economic wellbeing. As discussed previously, it is possible that productivity could increase even though labour supply falls. Hence, an increase in the EDR does not necessarily imply a worsening of living standards. The EDR should not therefore drive changes in education policy. Any change to education policy should be aimed primarily at improving social equity, productivity and economic growth.

Third, while education is a significant policy instrument for generating improvements in productivity and economic growth, many others exist. The relative merits of all policy instruments should be assessed before choosing any particular approach.

Consequently, determining whether or not governments should further encourage investments in education (in addition to policy measures already in place) in response to population ageing is a complex issue, requiring judgments about the

importance of educational attainment for economic growth and whether public funds could be allocated elsewhere with correspondingly higher economy-wide net benefits.

Current government action (via taxation policy and direct subsidies) is based on the view that individuals and firms — if left to their own resources — will underinvest in education and training because of market failures. It also relates to the connection between education and economic growth and the importance of education for social equity. For ageing to justify further action or changes to current policies, it would have to exacerbate these underinvestments due to market failure, or create other problems that could be addressed directly through education policy. Even if this were the case, the costs of government intervention may limit its usefulness in practice. In addition, population ageing may generate incentives for individuals and firms to invest more in human capital of their own volition, without any encouragement by governments.

Section 15.3.1 therefore canvasses the impact of ageing on investments in education and training by individuals or firms, assesses whether ageing adds to pre-existing reasons for underinvestments due to market failure and, in the process, explores whether ageing introduces other reasons to believe that investments in education may be inadequate. Some implications for government policy arising from the analysis in section 15.3.1 are drawn in section 15.3.2.

15.3.1 Implications of ageing for investments in education

Predicting the impact of ageing on incentives to invest in education

The human capital framework facilitates insights into the impact of population ageing on private investments in education and training by highlighting the factors that affect the incentives surrounding decisions to invest. According to human capital theory, decisions to undertake education or training are akin to decisions to invest in physical infrastructure. Such decisions by both individuals and firms will depend on a comparison of the future benefits arising from the investment and its current costs. The net return is then measured against other possible courses of action.

Human capital theory suggests that two critical determinants of educational investment decisions are the time period over which returns to education and training can be recouped, and expectations about the net returns to skill development (for the individual in the form of the addition to future earnings, and for the firm in the relationship between productivity and wage changes).

Turning to the recoupment period first, if the impact of population ageing is considered alone and all other factors are held constant, expectations of lengthening life (which are part and parcel of population ageing) may favourably affect individual incentives to make initial investments in education and training. However, this hypothesis may not hold if expectations regarding length of life are not correlated with expectations of length of working life or, more specifically, skill-specific recoupment periods. This may be the case if an individual's skills atrophy at a rate that deems educational investments worthless before the end of an individual's working life, or if instead of using their longer life span to work for a longer time period, individuals take time out from the workforce for family care or leisure, for example.

Similarly, other things held constant, the period during which firms can recoup training expenditure per employee may expand if population ageing is somehow correlated with an increase in expected job duration. The OECD (1998c) suggests the five-year retention rate for older workers (aged 45 and over) is higher than that for younger workers in six of the nine countries for which data are available. In addition, ABS data suggest that worker mobility tends to decline with age.⁵ On the other hand, the OECD (1998c) data also suggest that younger workers in most of the countries studied appear more likely than older workers to remain with a firm for longer periods. Further, the incentives of firms to train their employees will diminish after a certain age as workers move closer to retirement. It is therefore very difficult to predict the impact of population ageing on the training decisions of firms. However, it is possible that if population ageing leads to a fall in worker mobility generally (because of an increase in the average age of the workforce), that firms will be more willing to finance the development of their employees' generic skills. This has implications for the extent of capital market failure as a cause of underinvestments in education by individuals (further discussed below). Overall, the relative importance of age and job duration as determining factors in skill investments by firms is open to debate. The OECD (1998c, p. 139) concludes that 'the bottom line is that little is known about how firms assess the potential life of skill investments'.

Other things held constant, the net returns to skill development may be affected by population ageing via changes in relative cohort size, with repercussions for individual incentives to invest in education. Fluctuations in birth cohort size cause fluctuations in the relative size of various labour market cohorts, where a cohort may be defined with reference to factors such as age, qualifications and work experience. Evidence suggests that earnings relativities are sensitive to changes in

⁵ABS (1998) mobility data suggest that job mobility is related to age in an inverted U-shape, increasing to the age of 20–24 as young people 'shop' for jobs, and then declining.

the relative size of labour market cohorts, with the relationship depending on the degree to which labour market cohorts are substitutable in the production process. As Connelly (1986, p. 543) noted ‘empirical studies ... generally agree that a large labour market cohort has a negative effect on the earnings of individuals in that cohort’.

Where earnings relativities between more and less educated people are affected,⁶ educational participation choices are also likely to change (although as Disney [1996] notes, such choices tend to be constrained by government policies controlling prices and places in the education and training market). The nature of the relationship between changes in educational participation rates and changes in relative cohort size depends on the way in which expectations about earnings are formulated. Connelly (1986) shows a range of outcomes depending on assumptions about the extent of individual’s foresight about their relative cohort size and the feedback effect via relative returns to education. While it is possible with perfect foresight, that successive declines in the size of birth cohorts (which will occur with the current decline in fertility) will engender an increase in educational participation rates (Stapleton and Young 1988), but the opposite could also occur if young workers do not anticipate the feedback effect and their discount rates are high. Hence, it is difficult to predict the overall direction of this effect. Further research estimating the impact of changes in relative cohort size on educational participation in Australia would be useful.

Age may also affect the marginal cost to individuals of training, thus influencing the net returns to skill development. The OECD (1998c) notes evidence suggesting less educated workers and those not employed in a learning environment are likely to experience a decline in learning ability with age, increasing the marginal cost to them of training and providing a disincentive for them to engage in re-training. This is one factor contributing to the low skill/low training trap, where older less educated people who lose their jobs face long periods of unemployment or involuntary retirement.⁷ Initial investments in education can reduce the costs to individuals of subsequent skill development. Current participation rates in continuing education and training reflect this, rising with both educational attainment and literacy skills (OECD 1998b). The OECD (1998b, p. 208) concludes that ‘Skill differences that result from different levels of initial education are thus amplified by subsequent training decisions by employers and employees’.

⁶ There is evidence that cohort size affects more highly educated people relatively more than it does less well educated people (Berger 1983 and Welch 1979 cited in Connelly 1986).

⁷ Despite the unemployment rate of older people being lower than that of younger people, their comparative risk of long term unemployment is greater (see for example, OECD 1998c).

While evidence suggests that age can increase the marginal cost of training for those with little education, an increase in the average age of the population due to population ageing will not necessarily exacerbate the ‘low skill/low training trap’ in numerical terms. First, while it is very difficult to predict the impact of ageing on unemployment, Disney concludes that ageing related unemployment pessimism remains unproven (Disney 1996) and the OECD (1998a) predicts that ageing will reduce the Australian unemployment rate. Second, current increases in educational participation are likely to improve the educational attainment levels of older people in future. However, lengthening life spans could extend the length of time for which less skilled older workers who lose their jobs spend on low incomes.

In conclusion, even if other influences are held constant, projections of the impact of population ageing on private incentives to invest in education are extremely difficult. However, it would appear that population ageing alone is unlikely to worsen the ‘low skill/low training trap’ in numerical terms. While the latter is a problem of concern for policy generally, policy action is not justified from the perspective of an ageing population alone.

Market failures

There are several ‘market failures’ typically associated with education and training that tend to inhibit investments by individuals and firms in education and training — positive externalities, liquidity constraints and information deficiencies. The impact of ageing on these three types of market failure is analysed below. In addition, age discrimination may also lead firms to ‘underinvest’ in the training of older people.⁸

First, the positive externalities associated with investments in education and training (see IC 1997) are likely to be inversely related to age, simply because the time available to recoup spillovers falls as people get older. Hence, as the average age of the population increases, the positive externalities associated with investments in education fall. On the other hand, given that population ageing is partly driven by longer life expectancy, the positive externalities associated with investments in education at any given age are greater with longer average expected life spans. However, externalities also vary with other factors such as the type of education and training (for example, general or specific), the level of education and training (primary, secondary or tertiary) and the form of education and training (research or course work). Hence, for example, it is possible that the spillovers associated with an older worker completing secondary education are greater than those associated

⁸Age discrimination occurs if employers prefer young people for training over older people, even though the net benefits associated with training older and younger people are exactly the same.

with a young worker obtaining a masters degree by course work. Williams (1998, p. 155) makes the point that:

... externalities associated with education will be greater the earlier in life the education is received. ... with the possible exception of a research degree in which the research itself provides external benefits.

Unfortunately, little is known about the extent of spillovers generally, let alone the differences in spillovers arising from each educational sector or level (IC 1997).

Second, liquidity constraints depend on socioeconomic factors rather than age. However, older people are more likely than younger people to have built up collateral, and therefore less likely to be hampered by a lack of access to finance for investments in human capital. Thus, population ageing may reduce the prevalence of this constraint on educational investments. In addition, any increase in the willingness of firms to contribute to the cost of general training due to population ageing (discussed in section 15.3.1) may reduce the problem of capital market failure since individuals are more likely to face difficulties in accessing capital for training purposes than firms.

Third, underinvestments by individuals and firms in education and training may stem from inadequate information about the associated costs and benefits. This type of market failure is likely to affect fewer people as educational attainment increases because education tends to improve information gathering skills and, in addition, those with qualifications are likely to be familiar with the benefits of education. However, first-time investors (which may include older people in the secondary labour market) remain at risk.

Since the returns to education accrue over a long time period, lack of information about the future may mean people are unable to predict the expected value of those returns. Where this is combined with myopia stemming from a lack of information about the range of benefits associated with education (such as increased job mobility), individuals may undervalue the future returns to education (because they overestimate the risk of downward fluctuations in those returns, for example). This may result in an underestimate of the value of education as an insurance mechanism for retirement (through higher earnings, longer periods in the labour force and a lower probability of unemployment). Unemployment benefits and public pensions may lead to some moral hazard in this respect. As a result, people will tend to underinvest in education compared with a level that would provide adequately for their retirement. This could have a social cost, worsening the indicators projected in section 15.2 and adversely affecting economic growth.

Finally, age discrimination is difficult to prove, as in some cases, selection of young people for training in preference to older people may be rational. Evidence of age

discrimination is therefore scarce (OECD 1998c). Age discrimination may reflect informational deficiencies if, for example, employers believe that individuals become less productive from age 45, when there is little evidence that this is the case (Johnson and Zimmerman 1993).

In conclusion, population ageing accentuates concerns about market failure, particularly if ageing is associated with a fall in economic growth. However, according to the discussion above, the impact of population ageing on the market failures traditionally associated with education and training does not provide an obvious case for additional government intervention in the market for education and training. This is with the proviso that some policy action may be necessary if myopia and uncertainty lead people to underestimate the value of education as an insurance mechanism for retirement, generating social costs where it leads to falls in economic growth. Further research is required to determine whether age discrimination may be of concern.

15.3.2 Issues for education policy associated with population ageing

The foregoing analysis does not reveal a strong case linked to population ageing alone for policy action to encourage individuals or firms to raise investments in education and training.

While it is possible to conceive of a scenario where economic growth falls as a result of the impact of ageing on labour force and saving — and the OECD (1998a) has predicted such a fall — Dowrick's paper in this publication suggests that concurrent falls in population growth mean that GDP per head may not be adversely affected. Further, while section 15.2 suggests benefits from increased educational attainment, without information on the costs of such an approach (and therefore rates of return), it is not possible to compare the merits of such a policy with alternatives that may also benefit economic growth (for example, additional investments in infrastructure). There may be other reasons to promote greater educational attainment generally that are not linked to population ageing — such as the gathering pace of technological change, globalisation and the casualisation of the labour force — but these are outside the scope of this paper.

In the event that governments did decide to encourage greater participation in education in response to population ageing, there are various policy approaches, many of which have been discussed elsewhere. For example, reforms to improve efficiency in the education sector (discussed by West 1998 in relation to the higher education sector), or a reduction in the fees paid by private individuals for higher education under the Higher Education Contribution Scheme (although this may not

expand investments in education if demand for higher education is relatively inelastic [IC 1997]).

Education policy approaches involving significant increases in government expenditure may be constrained by ageing-related public resource pressures, notably in the health and aged care portfolios. On the other hand, population ageing introduces scope for reallocating public funds within education. If current policies are maintained and spending per capita remains unchanged, population ageing will reduce the demand for funds in the primary and secondary sectors, but (depending on the time frame under consideration) may increase demand for relatively more expensive tertiary education. However, population ageing may also affect spending per capita. The demand for cheaper education delivery methods may rise if older age groups prefer distance or correspondence education, shorter, re-training courses and less personal contact with teachers. In practice, there is some question about whether opportunities for reallocation and savings within the education portfolio will be captured. Policy decisions in Australia relating to reallocation between sectors within the education portfolio are difficult because responsibility for education is spread across different levels of government. In addition, lags in the response of educational infrastructure to demographic change (due to geographic immobility of infrastructure, or leading, for example, to falling class sizes) (OECD 1998b) may lead to capital deepening in the primary and secondary sectors by default. Further, governments responsible for declining education sectors may take the opportunity to initiate increases in spending per capita, by increasing the use of computers in primary education for example (World Bank 1994). Lastly, the education sector may not respond to ageing-related changes in the nature of demand because of constraints on supply due, for example, to the degree of centralisation in decision making (West 1998).

Whether or not funds within the education sector are mobile in practice, population ageing does not appear to justify a switch in targeting from younger people to older people. The low skill/low training trap emphasises the importance in an ageing population of enhancing the quality of primary and secondary education as the basis for future investments in learning and of ensuring universal access by young people to education in order to limit the numbers requiring safety net assistance later in life.

A possible response to underinvestments in education arising from underestimation of the value of education as an insurance mechanism for retirement, is to increase the school leaving age, extending to year 12 the period during which school attendance is compulsory. However, the net benefits of such a policy are questionable. Increases in productive capacity in the longer term may not materialise as people cannot be forced to study, and may simply postpone other forms of education such as learning at work, or vocational education which they would have

undertaken anyway on leaving school. The costs of such a policy include increased spending if the quality of education is to remain constant and a reduction in productive capacity (at least in the short term) as people who would otherwise join the labour force stay longer in education.

A more direct way of addressing myopia and uncertainty about the future returns to education would be to encourage the provision to first-time investors in the education market of career counselling and information about the value of educational investments in improving access to further training at work. First-time investors (no matter what their age) were identified in section 15.3.1 as being at most risk of underinvesting in education due to inadequate information.

15.3.3 Policy issues for other portfolios

A focus on education policy alone as a means of addressing any problems associated with population ageing risks downplaying the importance of the demand side of the market for skills. An expansion in educational investments will not improve economic growth unless the added human productive potential is actually converted into higher productivity. *Simul6* shows that re-training a proportion of those aged over 45 who are unemployed and without post-school qualifications has a negligible effect on the EDR and income per head, principally because upgrading to vocational qualifications adds little to the chance of older people finding a job.

An efficient labour market that provides the appropriate wage signals about which skills are needed, and that allows skills to be allocated and utilised appropriately at work, is one means of ensuring that employment is maximised. Population ageing therefore adds to other arguments (see, for example, PC 1998a, 1998b and 1998c) for eliminating institutional barriers to efficient labour markets — such as rigid institutional wage specification, narrow occupational definitions and demarcation rules — and to arguments for greater competition in product markets.

In addition, reducing any specific barriers to the re-employment of older workers will also be important. Such barriers might include wage differentials between old and young workers that do not reflect productivity differentials between the two age groups (possibly because of institutional wage setting),⁹ high on-costs which may reflect superannuation policy and the risks associated with insuring older workers (via workers' compensation), and age discrimination. Research into the role of job

⁹This illustrates the importance of allowing older workers re-entering the workforce to be eligible for a re-entry or training wage if it is thought that older workers re-entering the workforce are less productive initially, thus improving incentives for employers to hire them.

tenure in hiring decisions and the factors affecting the hiring probabilities of older workers would be useful in identifying barriers to the employment of older people.

Lastly, education policy is not the only mechanism influencing incentives to invest in education and training: for example, retirement incomes policies that improve retirement incomes (superannuation plus social security) relative to earnings from employment may discourage re-training. Ingles notes that replacement rates (income in retirement as a percentage of pre-retirement earnings) in Australia are at the low end of the OECD average except for those on low incomes (Ingles 1998). Thus, a cross-portfolio perspective will be important in addressing any perceived problems associated with population ageing.

15.4 Conclusion

The pressures of globalisation and technological change have strengthened calls for Australia to become a ‘knowledge economy’ in the twenty-first century. Issues of education and training are naturally central to such a transformation. Somewhat paradoxically, education and training do not figure prominently in the expanding literature on the rapid population ageing which Australia will experience during the same time period. This may be due to the fact that education, unlike other areas of public expenditure, is not expected to ‘blow out’ as a result of ageing, quite the reverse if current policies are maintained. This raises the question, however, of whether current educational policies *should* be altered in the context of an older population. In particular, it is reasonable to question whether educational expenditure should automatically decline as a proportion of GDP. Two possible reasons for raising this question are the potential economic benefits of delaying the rise in the EDR, and the need to combat any ageing-related market failures in education and training markets. This paper has attempted to evaluate the validity of both reasons.

With respect to the former, numerical simulation results presented in section 15.2 reveal, other things equal, that greater educational attainment of the adult population has the potential to alleviate the economic burden imposed by non-workers on workers. In particular, by adopting world best practice in terms of educational attainment (*simul2* and *simul3*), Australia may be able to lower the increase in its EDR by up to 12 percentage points or, equivalently, retard it by 20 years. In addition, greater educational attainment would allow income per worker and income per head to increase, the latter by up to \$46 (in 1996 dollars) per week and per person (compared with the natural increase simulated in *simul1*). Most alternative simulations, based on somewhat less ambitious goals, nonetheless confirm the positive economic impact of a more qualified population and labour force.

However, the positive simulation results — on their own — do not justify policies encouraging greater educational investments. Education is costly, and it is the net social benefits that are important, relative to the merits of other policy instruments. Well-functioning labour and education markets should, in principle, send out appropriate signals for individuals to adjust their behaviour in a way that is privately and socially optimal. Where market failure is present, governments can intervene to restore private incentives. While it is difficult to predict the impact of ageing on private incentives to invest in education, the paper suggests that ageing-related underinvestments in education may occur as a result of myopia and information deficiencies. The effects of such ageing-related underinvestments on lifetime income would be more detrimental if government budget constraints led to a narrowing of pension coverage. These effects notwithstanding, the paper is cautious about recommending any policy action in response to population ageing alone. The case for action is not strong. In addition, while ageing-related projected declines in public expenditure on education as a proportion of GDP give rise in theory to public savings, the practicalities of day-to-day policy formulation and the structure of responsibilities for different education sectors may mean these savings do not eventuate, or are achieved only with a significant time lag. Failure to achieve such savings may add to general public resource pressures associated with population ageing. In any case, a narrow focus on education alone risks ignoring potentially preferable alternatives.

Appendix 15A: Projection methodology and simulation assumptions

Projecting the population of a sub-group defined by gender, age, highest educational attainment and labour force status

Let i refer to the gender ($i = 1, 2$), j to the age group ($j = 1, 2, \dots, 7$), k to the educational attainment level ($k = 1, 2, 3, 4$), l to the labour force status ($l = 1, 2, 3, 4$) of a person, and t to the time period.

The population of any given sub-group at time t can be expressed as follows:

$$n_{ijkl}^t = p_{kl}^{1997} \cdot p_{ij}^t \cdot n^t$$

with n_{ijkl} = population of the $ijkl^{\text{th}}$ sub-group in period t

p_{kl}^{1997} = probability of belonging to the kl^{th} sub-group in 1997

p_{ij}^t = probability of belonging to the ij^{th} age group in period t

n^t = total population aged 15–64 in period t .

Both p_{ij}^t and n^t are drawn from series II of the ABS population projections (Cat. no. 3222.0.).

In 2017, for example, the number of females aged 45–54 who hold a degree or higher and who are not in the labour force is equal to $(0.0179 \times 0.131 \times 14\,467 =) 34$ (*simul1*, thousands).

Once the population of each sub-group is known, various aggregations are possible. For instance, the number of persons aged 15–64 ($j = 1$ to 7) of both sexes ($i = 1$ to 2) who are not working ($l = 3$ to 4) and hold a degree or higher ($k = 4$) in 2047 is given by:

$$n^* = \sum_{i=1}^2 \sum_{j=1}^7 \sum_{l=3}^4 p_{kl}^{1997} \cdot p_{ij}^{2047} \cdot n^{2047}$$

By analogy, the EDR in that same year can be expressed as:

$$EDR = \frac{\sum_{i=1}^2 \sum_{j=1}^7 \sum_{k=1}^4 \sum_{l=3}^4 p_{kl}^{1997} \cdot p_{ij}^{2047} \cdot n^{2047} + n_{y,o}^{2047}}{\sum_{i=1}^2 \sum_{j=1}^7 \sum_{k=1}^4 \sum_{l=1}^2 p_{kl}^{1997} \cdot p_{ij}^{2047} \cdot n^{2047}}$$

with $n_{y,o}^{2047}$ = population aged 0–14 and 65 and over in 2047.

Modelling increases in educational attainment

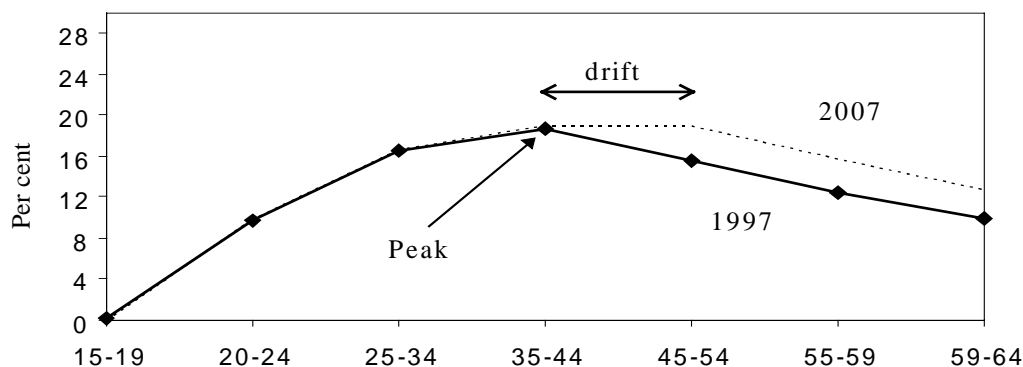
The typical age profile for holders of a given type of qualification is in the shape of an inverted U, as illustrated by the bold line in figure 15A.1 for males with a degree or higher in 1997.

This profile is characterised by an upward sloping ‘acquisition’ segment leading to a ‘peak’. That is, for ages 15–35, the proportion of degree or higher qualification holders increases and reaches a maximum during the age group 35–44. If the acquisition of educational attainment of successive cohorts is identical, the age profile after ten years can be represented by the dashed line in figure 15A.1.

Figure 15A.1 illustrates the process leading to the natural increase simulated in *simul1* (see below). The peak is unchanged but is now followed by a ‘drift’ segment, representing the peak of the previous period. (For the peaks to be of identical height, it also has to be assumed that no persons ‘upgrade’ their qualifications from, say, a diploma to a degree, and that the survival rate of those with degree or higher qualifications is the same as that of those without this qualification.) This is due to the fact that a person remains educated once educated. In this respect, educational attainment is unlike other labour force characteristics; for instance, unemployment rates may be thought to be influenced as much by the age group (cross-section effect) as by the characteristics of the persons passing through the group (cohort effect). Note that for lower qualification levels, the peak in one period can be lower than that in the preceding period if people have upgraded their qualifications from, say a diploma to a degree.

If it is now assumed that the newest cohort is acquiring degree or higher

Figure 15A.1 Age profile of male holders of degree or higher qualification (per cent)



Data source: ABS (unpublished Labour Force Survey, data).

qualifications at a more rapid rate than the previous cohort during the acquisition phase, the age profile will be altered as shown in figure 15A.2.

This is the kind of shock which is simulated in both *simul2* and *simul3* (see below). The new age profile with greater educational attainment (bold curve) will itself drift to the right in subsequent periods. Thus, when a snapshot of the educational attainment age profile is taken in a given period, it is necessarily a composite of acquisition, peaks, drifts and (in some cases) increases.

Finally, it must be noted that the location of the peak — as opposed to its height — could be altered by the arrival of newer cohorts. This could be the result of, for instance, of younger cohorts staying longer in education. This possibility is not contemplated in this paper.

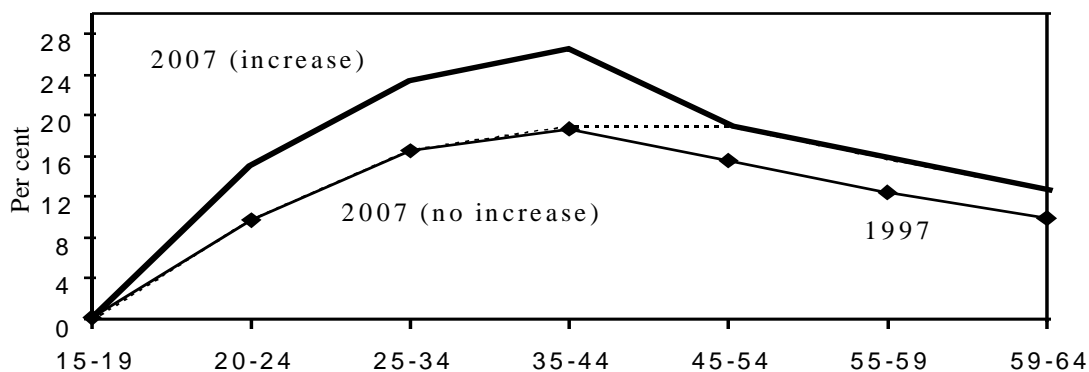
Simulation assumptions

Simul1 – baseline scenario

This scenario simulates the ‘natural increase’ in the overall level of educational attainment of the population, as brought about by population ageing. As better educated cohorts reach working age and less educated ones reach retirement age, proportionately more people will hold post-school qualifications in the population. However, attainment rates up to and including the peak age group (see above) are unchanged from their 1997 levels. This means, for instance, that males continue to reach a maximum rate of degree or higher attainment of 18.6 per cent when aged 35–44 (figure 2.1). Thus, in later periods, this rate can never exceed this value for males in any age group.

Figure 15A.2 Age profile of male holders of degree or higher qualification after 10 years (per cent)

Increase in educational attainment affecting the acquisition phase



Simul2 – world best practice (degree or higher)

In this simulation, it is assumed that the incidence of degree or higher qualifications in the civilian population aged 15–64 continues to increase and reaches 26 per cent in 2017. This figure is chosen by reference to the proportion of the US population aged 15–64 with a degree or higher qualification (OECD 1998c) and the rate of increase in the proportion of degree or higher holders in the Australian peak male age group between 1993 and 1997. Given the existence of an acquisition period mentioned earlier in this appendix, a figure of 26 per cent for the entire population implies a slightly higher value for the peak age group, estimated at 30 per cent. After the peak age group of both sexes reach this figure in 2017, and as the cohorts age, the proportion of Australians aged 15–64 with degree or higher qualifications will tend towards 26 per cent overall.

It is further assumed that the increase in the incidence of degree or higher qualifications does not occur at the expense of other types of qualifications, so age profiles for diploma and vocational qualifications holders remain unchanged. As a result, the proportion of the population with no post-school qualifications diminishes.

Simul3 – world best practice (all qualifications)

In this scenario, the proportion of degree or higher holders increases in identical fashion to *simul2*. In addition, the proportions of people with diplomas and vocational qualifications are also assumed to increase, leading to a decline in the proportion of the population in each age group without any post-school qualifications.

The assumptions made concerning the increase in the incidence of non-degree or higher qualifications are as follows.

- An increase of 42 per cent is recorded between 1997 and 2017, after which proportions remain constant. This date corresponds to that calculated in *simul2* as that when the proportion of degree or higher holders in the peak age group reaches a maximum. The 42 per cent increase on 1997 proportions applies to both sexes and all age groups up to the peak age group, and is chosen to reflect the educational profile of the leading OECD countries in terms of non-degree or higher qualifications — that is, the US and Canada. According to the OECD (1998c, p. 43) the proportion of their population aged 15–64 with either

vocational or diploma qualifications¹⁰ is equal to 60 per cent, making it approximately 42 per cent greater than in Australia.

- As in *simul2*, the increase in the incidence of qualifications is assumed to take place up to and including the peak age group. Older age groups are assumed to register the effects of the increase in subsequent time periods only.

Simul4 – qualification upgrading

In this simulation, it is assumed that 10 per cent of qualification holders (except holders of degree or higher qualifications) in each age group up to the peak age group (inclusive) upgrade their skills in each period. Ten per cent of diploma holders in the baseline scenario, for instance, are now deemed to have moved up and become degree or higher qualification holders. The net result of this upgrade process is that the number of persons with no post-school qualifications in each age group and in each period decreases. Thus, the average level of educational attainment of the population increases.

Simul5 – second-chance education

In this simulation, it is assumed that 10 per cent of all persons from the age of 45 upgrade their qualification in the manner described in the context of the previous simulation ('moving up'). This scenario is intended to reflect the fact that the proportion of those aged over 45 participating in post-school education (particularly vocational education and training) from 1989 to 1997, has grown faster than that of those aged under 45 (although from a much lower base). This is a manifestation of the growth of lifelong learning, which is increasingly complementing traditional 'front loaded' education in Australia. Lifelong learning typically implies a *continual* upgrading of skills, mainly in the form of training (not within the scope of the present simulations), but it also includes the kind of 'second chance' education envisaged here.

Simul6 – retraining of unemployed older workers with no post-school qualifications

This final scenario examines the effects of a policy of re-training unemployed workers aged 45 and over who do not possess any post-school qualifications. This simulation is intended to measure the benefits of combating the low skills/low employability circumstances in which some older unemployed workers find

¹⁰Termed 'upper secondary education' and 'non-university tertiary education' respectively by the OECD

themselves. It is assumed that 10 per cent of such workers in each period undergo retraining during which they acquire vocational (basic and/or skilled) qualifications. While some of these workers will remain unemployed following retraining, a number will become employed, as the likelihood of being employed full time increases with educational attainment in each relevant age group (data not shown).

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16 Housing implications of population ageing in Australia

Hal Kendig and Max Neutze¹

16.1 Introduction

The ageing of the population is recognised as one of the major changes facing Australia at the turn of the century. The future effects of population ageing can be anticipated because the next cohort of older people already are in late middle age. Similarly, the stock of dwellings in the housing market is long lasting and only 1–2 per cent of additional dwellings are built each year. Processes of individual and population aging have major implications for the changing composition and use of the nation's housing stock. Equally important are the effects of housing on the economic and social wellbeing of people over the entire life span and particularly in old age.

This paper examines impacts of population ageing on housing markets and explores implications for both individuals and public policy. There is an emphasis on understanding housing demand from the perspectives of older people themselves. A paper of this nature cannot explore very far the notable diversity between groups of older people and different housing markets (see the discussion comments by Fiona McKenzie). Similarly, the paper pays only brief attention to matters of infrastructure, urban location and accessibility (and some of these topics are discussed in Patrick Troy's paper in this publication).

16.2 Housing tenure of successive cohorts

Housing in old age can be understood as the outcome of housing 'careers' — that is, the succession of dwellings occupied over a lifetime (Kendig 1990a). The most

¹ We wish to acknowledge the contributions of Judith Yates, Pat Troy and Maryanne Griffen-Wulff to the arguments and data in the paper. We retain responsibility for the opinions and errors.

significant step is whether or not people ever attain home ownership, and if so, whether or not they retain it and eventually pay off their mortgages. Home ownership provides security of occupancy, the prospect of lowering housing outlays, and the means to buy into more supportive accommodation in old age. Owners and tenants respond differently in the market: for example, owners are unlikely to be pressured to move, while tenants face fewer costs in moving but they are more likely to be forced to move.

Whether or not people ever become owners or public tenants depends on their circumstances and housing markets particularly during their critical early adult years. Having a well paid and secure job, and combining two incomes in one household, increases capacities to overcome the cost thresholds to home ownership. Having children slightly increases preferences for buying, all else being equal, while marital dissolution can cause people to relinquish home ownership. During the critical young adult years, potential buyers are affected heavily by the price of housing, interest rates, public subsidies, and expectations for future price movements.

An overview of housing tenure for older people in private households is shown for 1994 in table 16.1. By the time individuals reach their mid-forties to mid-fifties more than half own homes outright and one third are purchasers. At ages 65–74, nearly four out of five are outright owners. For those who are not home owners, the balance tips from a majority of private tenants in middle age to a majority of public tenants in old age. There appears to be little overall change of housing tenure as people move through the post-retirement years. When people have major health problems and cannot manage their own house, most move within housing tenures or out of the private housing market entirely.

For the present cohort of older people, coming of age during the post-war economic and housing boom clearly assisted them in attaining home ownership. The chances of ever owning nonetheless were much lower among never married females, lower income groups, and very old people who had passed their prime home buying years

Table 16.1 Housing tenure, by age, Australia, 1994 (per cent)^a

<i>Housing tenure</i>	<i>45–54</i>	<i>55–64</i>	<i>65–74</i>	<i>75+</i>	<i>Total</i>
Outright owner	50	72	78	77	41
Purchaser	32	12	6	3	29
Private renter	11	7	5	4	18
Public renter	5	6	9	11	7
Boarder/other	3	3	2	5	3

^a These figures exclude the 10 per cent of older people who live in non-private housing such as boarding houses, hostels and nursing homes.

Source: AHURI (1996).

before the 1950s. Many of those who had divorced in mid-life had lost and not regained home ownership. Differential access to home ownership has accentuated economic inequality in the labour force across the life course.

Increasing economic opportunities have been mirrored by increasing age-specific home ownership rates at older age from 1981 to 1991. Over this time the proportions of outright owners rose by 6 per cent at ages 45–54, 9 per cent at ages 55–64, 4 per cent at ages 65–74, and 4 per cent at ages 75 and over (Yates 1999). There were corresponding falls in the numbers of purchasers as many people paid off their mortgages during these years of high inflation. Proportions of public tenants rose very slightly in these older age groups while the proportions of private tenants fell comparably.

Older people's use of housing reflects values and life styles which have been deeply affected by the Depression, World War II, and the post-war boom of the economy and cities. Their stoicism and modest expectations arguably relate more to these historical experiences than to having grown older. These older females were the young mothers who stayed home and (often) re-entered the labour force. They are the first cohort who can expect with some confidence to live relatively healthy and independent lives into their late seventies and early eighties.

The housing of older people in the future can be seen in the tenure 'trajectories' of middle-aged baby boomers today. In contrast to their parents, many of them spent time as young adults living alone, in shared accommodation, or in the then newly built flats of the 1960s and 1970s — all before buying typically large homes in middle or outer suburbs. Ages at marriage and childbearing have been rising, and many baby boomers later divorced and some remarried. They benefited from massive employment opportunities and booming property values during the 1970s and 1980s. Females in particular have benefited from rising educational standards, longer periods of work during the usual childrearing years, better paid occupations, and more exposure to the women's movement.

Overall, the baby boom cohort will have more resources and higher expectations than their predecessors in old age. They expect to set public agendas and are likely to demand change when they discover that 'ageing people' means them. They will bring to old age more superannuation and more large, debt-free and valuable housing in low density suburbs. Their housing choices are likely to be shaped by personal histories of more frequent housing moves, assertive consumerism, and varied housing earlier in life. Females are likely to have greater capacities and assertiveness whether or not they have a partner. Yet even in this advantaged cohort, some will reach old age without ever having owned a home or attained secure employment.

The economic changes of the 1990s appear to be creating a watershed in the lifelong prospects of age groups and birth cohorts in Australia. The Generation X cohort, children of the baby boomers, have faced sharply reduced opportunities for secure jobs, and they have lower incomes and (even more so) greater disparity of incomes (Yates 1998). Although they are staying at home with parents longer, there has been substantial growth in the numbers of single parents and individuals living alone, and continuing deferral of marriage and childbearing. Present low interest rates do lower the threshold for buying and make it easier to pay off loans faster. However, for those with lower incomes and less job security, deregulated housing finance can raise uncertainty over future mortgage repayments and it has fuelled increases of house prices.

There are corresponding trends towards lower rates of home ownership for younger people. From 1975 to 1994 the proportions of home owners among those aged under 35 had fallen from 70 per cent to 55 per cent (Yates 1998). The declines were greatest for those on lower incomes. Yates (1998, p. iii) observes that 'The current deferral of home ownership suggests that there is no reason to assume that the existing pattern of home ownership rates of over 80 per cent amongst the over 65s will hold for future generations'. It may be that some younger people, particularly those on higher incomes, are choosing to put their available wealth into other investments, such as the stock market or superannuation.

Nevertheless, there is a distinct possibility that many of the young over the coming decades — the old towards the middle of next century — will experience lifelong exclusion from what now are seen as basic economic and housing resources for old age.

Differential access to home ownership is increasing inequalities in wealth among cohorts and income groups. Yates (1999, p. 9) reports that, from 1975 to 1994, real house prices increased on average by 2 per cent per year, inflation averaged more than 8 per cent, rents barely kept pace with inflation, and nominal interest rates averaged 12 per cent. She states that these trends:

... suggest significant declines in the user cost of owner occupied housing for households with high housing equity and high marginal tax rates with the reverse outcome for households with low incomes and low marginal tax rates. To the extent that housing equity tends to be highly correlated with age, this provides a partial explanation for differential impacts [on home ownership rates] by household age and income status. (1999, p. 9).

Home ownership is the major source of household wealth in Australia (King and Baekgaard 1996). However, Baekgaard (1998) has shown that housing wealth has become relatively less important than superannuation during the 1990s. There also is notable uncertainty about the future of housing prices — quite a different outlook

compared with the appreciation over recent decades. Many long term private tenants today are unlikely to ever buy, while others have lost their foothold on home ownership (Wulff and Maher 1998). Yates (1998) suggests that for younger cohorts the desirability of home ownership may be declining along with the reducing capacity to buy, particularly for those on modest and uncertain incomes.

Housing policies are contributing to the divides between advantaged cohorts of older home owners and later cohorts of aspiring buyers (Bourassa, Greig and Troy 1995). Yates (1997, p. 266) has characterised the 1990s as an ‘apparent U-turn in Federal housing policies with the elimination of explicit home ownership policies, the withdrawal of the Commonwealth from direct involvement in public housing funding, and a rapid expansion of rent assistance for private tenants’. While the policy changes have less effect on older people, they impact very heavily on younger adults whose lifelong housing trajectories are being determined.

Similar issues arise for State Governments. The cost of new urban infrastructure and who pays for it is significant for generational equity as well as for urban consolidation (see Troy’s paper in this publication). The user pays approach through developer contributions tends to have very high costs for home buyers in their twenties or thirties, while established home owners sit contented in middle suburbs where infrastructure was paid for by all taxpayers (Neutze 1997).

16.3 Use of the housing stock

The vast majority of older people live in homes selected decades earlier when they were in the paid workforce and had larger households. Their use of dwellings and areas changes significantly when children leave home in late middle age and after widowhood in old age. Few people adjust their housing after retirement unless they eventually can no longer drive or maintain their homes. Only 11 per cent of older owners wish to move (National Housing Strategy (NHS) 1992). Private tenants, however, are subject to more insecurity and rising costs in the market.

‘Ageing in Place’ explains why there is only a slight tendency for people in private households to live in smaller dwellings at older ages (table 16.2). As indicated by people per bedroom, older people make less intensive use of their homes than does the population as a whole. Overall, one third of households are ‘headed’ by a person aged 55 and over (NHS 1992).

There also was consistency of housing types with increasing age. Table 16.3 shows that older people overwhelmingly reside in separate houses. During the 1980s there was notable stability of housing types for older people notwithstanding some growth of medium density housing. Similarly, for the cohort of Americans aged 60–69 in

Table 16.2 **Dwelling type, by age, Australia, 1981 and 1991 (people by age, Australia^a)**

	45–54	55–64	65–74	75+	Total
<i>Housing size and use</i>					
Separate house					
1981	88	3.2	3.0	2.7	2.9
1991	86	2.8	2.7	2.4	2.6
Mean number of persons per bedroom	0.9	0.8	0.8	0.7	0.8
1981	88	0.9	0.8	0.7	0.8
1991	86	0.8	0.8	0.7	0.8
These figures exclude the 10 per cent of older people who live in non-private housing such as boarding houses, hostels and nursing homes.					
1981	3	4	5	4	4
1991	3	4	5	4	4
Source: AHURI (1996).	5	6	9	12	6
Flat 1–3 stories					
1981	7	9	12	16	7
1991	5	6	8	11	8
Flat 4+ stories					
1981	1	1	2	3	1
1991	1	2	2	3	2

^a Excludes improvised/attached houses (1.1 per cent in 1981 and 0.6 per cent in 1991) and non-private housing.

Source: AHURI (1996).

1960, there were very low increases of apartment living over the next 20 years and almost none for owners (Kendig and Pynoos 1996).

Through the 1990s Australians have been entering old age with increasingly larger homes in post-war suburbs designed for car owners. While these homes are widely preferred by older people, they typically are some distance from shops and other services and they can present difficulties with home maintenance, gardening, shopping and transport. Older people who remain in single family homes have a significant impact in lowering, for a time, occupancy of the housing stock. Eventually the proportions of older people will tend to stabilise and become more uniform between different suburbs.

Few older people think that their homes are too large. A qualitative study supported by the former Ministerial Council on Housing Access uncovered an intense depth of meaning of home among older home owners; for many, their home encapsulated their sense of self, independence and even sanctuary (Davison et al. 1993). On average they spend 18 hours per day at home, and they make extensive use of 'spare' rooms for family visits, leisure and other activities. Few older owners are likely to be induced into smaller dwellings even when the financial and other barriers are lessened and attractive alternatives are available in nearby areas. When they do move, most buy another single family home.

What older people themselves think and want from their housing can be strikingly different from what is defined as 'rational' by some quarters in government. There are economists who consider large houses as being wasteful rather than simply reflecting elastic demand for living space (indoors and outdoors) as incomes and

wealth increase. The critique does have relevance insofar as government has subsidised the purchase and continued ownership of large housing through artificially low interest rates, exclusion of imputed rent from tax, and other policies having similar effects. However, rising real incomes over the post-war period are the main reason for a tendency for house sizes to increase and for falling household size. Why are the houses of older people singled out as a 'wasteful' use of increased purchasing power, rather than large cars, boats, increased eating out or greater tourist travel?

There is a danger that overzealous policies could unfairly identify older people as the only group in the community who under-utilise their homes (Correll 1994). The government subsidies which encourage housing consumption apply to all age groups, particularly those on high incomes and having high housing equity. Ageing, of course, is by no means the only reasons for falling household size: others include reduced fertility, increased dissolution of legal and *de facto* marriages and increased propensity of young people who can afford it to form separate households.

The NHS (1992) identified microeconomic reform and population ageing as major issues for housing options and urban environments. Subsequently the Australian Urban and Regional Development Review (AURDR 1994) aimed to increase the 'Efficiency of Existing Australian Urban Housing Stock by Creating Increased Housing Choice for Older People'. 'Overconsumption' or 'underutilisation' by the elderly has been seen as a problem instead of being seen as a private matter for individuals who can pay for their choice of housing.

There is limited evidence that barriers in the property market (as contrasted with individuals' preferences) are holding back changes in the composition and use of dwellings. The proportion of flats and other medium density dwellings has increased from 13 per cent in 1971 to 19 per cent in 1991, suggesting that more medium density options have become available if older people wish to move. The stock of dwellings is changing further due to alterations, additions and demolitions as well as new construction. In times and places of shortage, houses are frequently subdivided into flats. Demolition of large houses to release large sites for new construction tends to reduce average size, while demolition of small obsolete dwellings has the opposite effect.

There has long been concern for the exclusion of medium density development in the suburbs (Kendig and Gardner 1997). While neighbours in single family houses often oppose building medium density housing, local councils and state governments encourage such development in the belief that it is less costly to provide infrastructure services (this belief may not be well founded: see Neutze 1997; Troy 1996). The success of government policies in promoting urban consolidation has been notable in recent years. Non-market factors could well be

resulting in more rather than less of this kind of housing being built than the market demands.

Policy measures to enable older people to move have been considered (Howe 1992). Clare and Tulpule (1994) and the NHS (1992) have suggested reducing or removing stamp duty on trading down but the Federal Government has not been willing to compensate the States for loss of revenue. The age pension's privileged treatment of assets in home ownership does tend to discourage older people from moving. It seems unlikely that policy encouragement would have a major impact on older people's propensity to move if they do not wish to do so.

16.4 Housing tenure and income adequacy

Older home owners generally have such low housing outlays that they can live an adequate if austere life on the pension. Private tenants typically have lower incomes yet pay much higher housing costs, and public tenants lie midway between these groups. The proportion of older couples or individuals paying 25 per cent or more of their income on housing ranges from 1 per cent for outright owners to 15 per cent for purchasers, 14 per cent for public tenants, and an overwhelming 68 per cent for private tenants (Howe 1992, p.40). A quarter of older single tenants in the private sector pay more than half their income on rent. In 1995 private tenants made up two thirds of the older households whose housing costs exceeded 30 per cent of their gross income (AHURI 1996, p. 55).

Policies accentuate the advantages of home ownership in old age. Imputed rent from owner occupied housing is neither taxed nor included in the pension means test. By contrast, private tenants pay rents on which landlords are taxed, and tenants face poverty traps as each extra dollar of income (above a certain threshold) or non-housing assets reduces the pension and Rent Assistance. Lifelong tenants have been denied the massive assistance provided to the current cohort of older owner occupants earlier in life through subsidised mortgages, publicly funded urban infrastructure, sales of public housing to sitting tenants, and exemptions of the home from capital gains tax. In virtually all States, pensioner home owners benefit from various concessions (on rates, electricity, water and sewerage) which generally are not available to tenants. Overall, these substantial subsidies have been virtually invisible in our property owning democracy, except when they are threatened.

Policies related to housing tenure have important implications for social equity. They accentuate the economic divide between poorer lifelong tenants as compared to the better-off who have attained owner occupancy. The accumulation of advantage is particularly great for those who have large amounts of home equity

(irrespective of age), high marginal tax rates, and homes bought at a younger age. A more progressive impact of tenure-related policies is that the higher home equity of older owners (relative to younger purchasers) to some extent offsets the income disadvantages of retirement.

16.5 Public housing

Public housing traditionally provides older people with both low rents and security of occupancy. Age-concentrated housing offers further advantages of increased social contact, more informal support, and improved delivery of community services (Brooke, Davidson and Kendig 1998). When public housing rents were pooled across the entire stock, as was the case up to the 1980s, the benefits of rising housing values were passed along to new entrants to the stock. By the 1990s these procedures for setting rents had been overrun by new policy approaches as discussed below (Yates 1997).

The Commonwealth's drive to improve performance of public enterprises has included an inquiry into public housing by the Industry Commission (1993). The Commission proposed 'far-reaching reform of government housing assistance' and strongly supported public housing and rent assistance. It also proposed, mainly on equity grounds, that the Commonwealth take full responsibility for all housing related income support across both the public and private rental sectors. This would clarify the Commonwealth State Housing Agreement (CSHA) as an instrument for the Commonwealth to fund the States to provide public and community housing for people on low incomes. Other recommendations aimed to increase accountability and encourage more community housing.

The 1996 CSHA is implementing many recommendations from the Industry Commission report. The plans are for the Commonwealth to assume full responsibility for income support, and for the States to assume full responsibility for property management and housing services. Yates (1997, p. 270) suggests that 'this change is likely to mean a discontinuation of payment of capital grants to the states for public or social housing'. Fewer additions to the stock and more sales would decrease the stock at a time when waiting lists are growing and people of modest means cannot buy homes. Proposed rent changes would redistribute from public tenants (more needy and more subsidised) to private tenants (slightly less needy and less subsidised); established owners would benefit from lower public expenditure and new public tenants could be paying higher market rents.

Massive funding reductions from the Commonwealth have been reducing the supply of more public housing for many years. There is little indication that State

Governments are covering the shortfall by supplying their own funds for increasing the public housing stock. As a result, fewer 'permanent renters' will have the advantages of moving to public tenancies on retirement. Fewer young people will have public tenancies as stepping stones to buy or to provide secure alternatives to ownership.

16.6 Rent assistance

Government support for housing people on low incomes has shifted substantially in recent years. Provision of public housing with rent rebates (for those who cannot afford full market rents) is being overshadowed by the provision of Rent Assistance to Commonwealth pensioners and beneficiaries renting privately. Nearly all older people in public tenancies receive some kind of benefit and qualify for rent rebates. Rebates and Rent Assistance are based on different principles. Rebates are calculated to ensure that the rebated rent does not exceed some percentage (usually 20–30 per cent) of household income. Rent Assistance begins when rent paid exceeds a specified (affordable) amount for each size and composition of household. It pays 75 cents for each \$1 of rent paid above that level to some maximum, at which presumably satisfactory accommodation can be obtained.

The maximum payment for Rent Assistance remains low compared with Rent Rebates for public tenants and the tax and pension benefits for home owners (Kendig and Gardner 1997). While there is a continuing means test for Rent Assistance, the means test for public housing applies on entry and for Rent Rebates but not for continued occupation. Neither the residual public housing stock nor Rent Assistance provide opportunities formerly available to public tenants to save for becoming home owners. While Rent Assistance is much more widely available and arguably more equitable, both forms of housing assistance are now available almost solely to those who qualify for strictly means tested social security benefits. In 1995-96 the Commonwealth budget provided more funding for Rent Assistance (\$1.4 billion) than for the Commonwealth State Housing Agreement (\$1.0 billion).

16.7 Use of housing wealth

The vast majority of older people are relatively 'housing asset rich' and 'income poor'. In 1994 the estimated sale prices of owner occupied housing amounted to median values of \$140 000 for those aged 55–64, reducing to \$130 000 for those aged 65–74 and \$120 000 for those aged 75 and over (AHURI 1996). There is little indication that older people draw down on their housing wealth very much: US

studies show that when older owners move they seldom cash in on their housing equity unless they are in advanced old age (McFadden 1994).

Older people's wealth in housing is preserved in part through favourable policy treatment. Inclusion of owner occupied housing in the assets test on the Age Pension proved to be politically unacceptable when it was proposed in the 1980s. To trade down to less costly housing would subject net cash returns to the assets test. The Commonwealth has tried to limit the effects of the anomalous treatment of home ownership by allowing pensioners who rent a higher threshold for the test on other assets.

Home Equity Conversion (HEC) programs provide a way of drawing a lump sum or income from housing assets without moving from the home (Storey, Wilson and Kendig 1994). These reverse loan or sale arrangements can provide for one-off capital improvements, or small ongoing expenditure, but they are unlikely to yield significant cash over the longer term. They involve risks concerning movements of house prices and interest rates, the vulnerability of frail older people, and uncertain protection of both consumers and providers. Commonwealth income support provides some modest concessions on HEC returns in the pension income test but regulation is not very far advanced. While the current cohort of older people include few who will re-mortgage their homes, and hence reduce their children's inheritances, the baby boom cohort may well have different attitudes and expectations.

A KPMG report concluded that about \$500 billion will be received by the baby boom cohort in a combination of inheritances and (their own) superannuation by 2010 (cited in the *Australian* 1995). Unlike the situation in other industrial countries, housing wealth in Australia is inherited virtually without taxation or any reductions to pay for long term care or terminal care (Kendig 1990b). These issues are politically unpopular but they are attracting increasing attention in times of fiscal constraint. The 1997 furore over entry charges to residential care was a portent of conflict when government employs user charges to maintain care and limit taxes. Rather than rely on the inequalities of user pays arrangements, a more equitable solution is broad-based inheritance taxation. This proposal is unlikely to find its way into any election platform for the foreseeable future.

16.8 Housing and care

The vast majority of older people are fully capable in everyday living and they do not require any care. Aged care is a specialised concern which is addressed in the

papers in part IV of this publication. There nonetheless are important connections between housing and care as discussed below.

Since the mid-1980s governments have been shifting the balance of aged care from institutions to community settings (Gibson 1998). The Mid-term Review of Aged Care was specifically charged to examine links between ageing and housing (DHHLGCS 1993). This policy shift is responding to the preferences of older people to stay at home and reducing residential care expenditure. However, increased targeting of residential care to frail people has been accompanied by decreasing availability of public housing. It is difficult for people to benefit from community care if they do not have secure housing in the community.

Gardening and home maintenance can be difficult for older people who have low incomes and limited capacities to do the work themselves (Kendig and Gardner 1997). Along with transport, these are the areas where older people are most likely to require support in the community. While the Home and Community Care (HACC) program assists with these needs, they are seldom seen as high priorities relative to personal and household supports which more directly provide alternatives to residential care.

The retirement village industry provides a way for home owners to draw on their capital to obtain a more manageable housing unit in a more supportive social and physical environment (Stimson et al. 1997). Although growth of the industry slowed with the stagnation of housing prices in the 1990s, it appears that about 3–4 per cent of people over aged 65 live in villages. Residents report high levels of satisfaction (Gardner 1994) but it is not clear how village life will be viewed in the future by older people with changing personal and social expectations (for example, Turner 1994). The growth of the market may be facilitated now that all States have legislation or codes of practice for self-regulation by the industry. Nonetheless, it seems unlikely that many people will be keen to pay fully for supportive housing when residential care benefits are available without any income test.

Building regulations can benefit older people by ensuring that new residential and commercial buildings meet the needs of people throughout life. The Australian Urban and Regional Development Review (AURDR 1994) identified principles of barrier-free design. Standards Australia (1997) has specific design requirements for new buildings to ensure access for people with disabilities. Features such as wide doors and flat entryways are much less costly during initial construction as compared with later alterations. Legislation provides some rights to people with disabilities if they are denied access to buildings (McAuley 1994). The standards and legislation are promising but their long term impacts depend on political, industry and community support.

16.9 Approaches to the future

Improving the living conditions for older people depends very much on shifting towards more positive attitudes on ageing. We also have to keep aware of the effects of ideologies such as environmental protection and resurgent beliefs in unfettered markets and competition. For example, deregulation of shopping hours appears to be resulting in losses of neighbourhood supermarkets and other shops which are important for older people with limited mobility (Baker and Marshall 1998). What we might wish and hope for in theory can be very different from what results are possible and what they in fact mean for older people.

We also need to keep uppermost in mind the equity issues. The life span approach taken in this paper emphasises the importance of recognising vulnerabilities at critical points in life to ensure that disadvantaged people are not left behind. Opportunities for buying or public renting early in adulthood have a major bearing on income adequacy in old age. Young people who may become 'permanent' private tenants do not have strong lobbies behind them. It is to the credit of governments that Rent Assistance for private tenants remains on the policy agenda.

Another major issue concerns cohort inequality because younger people no longer can be assumed to have better lifetime economic prospects than did their parents. Severe cuts in home ownership and public housing programs add to these difficulties. More younger and older people in the future will have the inadequate living standards now experienced by low income permanent tenants unless Rent Assistance and/or public housing are increased. Fewer older people may have housing assets that can be used to assist their entry into supported accommodation. There is a distinct possibility that a large and advantaged baby boom cohort will be moving into old age followed by a smaller and possibly less advantaged cohort.

It would be risky and inequitable for well-off people now in the resource-rich and influential middle years to expect intergenerational transfers from the next cohort. Superannuation and home ownership provide privatised (and subsidised) means of self-financing by the baby boom cohort and avoidance of these problems. Issues of wealth are a serious matter for policy agendas based on social justice. This is especially so given that much of the housing wealth has been accumulated with massive public subsidies and tax advantages.

In conclusion we wish to emphasise several points. First, while the wealth of older people is largely off the present political agenda, long term care could be funded from housing wealth, either individually through user charges or collectively through death duties. Second, any efforts to 'better use' the housing stock must not subject older people to coercion to move. Third, the long term interests of people at

all ages are best served by policies which anticipate and respond to needs over the life span. There is a need for more transparency, coherency and fairness across government regulation of the built environment as well as in the funding and delivery of housing, income support and care programs.

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17 The implications of ageing for transport and accessibility

Patrick Troy¹

17.1 Introduction

The aged people in Australian society are a very diverse segment of the population. They are diverse in terms of their physical mobility and capacities, health, employment, activities they engage in, their income and wealth, and their housing preferences.

It is clear that the implications of ageing for demands for infrastructure, including especially transport services, varies according to whether we are looking at capital city, major urban or small urban centres, and urban or rural populations. In each case the demand for infrastructure services varies according to the expectations of people. That is, capital city residents have different expectations of and demand for various infrastructure services from those who live in major towns, small settlements or rural areas. It is not clear whether the residents in the different types of settlement have different capacities.

One important contextual point which must be understood is that this is the first generation of the aged that has had to face the problems of ageing in Australian cities, the greater part of which has been built since the advent of the motor car. That is, this is the first generation of aged people to cope with suburban areas, the development of which was not contingent on the provision of fixed rail public transport.

Much of the debate about ageing persons and their needs etc. has been related to their accommodation which, in urban terms, may be seen as a focus on issues of urban form. This question is dealt with in the paper by Kendig and Neutze in this publication. However, the demand for housing is also a demand for various infrastructure services.

¹ I would like to thank Professors Hal Kendig and Max Neutze for comments on an earlier draft of this paper.

The infrastructure demands of aged people in regional Australia are very important, if only because the regional population is ageing at a faster rate than urban Australia, but the relatively low numbers of aged people in any given regional centre mean that the demand for infrastructure is different from that in the major urban centres. The discussion in this paper focuses first on the infrastructure demands of aged persons in capital cities — that is, this discussion focuses on issues of urban structure. Urban structure issues relate most closely to issues of equity and efficiency.

Urban structure refers to the relationships that activities in urban areas have to one another. The activities may be arranged in a variety of patterns but Australian cities usually have a highly radial structure. That is, the transport systems and some economic and cultural activities in the metropolitan areas tend to focus on the centre.

Infrastructure services fall into two categories: social infrastructure and physical infrastructure.

Social infrastructure

Social infrastructure covers a diverse set of services and facilities. To distinguish them from other infrastructure services that are provided to properties, ‘social infrastructure’ is often described as the services provided to people. For the purpose of this discussion we define social infrastructure to be:

- institutions created to pursue interests beyond those that can be satisfied by individual households;
- services provided to people rather than property;
- services provided at particular locations rather than as part of a physical network; and
- services used only at particular times rather than continuously.

Physical infrastructure

Physical infrastructure includes services water supply, sewerage and drainage, transport, communications, power supplies and waste disposal. Apart from waste disposal these are network services which until recently have been typically provided by public authorities established under government legislation (apart from communications, which are provided by State Government authorities). They are often described as services to property. The operation of network services most directly affects the efficiency of the city. Generally, the more centralised the city and

therefore the services that support it, the less efficient it is because the service has to be developed to cope with peak demands. This is most obvious in relation to transport but applies in other services as well.

17.2 Social infrastructure

Some social infrastructure services such as education, health and welfare services may be described as ‘area’ services because they tend to provide services to residents within their catchment. They can be provided to an area without being physically connected to the provision of that service to other areas. That is, they are not network services like water supply, sewerage and drainage, although each point of service delivery may, nonetheless, be part of a broader system of service delivery and the different points may be crucially interdependent. There may be a health network in the sense that there may be local doctors, community health centres, hospitals, etc. organised in a coordinated manner but there is no physical connection between the elements. The local support agencies for health services often are the focus of the activities of retired and older people and may be seen as a measure of engagement with their local community. Cultural services and facilities may also be provided on a similar local area basis. The level of cultural activity in an area is usually less dependent on some hierarchical network. Many cultural activities are organised and promoted by the active participation of older people.

We may use the term ‘social infrastructure’ also to refer to that set of institutions that are created to pursue interests beyond those of the immediate concerns of households. They indicate the capacity of a group of households in an area to act as a community through participating in democratic institutions. Such institutions also provide the opportunity for residents of an area to challenge the power of the bureaucracy or of the wealthy interests in the area. These may include local planning groups, ‘progress associations’, historical societies, heritage preservation groups, nature conservation societies and senior citizens’ groups. Apart from senior citizens’ groups which could be seen as their ‘natural’ territory, older people also play a very active role in most community institutions, often being a majority of their most active membership.

Recreational activities are often organised and provided on a local area basis. Some recreational activities can be played or pursued as individual pastimes or involve only a small number people. Others are organised and can only be engaged in by teams in competition. It is possible to swim or ‘work out’ without involving anyone else, and to play golf or tennis, for example, may involve only one other person, but most other sporting activities require the organising of teams of people.

Some social infrastructure is provided or available throughout a city. In small towns and cities, all residents may have relatively equal access to a service. Within a large metropolis there may be wide variation in the level and availability of social infrastructure. Different areas within a metropolis have developed at different periods and at different rates with different mixes of residents at different stages in their life course, which means that we must expect that the social infrastructure demands of areas will differ. The scale at which they are provided will to some extent reflect the period in which development occurred as well as the preferences and demands of the residents. In our market economy we also see residents 'buying their way into areas' that have good social infrastructure developed over time and in the process easing out those who developed the infrastructure in the first place. There is, of course, some social infrastructure, especially the communal organisational infrastructure that cannot be bought. This creates paradoxes because the social or communal traditions or features of an area that make it relatively attractive are often destroyed by the people who arrive to enjoy them because they have indirectly displaced those who developed and maintained the traditions and desirable features.

Many social infrastructure services we regard as a 'right' of citizenship. That is, they are services to which access is available 'as of right' and not limited to those who can pay the full, or even part of the cost of providing them. Access to many cultural and recreational services — public libraries and parks and gardens — are obvious examples.

The presence or otherwise of social groups such as bridge clubs and senior citizens' clubs (which are created to provide social outlets for communal activities) or organisations such as Neighbourhood Watch (which offer a community service for purely altruistic reasons) may also indicate the richness of the social infrastructure fabric of an area and the propensity of residents to engage with one another in communal or community activities.

There are, of course, the institutions of civil society, the service organisations which are regarded as essential for the health of the community in a very broad sense but which have no set locale for their activities. These include APEX, Lions and Rotary groups and community charity groups which carry out a variety of activities within the community and have their own institutional structures which are independent of all levels of government. Some church-based welfare agencies such as St Vincent de Paul, the Salvation Army, the Brotherhood of St Laurence and non-denominational agencies such as the Smith Family may focus their activities in particular areas although their self-selected remit may be to provide help for the community at large. The presence of churches and their associated activity groups in an area might also

indicate high levels of social interaction, and may be seen as part of the social infrastructure of a community.

Another feature of social infrastructure services is that they, unlike other urban services (many of which are connected to each property), might not be continuously used by households. For example, a household has daily need for water supply and sewerage services but might use senior citizens' clubs, child care and schools only at a particular period in the life course of the household. It may only use health services when there is some episode of illness in the household. Some members of the household may only engage in some cultural or recreational activities according to the season of the year or their stage in life. The dwellings, nonetheless, need to be conveniently located in relation to such social services so residents can avail themselves of them as their need arises.

17.3 Physical infrastructure services

If we confine ourselves to discussion of physical infrastructure services the first point we have to make is that 'the aged' are not some undifferentiated group with standard demands. Nor do their demands for these services differ much from those of younger people.

17.3.1 Water supply

The demand for water supply services for cooking, drinking and personal hygiene will be fairly constant for people of all ages but might vary according to whether persons of any age engage in gardening activities. That is, those older people who find many of their recreational interests in the gardens around their homes might have greater demands for water and this might be more significant for the 'younger' aged than for those who are frailer. Here the implication might be to arrange for some subsidy of water charges for older persons but this might lead to relatively inequitable treatment of those who do not have gardens.

17.3.2 Sewerage

On the assumption that people have fairly standard demands for sewerage services and that all dwellings have access to sewerage services, there seems to be no special need for aged persons to be given additional consideration other than in situations where the cost of the service becomes a burden, in which case it might be apposite to develop a subsidy for those who cannot pay for the service. We note that the middle and outer suburbs have paid a disproportionately higher share of the costs of

the sewerage system because they have typically had to pay not only for the costs of providing the service to dwellings in their own areas but also have had to pay a share of the debts incurred in costs of the provision of the same services to the older inner suburbs.

17.3.3 Communications and power

We can make similar observations about other services such as communications and power. Nearly all dwellings have a telephone and all are now connected to electricity and a large majority are connected to gas supplies. The major issues confronting the aged in relation to all these services appear to be those related to the poverty of the aged. The implication for ageing in terms of access to these services may well be to arrange for the aged to receive pensions high enough to pay for them, but where that is not possible, to develop means-tested benefits enabling them to have access to the service. This may make no sense in relation to gas supplies if there are no gas services to an area but there seems to be no reason in principle why the aged cannot have access to all these services. Whether they do or not is simply a question of how the community believes the aged should pay for the service.

We may be able to make a special case for the aged in relation to telephone services because communication becomes more important as people become more dependent on others. One part of a policy designed to increase the support of aged people to enable them to remain as long as possible in their own homes might well be to ensure that they have a telephone and that it is cheap to use. Anyone who has ever had to support elderly people who live in another part of the city (or even in another town), but who want to remain in the area with which they are familiar, will understand how important the telephone is to maintain their morale, their confidence, their independence, their health and their access to other services and people.

17.3.4 Waste disposal

The demands of the aged for waste disposal services would not appear to vary greatly although individual aged persons might have difficulty in using the large sized 'wheely bins' in common use. Where the economies of operation of the solid waste disposal system dictate the use of large 'wheely bins' it might be apposite to try to develop community awareness and concern so neighbours help their older fellow residents put out and take in the large bins rather than to seek to develop a different system.

17.3.5 Transport

The urban service which raises most concern and the most difficult problems is transport.

How much use people make or desire to make of transport services will, to a large extent, vary not only according to whether they have access to public or private transport but also to whether they are frail or have some other physical limitation such as limited eyesight which limits their use of transport services. Their demand for transport services is not a simple function of their age in terms of the years elapsed since their birth, nor is their access to transport services and thus their access to or ability to engage in the wide range of activities available in the city simply a function of their wealth and income. Their demand for transport services is more a function of their own capacities, their range of interests and whether the service exists at all.

The report *Statistical Analysis of Older People and their Housing Circumstance* (SAOPHC 1996) gives us some information on this point. Older people express 'high' to 'very high' levels of satisfaction (over 90 per cent) with their accessibility to services and to leisure activities. They express even higher levels of satisfaction (nearly 99 per cent) with their dwellings and location.

While we might, in general terms, be able to argue that overall demand for transport services declines with chronological age, the variation or degree of dispersion around the declining demand curve makes it extremely difficult to produce forecasts of demand which might be useful in making investment decisions in the development of transport services, especially fixed rail services.

We know little about the usage of land and the distribution of activities outside the capital cities but within them we know that about one quarter of the area of the city is taken up by residential development. We know further that about 57 per cent of car travel is for the journey to and from work or is business related and about 43 per cent of all car travel is for shopping, recreational, entertainment or cultural activities. For the most part the car travel undertaken by the aged in is in relation to shopping, recreational, entertainment or cultural activities. We know that the aged spend a higher proportion of their time in and around their dwellings and gardens. This is not surprising. We also know that the aged are loathe to give up their cars and that is not simply because of the lack of public transport services - the motor car is just as attractive to aged people as it is for younger. They tend to continue to drive until they are well into their seventies. Almost three quarters (72 per cent) of those aged 60-64 drive cars at least once a week with the proportion falling to 58.4 per cent for those aged 65-74 and to a little over one third (36 per cent) for those aged 75 and over (SAOPHC 1996)

We do not have the same kind of data which disaggregates public transport usage by purpose.

Clearly the transport demand of aged persons is not some undifferentiated demand. Those who are aged 55 and over but still in the workforce have different demands from those who are not. Moreover, those who are elderly, aged 75 and over, have different demands than those who are younger and the frail aged have a different set of demands again. That is, the demands for transport services for any individual may change as they age. It follows that different policies and investment strategies may be required for the different age groups.

As a given suburb ages it may appear to ‘gain’ a higher proportion of aged persons. This ageing is a natural consequence of the life course for individuals and their households, and rarely the result of aged persons deciding to locate in particular areas. The growth of the Gold Coast and some of the other coastal urban settlements may be attributed to the inter urban migration of retirees, but as important as it is for those settlements, it has relatively little significance for the demand for transport infrastructure investment generally. There is some small evidence that aged persons tend to concentrate in different areas within the city but how much of this is due to the location of nursing homes and retirement villages in those areas is not clear. By and large however, to the extent that it occurs, the spatial concentration of the aged is not static — it moves as a ‘wave’ throughout the metropolis as areas are settled, age and then are rejuvenated. This does not mean that the transport problems of individual aged persons are not considerable but it does tend to suggest that systemic responses are difficult to develop because the demand in any location over any period of, say, a generation may vary widely.

The traditional response to the travel demands of aged persons has been to provide them with subsidised travel on public transport systems. The subsidy has usually been by cross-subsidy within the publicly owned transport service. The assumption here is that the aged are capable of getting to and from the public transport service and that all they need is some subsidy to enable them to have access to the service. In the case of cities such as Sydney, this is an unfortunate assumption because there are great variations between parts of the city in the density of provision of public transport services. It is clear from the reasons aged people give for not using public transport services, even where they are available, the difficulties are not primarily economic. They tend to identify difficulties in getting to stops, difficulties in getting into vehicles and the lack of seating as their main reasons (70 per cent) for not using available public transport (SAOPHC 1996).

The radial nature of the rail transport system means that those who live in the middle and outer suburbs have lower levels of service in terms of distance to a station or frequency of service than those who live in the inner suburbs. Moreover,

the publicly provided bus service is not provided to the outer suburbs. These features of the publicly provided transport services mean that there are significant equity problems between the inner, generally wealthier suburbs and the middle and outer, generally lower income suburbs. What makes this inequitable is that the losses sustained by the public train and bus services are met by the public as a whole though the greater portion of the losses are incurred in providing access for central area employers to their workforce

We should note too that the subsidised fares are often only available for travel after the morning and before the afternoon or early evening peak period. In other words the implicit assumption behind the policy is that ‘the aged can be helped to get around the city but only if they are not in the way’.

The transport demands of residents of nursing homes and many retirement villages may be small but those of their friends and relatives who visit them and those who work in or supply services to them may be significant. But again, it is difficult to see how we can make provision in the transport networks for them given that most nursing homes and retirement villages are located away from such services.

The structure of the city has made access to a variety of services and activities more difficult. Some of the structural changes have occurred because of changes in technology, household size and structure and social mores. Other changes have been feasible because of the adoption of the private car as the major source of mobility. The most obvious of these and the change which elicits the greatest expression of nostalgia is the change in retailing.

Earlier generations had easy access to ‘corner stores’ throughout suburban areas to which people could walk for their needs. The advent of the supermarket and shopping malls led to the closure of the traditional shops in the inner suburbs and the development of the middle and outer suburbs without them. People lament the passing of the local corner store and observe that the aged cannot now just wander down to the store to purchase their needs. While it is true that the corner store is with us no longer, the idea that the problems of access for the aged would be solved if only we returned to a halcyon past is out of contact with reality. The aged and immobile are too small animosity to influence the pattern of shopping but the transition has been accelerated by deregulation of shopping hours. The apparent disadvantage for the aged as a consequence of major changes in retailing or the general problems of lack of mobility and therefore of access for those who cannot drive or who cannot afford to drive may best be met by developing transport services analogous to the ‘meals on wheels’ services developed by the community to ensure that the older members of the community receive appropriate levels of nutrition. A variety of options for the development of mini-bus services or a variety of taxi services might be able to be developed to enable the aged to have access to

shopping, to health and personal services and to recreational and cultural activities. Services of this kind are already being provided — usually by family or friends — to older people, with more than 40 per cent of those aged 75 and over being supported in this way and over one quarter of the oldest group receiving help with their shopping.

Clearly, many of the social infrastructure services, even the locally provided services, can serve their purpose only if people can get access to them. The policy response might be to provide a local special purpose mini-bus service to enable the aged to gain access to social infrastructure.

But the focus on accessibility for the aged to the wide range of services and activities in the city serves to remind us that we can make a general improvement to the level of accessibility by following a different development policy compared with that we currently employ in the city. The current high degree of centralisation serves to concentrate travel on the city centre which, amongst other things tends to compound the access problems of the aged. A city structure in which the city contained a number of nodes distributed throughout the metropolis but connected together by high frequency, comfortable, safe public transport would not only result in less peaking in the transport services, and therefore greater efficiency, it would also result in greater accessibility for all, including the aged.

Arguments have been made that the aged ‘overconsume’ housing and that in doing so they use more infrastructure capacity than younger people because they live at lower dwelling occupancy levels. The implicit assumption behind this argument is that households, of any age, should be prepared (or even) to move to housing which more closely meets their needs because in that way we would achieve economies in the provision of infrastructure. Apart from the fact that we do not, as a society, attempt to force people to consume only that amount of any commodity or service that meets some arbitrary estimation of physical need — in the case of housing the measure is usually expressed in terms of bedroom occupancy — it would seem to be an objective which is both undesirable to pursue and probably impossible to achieve. That is we cannot construct public policy for any group but especially for the aged which assumes that we pursue some illusory savings in infrastructure services to dwellings by encouraging/forcing them to move to smaller dwellings. The simple fact is that individual security and community engagement, pride and confidence only develops where there is some continuity of occupancy or association. The reluctance of aged people to move house is therefore understandable. The stories of the unfortunate experiences of many aged households who have moved to reduce their housing consumption or who succumbed to the sales pitch that they should move away from the locations and communities they know attests to the difficulties created/faced by policies predicated on the

need/desirability of getting the aged to move. There are also significant dangers of instability and failure where systems are 'overdetermined'. That is, if systems do not have 'spare' capacity, both the risk and consequences of failure are magnified. This applies to housing systems as much as any other. That is, we need to recognise that the current housing stock provides opportunities for aged households to respond to changes in their housing consumption. We introduce policies to reduce that flexibility at our peril.

The temporary 'fact' of apparent 'overconsumption' of housing by the aged should not be the occasion for the pursuit of economies in the water supply and sewerage systems or in any of the other infrastructure services however compelling the short term 'economic' arguments might appear to be. Besides, it is not clear that much of the higher density housing into which people are expected to move is appropriate for older persons, involving as it does dwellings which have stairs which become increasingly difficult for the aged to negotiate.

There are other questions of equity which should be considered. The notion that older people should be expected to move into housing which better 'fits' their needs ignores the considerable transaction costs involved in buying and selling property. Even if it was true that there are community benefits to be gained from reducing their housing consumption, no proponent of the policy has proposed that the transaction costs involved should be borne by the community. It is not clear why the aged should be expected to pay the costs of the changes urban form when the alleged benefit lies with others.

Much of the data about present urban consumption and many of the assumptions about future demand for services are built on understandings about the structure and form of the city which at the very least are open to question. For example, the debate over form and structure seems to place great weight on the alleged increase in the average size of dwellings in Australia. This writer knows of no official data set or survey which would support the assertions made relating to the dramatic increase in the average size of dwellings. There are some data which relate to the size of new houses approved in Australia, but these data are of limited value and relate to the additions to the stock of houses rather than the stock of dwellings. The data does not include information about new flats, which are an increasing proportion of dwellings and tend to be significantly smaller than houses. Moreover, the data exhibit a strong bi-modal distribution in size, suggesting that it is impermissible to refer to 'averages'. The origin of the data means they cannot be used to indicate even the 'average' size of new houses because they include houses built as dual occupancy units. I have discussed the problems with this data in *The Perils of Urban Consolidation* (Troy 1996) and do not intend to rehearse the argument further here.

Much of the debate over city form assumes that there are significant economies of scale in infrastructure investment to be obtained by increasing density. Early studies showed that if only residential standards were reduced, increased residential density would produce only derisory savings in infrastructure investment. The only recent study which addressed this issue in detail concluded that net residential density would have to increase by 50 per cent to save 3 per cent on infrastructure costs. But even this saving must be offset by the increased accident rate which would accompany the simple grid road system on which the cost estimates were based and would be insensitive to topography, thereby increasing drainage problems. Moreover, the study made no estimate of the loss of amenity or environmental costs arising from the higher dwelling density.

Another assumption basic to arguments about city form and structure is that residential density falls with distance from the city centre. The evidence available on this point indicates that there is little change in net residential density with distance. This is for several reasons, not the least of which is that block sizes of suburban developments on the fringe have fallen dramatically in the post-war period. Another reason is that the number of people per household falls with increasing dwelling density, thus tending to offset the 'gains' to dwelling density. Gross population density may well fall but this is more likely due to a combination of the structure of the city and the form of general development rather than the form of housing.

- Historically, as Australian cities attempted to make good their deficiency in open space provision in the inner areas, they did so in what were then the outer suburbs where we now find many of the playing fields, golf courses, parks and other large land using recreational activities. Many of the so-called 'middle and outer suburbs' were and are being developed with this consideration in mind. That is, they are the areas in which many of the recreational facilities for the metropolis as a whole are found.
- As a result of technological changes in manufacturing processes and warehousing, many manufacturing and warehousing activities shifted from their cramped inner city sites, relocating to middle and outer suburbs where large scale, low intensity developments were undertaken.
- Changes in marine transport technology led to major rearrangements of inner city docklands and infrastructure support activities, with the result that city structures were reorganised to accommodate the new form of transport which required extensive areas of low intensity use to marshal exports and distribute imports.
- Areas which were once on the fringe and used as part of the extractive industries or for heavily polluting industries have been worked out or are no longer used for those activities. In many cases, these areas were used as waste disposal sites

and often used subsequently for recreation activities, thus leading to lower apparent gross residential density.

- The development of air travel led in the post-war period to the development in most major Australian cities of airports which are extensive developments and which themselves became surrounded by large areas of low density development. (More than anything else consideration of airport noise limited the nature, scale and density of development.)
- Developments in retailing since the mid-1950s led to extensive shopping malls and hypermarkets.

That is, much of the explanation for the lower gross residential density middle and outer suburbs is due to a sequence of developments, only some of which arose from or were facilitated by the increasing level of private motor car ownership. Net residential density, in terms of dwellings per hectare, has tended to increase in what are now the middle and outer suburbs.

17.4 Comment

We note that the present generation of aged people gained some economic advantage over younger generations because they obtained access to services like water supply, sewerage and drainage and many transport services which they did not have to pay the cost of when they bought their homes compared with those who have bought new homes since the 1960s. That ‘transfer’ occurred largely because of the changes in the way services were paid for. Before the 1960s it was assumed that services would be paid for by the property rating system. Increasingly since then we have introduced development charges which recover the cost of the services at the point of connection to the system. This has meant new home owners increasingly have been required to pay for services at the full cost — usually at housing finance mortgage interest rates when they bought their houses — compared with the older generations who received the services provided by public agencies at long term bond rates.

The demand for infrastructure services by the aged is not some undifferentiated demand, and for many of the physical infrastructure services is little different from the demand for the same services by other age groups. Further, the demand for services by the aged is not spatially concentrated.

That is, there appears to be little opportunity or need to develop most physical infrastructure services to cater for the needs of the aged.

The demand of the aged for transport services is not some undifferentiated demand, nor is it spatially concentrated. These two features of the demand make it extremely difficult to invest in fixed network transport services. Given that the aged proportion of the population is increasing we may need to pay more attention to the development of local area transport services, such as mini-bus services, to enable the aged to participate, to make better use of social infrastructure and to avail themselves of the services available in the city. These services may have to be subsidised.

The case for developing fixed rail public transport services in regional Australia is even weaker but there may be greater need to provide subsidised road based public transport services in regional Australia.

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Discussant — *Gerald Burke*

The paper by Penny Taylor, Patrick Laplagne and Craig de Laine provides simulations of the effect of raising the level of educational attainment on employment and income. It demonstrates the extent to which increased education might offset some of the effects of ageing on labour force participation. The paper also considers some of the ways in which ageing might affect investment in education and training. It is a carefully prepared and appropriately qualified presentation.

My comments relate to some of the themes in the paper and suggestions about matters for further research. It may be noted at the outset that this paper is very different from many of the others at the conference in that the education policies it addresses are for the young and working age population rather than the aged. It is concerned with policies affecting their employment and productivity to offset the negative effects of the ageing of the population.

The likelihood that increased levels of education will raise the proportion of an age group in employment is partly a matter of the supply of labour, but also a question of demand. As stated in the paper, if the benefits of education are mainly in screening the more able into jobs, then increasing the levels of education may not have much effect on the numbers at work. If we raise the proportion of females with degrees, will they continue to have the relatively high employment to population ratio experienced by females with degrees compared with that of females without qualifications?

The paper does not address the costs of raising educational qualification levels. The costs may well be large relative to the benefits of the sort under consideration in this paper. But there is wide range of other benefits for education and training. Policies for education and training will be determined for a number of reasons, of which offsetting the effects of ageing will form only part.

At the moment, the driving forces for increased education and training are the changing structure of the Australian economy and its labour force due to labour market policies, globalisation and new technology. These are giving rise, on average, to an increased demand for skilled and educated labour and a decline in demand for the low skilled. There is a need for continuing re-learning and re-training among adults.

The other strong case for increasing education and training is concern for those who are jobless or likely to be so. There are a large number of persons aged 15 or over in

Australia — about two million persons according to Australian Bureau of Statistics (ABS) estimates — who do not have a job but would like one. Education and training can help the competitiveness of these persons in the job market. As the experience of labour market programs showed, we cannot expect education and training to slot a majority of such persons into employment. But, alongside a successful macroeconomic policy, it can help such people to participate in an economy which may otherwise continue to marginalise them with considerable personal consequences and the development of a more polarised society.

The paper dealt with education and qualifications. The formal education system currently involves nearly 6 per cent of the GDP, mostly funded by governments but with a growing private share.

But this formal education system contributes only part of the skills and knowledge of the labour force. Much of our work related skills, knowledge and attitudes are developed in the workplace through training or by on-the-job experience and learning. Little of this results in qualifications, so we have no exact measure of its relative importance compared with formal education. There is some indication of the size of employer expenditure and of employee participation in training in recent ABS surveys (summarised in Burke 1999). They indicate that employer expenditure on structured training is about 1 per cent of GDP each year. Over 35 per cent of the workforce participate in some form of structured training during a year. A much larger proportion report informal training on-the-job.

If we are considering ways of lifting the quality of the workforce it is important that our research includes not only the education system but also this less measurable training that goes on in the workplace. We need to find out more about the ways in which it is promoted and is most effective.

Recent trends in the structure of the workforce may be discouraging employers from providing training. The public sector has had the best record in providing structured training. A considerable amount of trade and technician training was provided in power and communication corporations in the public sector. The privatisation of these activities appears to be resulting in the lower levels of training of the private sector. Another factor is the recent growth in casual and part time employment. Employers tend to provide relatively less training to those categories of employees. The employer training expenditure survey showed a decline between 1990 and 1996 in the hours of training provided, the percentage of wages and salaries devoted to training, and the proportion of employers providing training.

In conclusion, it is very useful to have this review systematically consider the implications of ageing for educational policy. Further research can consider this work in relation to the costs of education and also the broader aims of educational

policy for young persons and adults. It will be important to consider policies for training in the workplace, where the recent downward trend in employer expenditures is a cause for concern.

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Discussant — *Fiona McKenzie*

Introduction

My responses are directed towards the paper by Patrick Troy and the paper by Hal Kendig and Max Neutze.

My first comment relates to intergenerational issues which have been raised in the Kendig and Neutze paper on housing. Second, I shall comment on some issues of urban form raised in Troy's paper on transport. Third, I shall make some comments on an issue which is not covered in these papers and has not really been addressed by the papers overall — the issue of regional and rural Australia and the ways in which issues for the elderly in relation to housing and transport policy may differ between metropolitan and regional areas.

Intergenerational issues and housing

Kendig has raised the issue of home ownership and the role which it plays in the economic security of older Australians. He raises concern about Generation X (the generation following the baby boomers) who appear to have lower rates of home ownership at present than their predecessors did at the same age.

Without wanting to downplay the importance of this issue for many of Generation X who are unable to purchase housing due to unemployment or insecure working careers, I would point out a contradiction regarding their prospects. While many are being denied opportunities in relation to housing, there are many more double income, no kids (DINKS) and single income, no kids (SINKS) households within this generation than in any previous one. These people can not only buy housing, but they can do so rapidly — the 10–15 year mortgage rather than the 25 year mortgage.

As a generation, the 'X-ers' are also more likely to live at home with their parent(s) longer. This may be a result of staying in education longer, having less stable employment patterns, or pursuing other activities as young adults, such as travel. Whether this trend is likely to result in a 'pent-up' demand for housing is not yet clear. The economic status of these individuals is also difficult to gauge — are they likely to have savings which will enable independent living, or are they likely to continue living at home because of an inability to afford independent living? Answers to these questions are yet to be determined.

It is likely, however, that the mixed fortunes of many within Generation X will lead to a greater polarisation of housing wealth as this cohort ages. Whether housing alone will be the main indicator of this generation's wealth in old age is difficult to determine, but is worthy of further investigation.

One final feature to comment on in relation to both baby boomers and (more particularly) the Generation X is their levels of personal mobility. What is the nature of the community and of support networks for those who have travelled, worked and lived in a multitude of locations and for whom the 'community' is increasingly defined in global terms? What geographic location will be chosen in which to age? What will happen to the non-geographically defined community (network) when physical mobility diminishes with age?

The heightened mobility of future ageing generations will not simply be determined by transport technology and disposable wealth; it will rely on the life experience of the DINKS and SINKS who may have no clear family ties to particular locations.

The changing face of suburbia

Troy in his paper on transport and the ageing population has talked more broadly about the urban fabric of our cities. He has posed the question of what will happen to an ageing population who live in car dependent suburbs. Much of the baby boomer generation grew up in such suburbs and chose to have their own families in the expanding outer suburban areas, taking advantage of the flexibility and mobility which the motor car brought to suburban life. Now as this age cohort reaches middle age and beyond, it is right to question how they will fare as they age in suburbia.

Nevertheless, it should be recognised that suburbs are not static. We are currently in a phase of major redevelopment in urban areas such as Melbourne and this is having a significant effect on the suburbs which are of most concern to Troy. Using Melbourne as an example, there are a number of trends which are changing the way we live and the way suburbia is developing.

The traditional pattern of movement outwards to new greenfield sites on the urban fringe is still occurring and plays an important role in housing provision, particularly for young families. However, the traditional family structure is no longer so dominant as it was in the post-war decades. On average, households are smaller, fertility rates are lower, and there is a greater diversity in life choices in relation to family formation. Diversity of family arrangements means diversity in people's housing needs, and developers have realised the importance of catering to a range of housing market segments — families, young professionals, empty nesters, and so on.

As well as responding to diversifying market demands, residential land developers are also responding to changes in the supply side of the housing market equation. Government policy has had an impact on the nature of housing development, but not necessarily in the direct manner that people may assume (for example, through policies on medium density housing). There have been changes in the way in which infrastructure and services for new fringe development are delivered, with private infrastructure provision being encouraged by governments, and with user pays systems becoming more common. As a result, residential development in fringe areas has had to bear its full development cost.

At the same time, new development opportunities have arisen in existing suburban areas during the 1980s and 1990s. Removal of some restrictive building and design policies have assisted smaller developers and individual investors to undertake small scale residential redevelopment across a range of suburbs. Other redevelopment opportunities have arisen because of economic restructuring which has left many former industrial sites available for redevelopment. Surplus public land sold by government has also contributed to land availability. Such redevelopment opportunities have provided a source of residential development other than the outer fringe areas of Melbourne, and this is likely to dampen demand for urban fringe living. The pattern of the ‘ageing’ suburb which Troy has described is therefore likely to be changing as urban and suburban housing markets diversify.

It is pertinent to ask whether redevelopment of middle and inner land for residential uses is likely to offer greater choice for aged people in the future. What will large redevelopments like those at Beacon Cove, Maribyrnong or Docklands offer to the retired population over the next 20 years? Will the ageing baby boomer cohort be specifically targeted in the marketing of these new housing products? The diversification of suburban housing choice may create more options for ageing in vicinity, if not ageing in place. And the regeneration of population growth rates is likely to create higher levels of servicing than might have been expected were population levels to decline and ageing to occur.

Regional perspectives

Ageing: regional versus metropolitan areas

It is important to highlight the fact that most regional areas of Australia are ageing more rapidly than metropolitan areas. There are two reasons for this, both related to migration patterns. The first migration trend is for young adults (aged 15–24) to leave regional areas in order to gain educational or employment opportunities in metropolitan regions. This is not a new trend. While some of these people will

return to regional areas at a later stage, many will not, especially those seeking professional or specialist careers for whom regional Australia may hold few opportunities.

The other migration factor affecting the age profile of regional Australia is retirement migration. In this respect, some parts of regional Australia are affected more strongly than others. Coastal regions are of particular attraction to retirees, but some inland areas are also attracting increasing numbers. As the large baby boomer cohort reaches retirement age over the next few decades, retirement migration to regional areas is likely to increase. While this will provide many positive economic outcomes, there will also be increasing demands for recreational and health services in such regions.

Regional transport issues

Policy solutions developed for metropolitan areas of Australia may not be suitable for regional areas, especially where the population is highly dispersed and distance between settlements is great. For example, compared with the metropolitan area, there are fewer public transport options available in regional areas, and in some rural areas there are none. So issues which may be easily dealt with in urban areas (for example, meals on wheels or home help) may be much more difficult in regional areas.

Behind these logistical issues lie difficult questions of economic efficiency and viability. For example, while mobile services are seen by many as providing solutions to service delivery to the elderly, a question arises about the degree to which mobile services can operate viably in regional situations — what are the costs, staffing, and resourcing issues?

Transport for medical services is one of the greatest difficulties facing rural and regional communities, especially as general practitioners become harder to attract and retain. Even basic care services can thus become difficult to gain access to without distances being travelled, and this will tend to discourage visits to doctors for ailments which may later prove more serious or difficult to treat. For specialist care, residents of regional Australia are likely to need to travel to regional cities. Australia has very few regional cities compared to other countries of the world, and this feature of its settlement geography is critical to understand when considering policy approaches to service provision. As a result, it is common for Australians in regional areas to travel to capital cities for specialist care.

Regional elderly care accommodation

Despite the interest and support for mobile servicing regimes in elderly care, there will still be a need for elderly accommodation facilities and, as the numbers of elderly increase over the coming decades, it can be assumed that the actual numbers requiring such accommodation will increase.

From research undertaken by the Victorian Department of Infrastructure, it is evident that nursing homes form an important feature of even very small regional centres. Many of these are attached to small local hospitals and fulfil an important role in community life, allowing older residents to remain in the township in which they have lived.

Nevertheless, the size of many of these facilities represents an economic issue in terms of efficiency. Some regional nursing homes have fewer than 10 beds, well below accepted levels of economic viability. Further, under recent Commonwealth requirements for nursing home accreditation, many of these small regional facilities may fail to achieve required standards.

Whilst the closure of urban based facilities which do not meet government standards, or which are not economically viable, will cause stress, there are at least alternative facilities available within the wider urban area. For regional areas, the closure of small nursing home facilities may mean that local elderly residents need to be relocated some distance away, in a larger regional centre.

Clearly there are many issues beyond simple economic efficiency to be considered. Of particular importance is the need to recognise Australia's settlement geography and to understand that policies suited to metropolitan areas may have quite different outcomes in a regional context where distances are great and the population is dispersed.

General discussion

The general discussion focused on the following issues:

- regional access;
- access to education; and
- intergenerational wealth comparisons.

Regional access

The issue of access to nursing home infrastructure was raised as a concern, particularly in regional areas of Queensland (which has a relatively decentralised population with the large distances between centres). In particular, it was stated that owners of nursing homes indicate that viability centres around 50 beds but a 50 bed nursing home would be difficult to sustain in some areas of regional Queensland.

Another regional access issue concerns the difficulty of accessing some medical technologies, such as CAT scans. However, it was acknowledged that other types of technologies, such as tele-medicine have improved access of the regional elderly to medical and home care arrangements. In addition, access to technologies, such as e-commerce, require skills of the aged members of our population that do not currently exist.

Kendig responded by pointing out that technology cuts both ways. He challenged the audience by questioning whether older people do not have the capacity to keep up with changes in technology. He also noted that many technologies assist in overcoming many of the physical limitations that arise with old age.

Access to education

Lifelong learning was seen as the continued learning throughout life, both in relation to employment and employability as well as leisure pursuits — the latter being important to healthy ageing. It was felt that didactic learning modes (sitting in classrooms) are not appropriate for one group of early school leavers and that there is a case for government intervention to enable this group with poor learning experiences to continue to learn so as to limit the negative consequences of retrenchment, redundancy and the like.

Taylor agreed that such considerations are important in policy development but do not necessarily arise from population ageing *per se*.

Intergenerational wealth comparisons

One participant endorsed McKenzie's point that a lower rate of home ownership by the so-called Generation X is not necessarily a concern. In addition to the points previously made (about staying at home longer, building up human capital via investment in education, having smaller families, marrying later and the like), this generation also has a much higher rate of ownership of shares in listed public companies than, the rate of the previous equivalent generation. Essentially, wealth holding among this generation may be in forms other than home ownership — for example, human capital and listed companies. Therefore, home ownership may be a less important indicator of wealth and poverty in 20 years than today. Indeed from a macroeconomic perspective, a lower home ownership rate may contribute to high levels of labour mobility and even a lower natural rate of unemployment.

Finally, the view that people save until the day they die was questioned. It was felt that the figures used to support this view are based on too narrow a concept of saving. If the running-down of assets (for example, superannuation) is treated as dissaving, then this view may not hold.

A Conference participants

Mr Zia Abbasi	Australian Bureau of Statistics
Mr Bruce Bacon	Commonwealth Treasury
Ms Meredith Baker	Productivity Commission
Mr Gary Banks	Productivity Commission
Dr Nicholas Barr	London School of Economics
Mr Kim Bond	Department of Family and Community Services
Associate Professor Jeff Borland	University of Melbourne
Ms Lynelle Briggs	Department of Health and Aged Care
Dr Gerald Burke	Centre for the Economics of Education and Training, Monash University
Mr Ross Clare	The Association of Superannuation Funds
Mr Denys Correll	Council on the Ageing (Australia)
Professor John Creedy	University of Melbourne
Ms Joanna Davidson	Department of Health and Aged Care
Professor Peter Dawkins	Melbourne Institute of Applied Economic and Social Research
Mr Craig de Laine	Productivity Commission
Professor Steve Dowrick	Australian National University
Dr Alan Duncan	Institute of Fiscal Studies, London
Ms Diana Edwards	Productivity Commission
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Dr Mariah Evans	Melbourne Institute of Applied Economic and Social Research
Mr Tony Feely	BIS Shrapnel Pty Ltd
Ms Jan Feneley	Department of Health and Aged Care
Dr Michael Fine	Social Policy Research Centre,

Dr Vince FitzGerald	University of New South Wales The Allen Consulting Group
Dr Jacky Fogarty	Department of Health and Aged Care
Mr Chris Foster	Department of Family and Community Services
Mr John Goss	Australian Institute of Health and Welfare
Professor Bob Gregory	Australian National University
Dr Ross Guest	Griffith University
Professor Ann Harding	NATSEM, University of Canberra
Dr Anna Howe	Australian Association of Gerontology
Associate Professor David Johnson	Melbourne Institute of Applied Economic and Social Research
Professor Paul Johnson	London School of Economics
Dr Qaiser Kahn	World Bank
Professor Hal Kendig	University of Sydney
Ms Debra Kennedy	Swiss Re Life and Health
Mr Robert Kerr	Productivity Commission
Ms Rebecca Kippen	Australian National University
Dr Sue Lambert	Post Acute Care Evaluation, Centre for Applied Gerontology
Ms Lisa Lane	Productivity Commission
Dr Patrick Laplagne	Productivity Commission
Dr Mandy Leveratt	Brotherhood of St Laurence
Ms Maureen Lyster	Aged Care Australia
Ms Michele Mack	Department of Health and Aged Care
Mr Geoff Maloney	Department of Family and Community Services
Professor Ian McDonald	University of Melbourne
Professor Peter McDonald	Australian National University
Ms Fiona McKenzie	Department of Infrastructure, Victoria
Ms Rosalie McLachlan	Productivity Commission

Ms Margaret Mead	Committee for the Economic Development of Australia
Mr Neil Mullinger	Department of Immigration and Multicultural Affairs
Mr Rob Nicholls	Australian Council of Social Service
Dr John Nieuwenhuysen	Committee for the Economic Development of Australia
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Professor Jeff Richardson	Centre for Health Program Evaluation
Mr George Rothman	Commonwealth Treasury
Mr John Ryan	Department of Immigration and Multicultural Affairs
Mr Hugh Sarjeant	Cumpston Sarjeant Pty Ltd, Consulting Actuaries
Ms Janet Savvides	Productivity Commission
Ms Helen Silver	Productivity Commission
Professor Judith Sloan	Productivity Commission
Professor Richard Snape	Productivity Commission
Dr Margaret Steinberg	Department of Social and Preventative Medicine, University of Queensland Medical School
Ms Penny Taylor	Productivity Commission
Mr Steven Tregea-Collett	Department of Employment, Workplace Relations and Small Business
Professor Pat Troy	Australian National University
Ms Judy Tyers	Business Council of Australia
Dr Rebecca Valenzela	Melbourne Institute of Applied Economic and Social Research
Ms Odette Waanders	Aged Care Australia
Mr Peter Whiteford	Department of Family and Community Services
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Ms Ilene Wolcott

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Mr Mike Woods

Australian Institute of Family Studies

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B Demographic change in Australia — conference background paper

B.1 Introduction

The term demographic change may be taken literally to refer to *any* change affecting a given population. However, a more traditional interpretation of that term restricts changes of interest to those affecting the *size* and *structure* of that population. Even under this relatively narrow definition, the range of such changes can be quite large. This is because the make-up of a group of persons can change in terms of a number of criteria, such as age, gender, ethnicity or geographical location. Each of these types of change may, in turn, be associated with very diverse economic flow-on effects, on both a micro and a macro level. For instance, the ageing of a population can be expected to have repercussions in the area of public finances, the labour market, and macroeconomic aggregates. In this paper, section B.2 outlines the major recent trends thought to affect the size and structure of the population of Australia. The subsequent sections canvass some of the economic implications of these changes on, first, the macro economy, second, the labour market and, third, the delivery of selected social services. The main aim in these sections is to develop and prioritise conference themes and topics, based on an overview of relevant economic knowledge in each area.

B.2 Demographic change: recent trends and projections

The debate regarding the optimal size of the Australian population is a perennial one, which resurfaces at frequent intervals. It is often accompanied by arguments about the pros and cons of international immigration. One of the arguments in favour of migration relies on the claim that Australia's population, in the absence of net immigration, will eventually decline. The validity of that claim is investigated in the next section. In other sections, the implications of population projections for the structure of the Australian population are considered on the basis of several criteria.

B.2.1 Population size

In 1996, the Australian Bureau of Statistics (ABS) published the latest issue of *Projections of the Populations of Australia, States and Territories* (ABS 1996a), containing forecasts of the size and demographic structure of the population at five year intervals from 1995 to 2051. Rather than present a unique set of figures, the ABS elected to simulate eight alternative scenarios, based on various combinations of assumptions regarding fertility rates, mortality rates and migration flows (overseas and inter-State). In the remainder of this paper, no discussion of the validity or otherwise of these assumptions is provided; rather, the ABS scenarios and associated projections are taken as the starting point of an attempt to outline plausible economic repercussions of demographic change in general, and ageing in particular. Accordingly, selected projection results are summarised in table 1 and subsequent tables.

The figures contained in table B.1 reflect a slowing down of Australia's rate of population growth, from current annual rates of 1.1–1.3 per cent to 0.2–0.5 per cent in 2051. The ABS attributes this slowdown to a projected decline in Australia's natural rate of population increase, itself a consequence of two factors:

- low fertility — during the 1970s, the number of births per female declined rapidly in Australia, from 2.9 in 1971 to 1.9 in 1980. Since that time, fertility levels have remained relatively stable within the 1.8–1.9 range; and
- increasing number of deaths — as mortality rates fall with improvements in health, the median age of a population increases, leading to an increasing number of older people in the population. As a result, the total number of deaths increases, even though each individual has a greater probability of survival.

Table B.1 **Australia: population projections (million)^a**

	Size in 1995	Peak (reached in year)	Size in 2051
Upper bound ^b	18.1	na	28.3
Medium variant ^c	18.1	na	26.1
Lower bound ^d	18.1	na	24.9
No net overseas migration ^e	18.1	20.7 (2033)	20.1

^a Mortality rates are assumed to decline in identical fashion in each variant. ^b Assumes an unchanged rate of fertility from 1994, combined with a decline in net migration from 120 000 in 1995-96 to 100 000 in 1998-99, remaining constant thereafter. ^c Assumes an unchanged rate of fertility from 1994, combined with a decline in net migration from 120 000 in 1995-96 to 70 000 in 1998-99, remaining constant thereafter. ^d Assumes a decline in total fertility rates from 1.85 children per woman in 1994 to 1.75 in 2004, remaining constant after that. Net migration gain is assumed to be the same as in ^b above. ^e Assumes no net overseas migration gain. Fertility rates assumption identical to ^a above.

Source: ABS (*Projections of the Populations of Australia, States and Territories*, Cat. no. 3222.0.).

These are demographic phenomena that are also in evidence in most Organisation for Economic Cooperation and Development (OECD) countries. In some of them, falling population levels are predicted as early as 2005 (Germany) and 2015 (Japan). By contrast, most of Australia's Pacific and Asian neighbours are forecast to experience strong population growth into the next century: for instance, Papua New Guinea and Viet Nam are expected to double their population over the projection period.

Australia's rate of population growth is also influenced by overseas immigration. It is estimated that Australia's population, in the absence of a net inflow of overseas migrants, would actually begin to decline after 2033. Conversely, if net positive migration continued, albeit at a rate lower than that observed in 1995-96, the population would continue to grow, but at a decreasing rate nonetheless.

B.2.2 Age structure

Irrespective of which projection variant is selected, the ageing of Australia's population, already well underway, is set to continue apace in the next century. Table B.2 presents several indicators illustrative of this trend (medium variant only).

Regarding the ageing of the population, it is worth noting that the share of the 85 and above age group (the 'old old') within the aged population (65 and over age group) group is increasing. That is, the elderly are getting older.

In terms of what is officially regarded as the prime working age (age 15–64), the share of this age group is set to decline somewhat between 1995 and 2051.

A common measure of population ageing is provided by the dependency ratio. Traditionally, the dependency ratio d is defined in the following way:

$$d = \frac{\text{population aged 0–14 and 65 and over}}{\text{population aged 15–64}} \times 100$$

Table B.2 Australia: population age structure (medium variant projection)

	1995	2021	2051
Median age (years)	33.7	39.8	42.6
0-14 yrs old (%)	21.4	18.0	16.8
15-64 yrs old (%)	66.7	64.5	60.0
65 yrs and over (%)	11.9	17.6	23.1
85 yrs and over (%)	1.1	2.0	4.7

Source: ABS (*Projections of the Populations of Australia, States and Territories*, Cat. no. 3222.0.).

In addition, it is possible to differentiate between the elderly (gerontic) dependency and youth (neotic) dependency ratios by separating the 0-14 and 65 and over age groups in the numerator of this formula. Table B.3 below presents the projected changes in the three ratios between 1995 and 2051 for Australia.

B.2.3 Gender

The gender balance of the Australian population is predicted to continue to favour females. In 1995, there were 99.2 males per 100 females. This imbalance is due to differences in mortality and life expectancy, and has been a long term phenomenon. Depending on the projection variant under consideration, this ratio is expected to fall to between 95.9 and 96.3 by 2051.

The contrast between males and females is also readily apparent from the projected weight of each age group within each population; while the largest projected female age group in 2051 is also the oldest one (aged 85 and over), this age group is expected to be the smallest of all age groups for males.

B.2.4 Family structure

As could be inferred from the low fertility figures for Australian women since the early 1980s (section B.2.1), the average number of persons per family¹ is falling in Australia, from 3.3 in 1985 to 3.2 in 1987, to 3.1 in 1997 (ABS 1998a). A falling fertility rate is not the only factor having contributed to this phenomenon, however. Compounding factors were the:

- increase in the proportion of persons who live alone — from 7.6 per cent of all persons aged 15 and over in 1983 to 8.2 per cent in 1990, to 10.5 per cent in 1997;

Table B.3 **Australia: dependency ratios (medium variant projections, per cent)**

	1995	2021	2051
Overall dependency	50.1	55.1	66.6
Youth dependency	32.1	27.9	28.0
Elderly dependency	17.8	27.1	38.4

Source: ABS (*Projections of the Populations of Australia, States and Territories*, Cat. no. 3222.0.).

¹ Defined as two or more related (by blood, marriage or adoption) persons. Households, the definition of which is slightly different from that of a family, have followed a similar trend, falling in terms of their average size from 3.0 in 1981 to 2.8 in 1991, to 2.7 in 1996.

- increase in the proportion of families with no children or dependants — from 29.6 per cent of all families in 1982 to 31.2 per cent in 1990, to 33.6 per cent in 1997; and
- increase in the proportion of single parent families — from 7.7 per cent of all families in 1982 to 8.1 per cent in 1990, to 10.4 per cent in 1997.

B.2.5 Ethnicity and birthplace

Table B.4 illustrates the changes in the composition of the Australian population between Australian-born (indigenous and non-indigenous) and overseas-born (English speaking and non-English speaking) residents.

From the data above, two trends are apparent:

- an increase in the relatively small share of the indigenous population within the Australian population; and
- an increase in the share of the overseas-born, non-English speaking background population.

The first of these two trends is caused by two distinct phenomena:

- the increasing willingness of people to identify themselves as ‘indigenous’ when surveyed; and
- the natural rate of increase in the indigenous population is higher than that for the rest of the population — while it is not possible to quantify this rate precisely, it is thought that the natural increase has contributed one third to indigenous population growth between 1986 and 1991 censuses (ABS 1998a). The combination of high fertility rates and low life expectancy means that the average age of the indigenous population is much younger than that of the rest of the population; as a result, the ageing of the indigenous population is not

Table B.4 Australia: ethnicity and birthplace (per cent of the total population)

	1986	1991	1996
Australian born (indigenous)	1.4	2.0	2.1
Australian born (non-indigenous)	77.4	75.1	74.6
Overseas born (non-English speaking)	11.8	13.3	14.1
Overseas born (English speaking)	9.4	9.6	9.2

Source: ABS (*Australian Social Trends*, Cat. no. 4102.0).

expected to be a significant issue in the next century.

Regarding the second phenomenon — the growth in the proportion of non-English speaking background migrants — it can be primarily attributed to the growth in numbers of family reunion migrants originating from South east and North east Asia. The increase in this category has been accompanied by a decline in the relative importance of skilled migrants and those from European backgrounds (both English and non-English speaking). Since 1996, however, these trends in the composition of the migrant intake have been reversed somewhat, which makes any attempt at long term predictions inherently difficult.

B.2.6 Geographic distribution

The internal migration projections undertaken by the ABS include forecasts of the size and structure of the populations of States and Territories until 2051. Some of these results are outlined below. However, internal migration can also occur intra-State — for instance, rural-to-urban and between different types of urban centres. Some recent trends in intra-State migration are outlined also.

Inter-State migration

With the exception of Tasmania, all Australian States and Territories are projected to experience increases in population by 2051 (ABS 1996a). However, there is considerable variation in the population growth rates forecast by the ABS for each State. To a large extent, these differences stem from the nature of inter-State migration. In table B.5, upper and lower estimates for State and Territory population growth rates are presented.

Table B.5 States and Territories: rate of population growth (1995–2051) and proportion of Australian population (2051)

<i>State</i>	<i>Rate of population growth (lower–upper per cent)</i>	<i>Proportion of population in 2051 (per cent)</i>
New South Wales	32–55	31–34
Victoria	10–28	19–20
Queensland	89–117	24–27
South Australia	2–16	6–6
Western Australia	71–93	12–13
Tasmania	–2 to –22	1–2
Northern Territory	45–79	1–1
Australian Capital Territory	52–85	2–2

Source: ABS (Projections of the Populations of Australia, States and Territories, Cat. no. 3222.0.).

Inter-State migration movements are dominated by migration flows to Queensland and Western Australia. Assumptions made regarding the strength of these flows influence not only the rate at which the population of these States grows, but also the rate prevailing in other States. With the exception of the Australian Capital Territory, all remaining States and Territories are projected to experience net migration losses to Queensland and Western Australia.

Alongside an increase in the overall population of these two States, an increase in the proportion of their population aged 65 and over is forecast (table B.6). In 2051, Queensland's elderly population is likely to be exceeded by that of New South Wales alone, while that of Western Australia is likely to have overtaken that of South Australia. However, in relative terms, Western Australia and Queensland will continue to have the lowest percentages of elderly people of all Australian States.

Intra-State migration

When Australian households change their place of usual residence (that is, when they migrate), they primarily relocate to another area within the same State. In other words, most internal migration occurs intra-State, often within the same statistical region (BIR 1992, p. xxvi). The exact factors driving intra-State migration vary a great deal between towns, cities, regions and States, but some common threads are nonetheless discernible. For instance, towns located in inland wheat–sheep belts have typically seen their populations decline between 1986 and 1996. Conversely, coastal towns or those located in close proximity of capital cities have often experienced rapid growth. The figures contained in table B.7 help shed some light on the overall pattern of intra-State migration in Australia. From these data, two significant trends are apparent.

Table B.6 States and Territories: age distribution of the population in 1995 and 2051 (per cent)^a

<i>State</i>	<i>0–14</i>		<i>15–64</i>		<i>65+</i>	
	<i>1995</i>	<i>2051</i>	<i>1995</i>	<i>2051</i>	<i>1995</i>	<i>2051</i>
NSW	21.2	17.2	66.3	59.9	12.5	22.9
Vic.	20.9	16.0	66.8	59.5	12.3	24.5
Qld	22.0	17.0	66.7	60.5	11.3	22.5
SA	20.4	15.5	65.9	58.8	13.7	25.7
WA	22.3	17.3	67.3	60.8	10.4	21.9
Tas.	22.4	15.3	65.0	56.0	12.6	28.7
NT	27.7	21.7	69.1	63.5	3.2	14.8
ACT	21.8	16.7	71.2	62.9	7.0	20.4

^a Figures assume a medium level of inter-State migration (ABS projection variant A).

Source: ABS (*Projections of the Populations of Australia, States and Territories*, Cat. no. 3222.0.).

- The decrease in the share of the population living in capital cities.
- An increase in the share of the population living in an urban² environment.

The combination of these two trends points to the continuation of a phenomenon termed 'counter-urbanisation' by demographers (BIR 1992, p. 63). While Australia remains one of the most urbanised countries in the world, its capital cities are no longer the main driving force behind urbanisation. Instead, the growth of the urban population is now due to the emergence of other urban centers, ranging in size from 1000 to in excess of 100 000. The growth of these alternative urban centres has been variously attributed to non-economic (preference for semi-rural lifestyle) and economic (lower house prices) motives. There is, however, some debate regarding the validity of some of the explanations put forward to explain this trend (BIPR 1994a, p. 16).

In summary, the major demographic changes forecast to affect Australia over the next 50 years are:

- the decrease in the rate of growth of its population (leading, in one projection variant, to the eventual decline in the number of inhabitants after 2033);
- the ageing of its population and thus the increase in its demographic dependency ratio, particularly the elderly dependency ratio;
- the increase in the percentage of females in the population, a phenomenon linked to population ageing, because females enjoy a longer life expectancy; and
- the increase in the population of all Australian State and Territories except Tasmania, underscored by strong internal migration to Queensland and Western Australia.

In addition, if trends that are observable at present persist in the long run, the structure of the Australian population will also be characterised by:

Table B.7 Proportion of Australian population living in urban centres and rural areas (per cent)

<i>Location</i>	<i>1976</i>	<i>1986</i>	<i>1996</i>
Capital cities	59.7	57.3	56.7
Other major urban (>100 000)	5.1	6.1	7.4
Other urban (> 1000)	20.9	21.9	22.3
<i>Total urban</i>	<i>85.7</i>	<i>85.3</i>	<i>86.4</i>
Rural balance	14.2	14.7	13.7

Source: ABS (cat. no. 2015.0); BIR (1992, p. 66).

² Defined as any population cluster comprising 1000 persons or more.

-
- a reduction in average family size;
 - an increase in the share of indigenous and overseas-born Australians; and
 - an increase in the share of the population living in urban centers.

B.2.7 Conclusion

From the various demographic trends outlined above, one in particular — population ageing — emerges as a likely factor of significant economic change in the very long term. This is due to the fact that, as the median age of a given population increases, its composition becomes progressively altered, in terms of the balance between, for instance, consumers and savers, workers and retirees, income producers and income receivers. While the nature of many phenomena impacting on an economy is unknowable in the very long term, this is not the case with ageing: this phenomenon is largely predictable, relying as it does on slow changing demographic variables. Further, all developed countries are experiencing ageing, to a greater or lesser extent, which facilitates international comparisons, and enables lessons learned overseas to be used as an input into policy making in Australia. For these reasons, the effects of ageing on the economy are explored further below, with a view to identify the state of current knowledge in this area, and to highlight any unanswered questions remaining.

B.3 Ageing: macroeconomic implications

The effects of ageing on selected macroeconomic variables — consumption and saving, the current account, economic growth, and fiscal balance — are considered in some detail below.

B.3.1 Consumption and saving

Traditional life cycle theory suggests that younger populations have a higher propensity to save and a lower propensity to consume than older populations (for example, Lydall 1955). If this proposition held for Australia, a fall in its saving performance would result from the ageing of the population. However, in a recent empirical study of Japan, Ando and Moro (1995) have contended that it is the changes that have accompanied ageing (increases in single parent families, no-children families and single-person families) in many countries that have really caused the drop in saving performance attributed to ageing.

One scenario, suggested by Cutler et al. (1990, p. 17), is that an increase in the dependency ratio would lower output per head and thus, consumption per head. However, they also raise the possibility that slower growth in the labour force would reduce investment requirements and the need for saving, thus freeing up more income for consumption purposes.

It is, ultimately, not easy to predict what the ageing of Australia's population will mean for its propensities to consume and save. Yet, these variables will have important consequences for foreign trade and output growth. It is therefore highly desirable that the conference address the issue of the implications of ageing for the saving and consumption performance of the Australian economy.

B.3.2 The current account

In national accounting terms, the current account deficit is identical to the difference between gross investment and domestic saving. If, as some studies have suggested (Higgins 1998), the path of these macroeconomic variables is affected in different ways by population ageing, then the current account itself will be affected, at times significantly. For instance, estimates by Higgins (1998) put the demography-induced improvement in the current account balance of Japan at 7 per cent of gross domestic product (GDP) (on average) between 1950–54 and 1980–84. This improvement was due to the simultaneous fall in investment requirements and increase in saving performance of an ageing Japanese population. Looking ahead, Higgins' results also point to a sharper decline in investment than saving in developed countries in the decades to 2025, resulting in current account improvements in most OECD countries. This forecast appears, therefore, to rule out the need for greater saving in response to demographic changes alone; in this, Higgins' results resemble those of Cutler et al. (1990) who advocate a *reduction* in the national saving effort as the optimal response to the predicted demographic change.

However, this conclusion applies to saving in aggregate, not necessarily to its individual components. For instance, a greater saving effort by the private sector may be required if a blow-out in pension payments is to be averted in future. If retirement income continued to be provided by the government mainly, and if increased public sector dissaving was not offset by greater private saving, a deterioration in Australia's external position would ensue (see, for example, FitzGerald 1993). While this relationship between the current account and ageing would be technical rather than behavioural, it may nonetheless be significant. It would therefore be of value to consider the external implications of future ageing-related changes in the balance between private and public saving.

Finally, other areas of uncertainty remain. Some authors (for example, Masson and Tryon 1990) have highlighted real exchange rate movements as a possible channel linking ageing and the current account. While such movements will naturally occur as a result of a great diversity of factors, it may be of interest to examine whether the ageing of a population can result in a long term trend towards greater or lower competitiveness, as measured by various definitions of the real exchange rate.

B.3.3 Economic growth

There is a vast amount of literature devoted to the relationship between population growth, fertility and ageing on the one hand and the growth of per capita income on the other hand. Results have tended to range between ‘no effect’ and ‘negative effect’ conclusions, without a clear consensus emerging. This may be due to the country-specific nature of the relationship, which does not lend itself well to cross-section studies, or to the simultaneity of the relationship between the variables under examination (Brander and Dowrick 1993).

Brander and Dowrick (1993) showed that the change in the share of the population of working age was a significant positive determinant of the growth of per capita real GDP. In Australia, this share is expected to fall over the next 50 years, which could lead to the slowing of per capita real GDP growth.

Cutler et al. (1990) considered the effects of demographic factors on a growth-related variable — the rate of technological change. They suggested the following opposite sign effects:

- relatively scarce labour may increase the incentive to innovate;
- the ageing of the population may lower its ability to invent and innovate; and
- lower labour force growth may lower the incentive to invest in research and development because there is a depressed demand for capital goods.

As can be seen from the above, there are plausible theoretical reasons to suggest that the growth rate of GDP could increase or decrease as a result of population ageing. Given that economic growth has profound repercussions in terms of unemployment and population welfare, it is important that some of these theoretical issues be explored using Australian data.

B.3.4 Fiscal balance

The impact of population ageing is expected to be felt strongly in the areas of public expenditure and revenue. Simulations by the OECD (1995) have shown that the

fiscal repercussions of ageing could be dramatic under some assumptions: in Japan, for instance, the growing imbalance between government expenditure and revenue linked to ageing could result in a budget deficit equal to 23 per cent of GDP in 2030, and a net public debt equal to 314 per cent of GDP in that same year (OECD 1995, p. 36). This study highlights, further, the need for early choices in this area, before the full effects of ageing are felt; for instance, a permanent cut in spending programs of 1 percentage point of GDP in 2000 would result in net public debt in 2030 being 40–55 per cent of GDP lower than otherwise in G-7 countries.

The replication of this modelling approach for Australia appears to be a promising avenue for research, not least because the amount of public sector dissaving caused by ageing could in turn affect Australia's current account position.

If governments decide to increase taxation in line with rising social expenditure, the taxation burden could become very high. EPAC (1994, p. 41) has estimated that a net increase in social expenditure of just over 2.5 per cent of GDP implies a rise in average taxes of 8 per cent or so from existing levels. They concluded that the key to the sustainability of rising social expenditure levels in future will be greater productivity that allows economic growth to continue. This is confirmed by projections carried out by Creedy and Taylor (1993).

Further effects of ageing on government finances in Australia are considered below.

On the expenditure side

Effects on the expenditure side of the budget are thought to be both positive and negative. They include:

- an increase in demand for old-age pensions funding — at the moment, about 60 per cent of retirees rely on pensions for their main source of income (ABS Cat. no. 4102.0). If this trend persists, the demand for pensions is likely to rise strongly with the proportion of elderly persons in the population;
- an increase in demand for aged care funding;
- a decrease in expenditure on school education; and
- an increase in expenditure on tertiary education and vocational education and training.

Based on international evidence, it seems likely that the net effect of ageing on public expenditure will be positive. This is because any savings on expenditure on the young are likely to be more than offset by increases in expenditure on the elderly. In 1980, per capita social spending on the aged outweighed that on the

young by a factor of 2.1–3.8 in the eight largest OECD economies (World Bank 1994, p. 34).

Issues arising from the expenditure implications of ageing include: (i) the need to scale back pension payments and coverage; (ii) the need to extend the reach of superannuation through compulsion or the provision of incentives;³ and (iii) the intergenerational equity implications of various pension/superannuation scenarios.

On the revenue side

The reduction in the proportion of working age persons in the population can be expected, at first glance, to diminish the income tax base and hence lead to a decrease in tax revenue in absolute and/or per capita terms. However, a number of factors need to be considered before this conclusion can be supported unambiguously:

- as the superannuation funding of retirement income spreads in the population, tax revenue could fall as contributions by employees enjoy some measure of tax exemption;
- a reorientation of the tax base from income to consumption could mean that ageing does not decrease taxation revenue to the extent predicted. This is due to differences in the age-related profile of direct and indirect taxation (EPAC 1994, p. 28); and
- if the trend towards greater labour force participation of females continues, the tax base would increase and tax revenue could rise.

The main tax revenue question raised by ageing, which could be addressed by the conference, concerns the need for taxation reform, particularly for an expansion of the tax base.

B.4 Ageing: implications for the labour market

The reduction in the share of the working age population is certain to have important repercussions on the supply side of the labour market. In decades to come, this market is also likely to alter on the demand side, through the combined influence of globalisation, casualisation and economic restructuring. In the following sections, some of the supply and demand side changes, respectively, are considered. Unemployment — jointly determined by labour supply and demand — is considered in the last section.

³ In particular where female/part time/casual/self-employed workers are concerned.

B.4.1 Supply side issues

Labour force participation

As noted in section B.2.2 above, the share of the 15–64 age group in the population is projected to decline from 67 per cent in 1995 to 60 per cent in 2051. From this, it could be inferred that the size of the Australian labour force will undergo a commensurate relative decline over the same period. This would only be true if the aggregate labour force participation rate⁴ remained constant throughout. This is unlikely to be the case, for two reasons:

- as the age and gender structure of the population changes, the aggregate participation rate will change in accordance with the weight of each sub-group; and
- within each sub-group, the propensity to enter the labour force changes according to a number of factors.

Borland (1997) shows that participation rates in Australia during 1966–96 were characterised by the following:

- a steady increase in the aggregate labour force participation rate;
- a decline in labour force participation by older males;
- an increase in labour force participation by married females; and
- the relatively steady participation rates of persons aged 15–19.

Given these trends, a decline in the labour force relative to the overall population need not be an inevitable consequence of population ageing. Such an outcome could be avoided if the aggregate participation rate grew sufficiently to compensate for the falling representation of working age persons in the population.

However, many uncertainties exist regarding future labour force participation rates. The greater female participation rates observed in recent times have been variously explained (for example, Borland 1997) by demand (for example, demand for part time labour in the services sector) and supply factors (for example, increased availability of child care, changing attitudes). On an individual level, factors such as educational attainment and marital status are important in the determination of participation rates. For the population as a whole, apart from the well known influence of the level of economic activity, real wages, and government benefits,

⁴ The ratio of the total number of persons employed and actively looking for work to the civilian population aged 15–64.

recent research by the Commonwealth Treasury points to the fact that the decision to join the labour force is positively influenced by the level of mortgage interest rates.

As mentioned above, a factor likely to influence labour force participation rates in future is the changing nature of the family unit. Anecdotal evidence suggests that more and more families are departing from the traditional model of a married couple with a single income earner. The corollary of this proposition is that more and more families consist of two working partners or are headed by single parents. Table B.8 shows how the distribution of the Australian population between selected types of family structure has changed from 1990 to 1998.

The data presented in this table do not fully support the ‘accepted wisdom’ about changes in the nature of the Australian family. The main difference lies in the fact that, as a proportion of the total number of families, the number of two income families has remained relatively constant. While the data support the hypothesised decrease in the importance of single income couples, this trend appears to be more correlated with an increase in the representation of single parent families (employed and unemployed).

The rising incidence of one-parent families within an ageing population raises important questions regarding future income support requirements; this is because, according to one measure of poverty, elderly persons and one-parent families are the two income unit types most likely to live below the poverty line (ABS 1998a).

In discussing labour force participation rates, some attention must also be devoted to understanding decisions to leave the labour force. The high rates of unemployment that have prevailed in recent times, combined with the increasing coverage of superannuation, have been cited as factors behind the increasing frequency of early retirement⁵ (voluntary and involuntary) decisions.

Table B.8 Australian families by type of family structure and employment status (1990–1998, per cent^a)

Couples single income ^b	25.6	24.0	21.8
Couples double income	41.6	40.0	40.7
Couples unemployed	0.3	0.8	0.6
Single parent employed	4.0	5.5	6.7
Single parent unemployed	0.5	1.0	1.2
Other ^c	28.0	28.7	29.0
Total	100.0	100.0	100.0

^a Percentage of the total number of families. ^b Couples where one spouse is either unemployed or not in the labour force. ^c Includes couples not in the labour force, single parents not in the labour force and ‘other’ families.

⁵ Traditionally thought of as the age at which contributory retirement funds (for example, superannuation) can be first accessed i.e. 55 years old in Australia.

Figure B.1 shows that early retirement has become an increasingly common option for males during the 1990s. Females, by contrast, appear to have postponed their retirement date somewhat during the same period. In cumulative terms (not shown in figure B.1), 78 per cent of male and 97 per cent of female retirees surveyed in 1997 had already retired by the time they reached the traditional retirement age.⁶

According to an ABS survey of early male retirees (Cat. no. 6238.0), their decision was motivated, in the majority of cases (81.4 per cent), by personal reasons, such as ill health or the preference for leisure. However, early retirement decisions would normally be expected to take into account economic factors as well, such as the probability of retaining or finding a job, and the net benefits associated with remaining in employment. Gruber and Wise (1997) have shown that the decision to retire early was clearly linked, in some OECD countries, to the availability of social security provisions (including unemployment benefits) before the official retirement age, and to the implicit rate of tax on income earned in the years following the early retirement age (i.e. taking into account the reduction in pension payments).

Given the projected decline in the share of working age persons in Australia in the next century, it would be of interest to examine the nature of the incentives at work in the area of early retirement decisions. Specifically: (i) is the incidence of early retirement related to the availability of social security provisions or superannuation monies? and (ii) what is the magnitude of the implicit tax on earnings of persons who choose to work beyond the early retirement age?

A separate issue arises in regard to compulsory⁷ retirees: according to the ABS survey already mentioned, about a third of these persons would have liked to continue to work full-time. It would thus be of interest to estimate the loss of productive capacity imposed by compulsory retirement. Lazear (1982, reported in Kessler 1989) has proposed the hypothesis that compulsory retirement mechanisms and associated pensions act as form of socially acceptable severance pay. Such an arrangement enables firms to improve productivity by replacing workers whose ratio of wage to marginal product has become high (older workers) with workers for whom it is relatively low (younger workers). Hence, if the desirability of encouraging continuing employment of older workers in Australia were examined, it would be important to verify the existence and significance of wage/productivity differentials between workers belonging to various age groups. Such differentials

⁶ Defined in terms of old age pension eligibility i.e. 61 years for females and 65 years for males.

⁷ While there is no statutory retirement age in Australia, compulsory retirement arrangements are still in force under some awards.

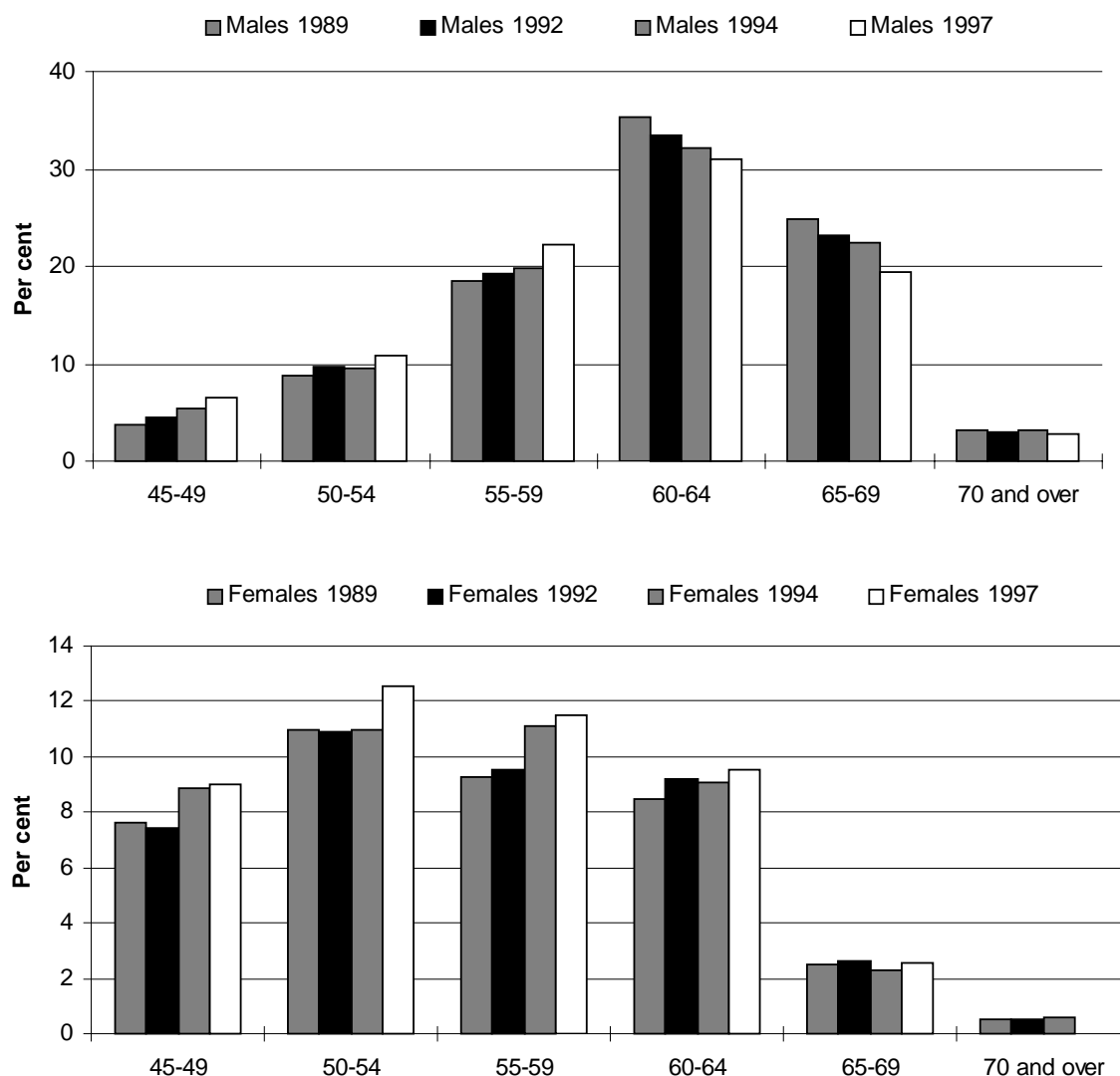
may also prove to be an explanatory factor in the increasing incidence of early retirement, given that a fraction of older workers choose to retire early as a result of retrenchment.

Labour supply

Changes in the labour force are only an imprecise reflection of changes in the supply

Figure B.1 Retirees from full-time work, aged 45 and over: percentage by age of retirement and by sex, 1989–97

subtitle



^a Males and females deemed to have retired before the age of 45 are not included, hence total percentages for each year and sex are not equal to 100 per cent.

Data source: ABS (*Retirement and Retirement Intentions*, Cat. no. 6238.0, various years).

of labour to an economy. This is because the effective supply of labour services depends not only on the number of people in the labour force, but also on the proportion of workers in employment and on the number of hours that they work.

From 1989 to 1997, the total annual number of hours worked in Australia has increased by an average 1.06 per cent per year⁸ (ABS 1998b). This overall increase in labour hours is the net result of a number of distinct trends, however. They are, as noted by Borland (1997):

- an increase in share of part-time employment;
- an increase in proportion of persons working more than 49 hours per week; and
- an increase in proportion of persons in casual employment.

The first and third of these trends affect the female component of the employed population proportionally more, given their greater relative reliance on this form of employment; in 1996, 50 per cent of females worked between one and 34 hours per week, while the equivalent statistic for males was only 20 per cent. However, in absolute terms, more males than females work part-time and as casuals.

Apart from the ‘intensity’ of work, measured in hours, the difference between effective and potential labour supply to the economy arises from the existence of unemployment. As unemployment is jointly determined by labour demand and labour supply factors, it will be discussed separately in section 4.3 below.

Labour productivity

Even in the event that an economy is faced, through a combination of the factors outlined above, with a decrease in quantitative labour supply, it may still be capable of sustaining output growth if each hour worked is more productive. Labour productivity depends on four main elements:

- the stock of human capital;
- the stock of physical capital;
- technology; and
- economic efficiency.

The first element refers to what may be thought of as ‘labour quality’. A better-trained and better-educated workforce is able to produce more goods and services, other things equal. Empirical evidence regarding the changes in labour quality in Australia is mixed: while a comparison of the 1991 and 1996 censuses reveals a

⁸ This is in spite of a slight reduction in the average number of hours worked.

growth in the proportion of Australians aged 15-64 holding post-school qualifications — from 40.8 per cent to 42.3 per cent — this proportion is subject to non-negligible variation from one year to the next, possibly in response to changing economic conditions.⁹ Nevertheless, the general view appears to be that Australian workers have achieved an increasing level of educational attainment and training in recent times (for example, IC 1995, Borland 1997, NCVER 1998), which has resulted in improvements in labour quality (Karmel 1994). Whether these improvements in quality are translated into greater productivity depends on the changes occurring simultaneously in the capital stock, the state of the technology, and economic efficiency. So, in a sense, increases in labour productivity can be exogenous (caused by changes in labour complements like capital) or endogenous (when the quality of labour itself is increasing). In practice, it is not always easy to differentiate between these sources of greater labour productivity.

If real output per hour worked is used to measure labour productivity, the productivity of the Australian workforce has increased at an annual average rate of 1.8 per cent between 1989 and 1997 (ABS 1998b and 1998c).

An alternative view of labour supply growth in terms of quantity and quality is provided by Borland (1997). His measure of aggregate labour supply, based on ‘constant quality units’, combines both quantity and quality effects into a single measure. That is, if the number of hours worked remains constant but their quality improves, the effective aggregate labour supply to the economy is deemed to have increased. According to his calculations, population growth accounted for 60 per cent of the growth in the aggregate (effective) labour supply between 1966 and 1996 in Australia. Improvements in the quality of labour contributed another 30 per cent, with the remainder coming from changes in labour force participation rates and average hours worked. Thus, if these proportions were to persist in future, the projected slow-down in Australia’s rate of population growth would affect its labour supply negatively; on the positive side, the full force of this impact would be cushioned by continued improvements in labour quality.

B.4.2 Demand side issues

The ageing of the population is likely to influence both the volume and composition of the demand for labour in coming decades. For instance, the demand for the output of some services sectors can be expected to increase, as more health and care-related services are required by the population. As a result, the derived demand for labour emanating from these sectors will be directed at a number of industry-specific skills

⁹ As people postpone their entry into the labour force during a recession.

for example nurses, doctors, carers and so on. Conversely, a reduction in demand for the output of youth-oriented sectors such as compulsory education will affect such professions as school teachers and counsellors. In some cases, however, a changing demand may simply see the same set of skills applied to a different area, for instance when a high school principal becomes a TAFE administrator, or when a home loan adviser becomes a retirement income specialist.

At labour market level, the differential growth in skill requirements may affect wage relativities in the economy, with employers subsequently responding in a variety of ways: substitution between capital and labour, changes in casualisation, recourse to off-shore production and so on.

B.4.3 Unemployment

The volume of unemployment (and the associated unemployment rate) will be a major determinant of the economy's capacity to absorb the effects of ageing; this is because economic dependency ratios (as opposed to demographic ones) depend on how many persons are actually *working* (not just of working age or in the labour force) to support the non-working segment of the population.

In a macroeconomic sense, any effect of population ageing on overall unemployment will necessarily be a reflection of changes affecting aggregate supply and aggregate demand. Given the uncertainties outlined previously concerning the magnitude and direction of changes in consumption, investment and productivity — let alone external factors — it is not possible to predict *a priori* how unemployment will be affected by ageing. Such a prediction could only be based on detailed modelling of both the macroeconomy and the labour market.

It is possible, however, to distinguish some ageing-related labour market phenomena which may be influential in determining the volume of frictional and structural — though not cyclical — unemployment. They are listed below:

- with the reduction in the representation of younger workers in the labour force, the amount of frictional unemployment in the economy should decrease. This is due to the fact that younger workers (especially those looking for their first job) tend to spend more time on job search;
- while older workers are generally less likely to be unemployed than younger workers, the incidence of long-term unemployment (mainly due to structural reasons for example skill obsolescence) in older age groups is higher than in younger ones. In this context, population ageing could result in an increase in the number of labour-days lost to unemployment each year, even if the overall number of unemployed workers diminished; and

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- if ageing is accompanied by an expansion of lifelong learning and (re)training (see section 5.1 below), both frictional and structural unemployment may decline as a result of increased labour flexibility. This trend could only be accentuated if newly-acquired qualifications became standardised and, hence, more portable.

Another relationship between population ageing and the labour market can occur via cohort¹⁰ size effects. It has been hypothesised (Schmidt 1993) that persons born in a proportionally large cohort (for example the ‘baby-boomers’) are at greater risk of unemployment than those born in a proportionally small one, because of the relative abundance of workers in their age group, and because of the inability of the age-earnings profile to reflect completely these changing labour endowments (due to union activity for instance). In this event, an ageing population could experience less youth unemployment and more unemployment of older workers. This trend could be accentuated if, as suggested by Winkelmann and Zimmermann (1993), labour mobility declines with age.

Beyond unemployment numbers, the forecasting of unemployment *rates* in coming decades is a far from precise exercise, given the uncertainty governing labour force participation rates. Ultimately, however, it is the combination of unemployment rates and participation rates which will determine economic dependency ratios, themselves a likely determinant of growth in GDP per capita.

For this reason, it is of some interest to be able to forecast the influence of ageing on the demand and supply of labour, and hence on unemployment rates. With respect to the latter, special attention could be paid to the existence of age differentials in terms of earnings, labour productivity and unemployment rate.

B.5 Ageing — implications for selected services

Irrespective of the consequences of ageing on overall public finances (see section B.3.4), it is almost certain that governments will continue to provide a large range of public services, as well as some private ones, well into the next century. However, an ageing population will require that all levels of government adjust their policies to reflect this demographic change, both in terms of the quantity and quality of the services provided. In the next four sections, some implications of ageing for the provision of education and training, health, family services, and housing and transport are examined.

¹⁰ A group of people born in a given year or in a given period.

B.5.1 Education and training

An ageing population will not require as much delivery of primary and secondary education as a younger one. Instead, increasing emphasis on lifelong learning and training is predicted to increase the demand for tertiary and vocational education (Dobson and Sharma 1998), as workers seek to maintain their skills in a more segmented and less predictable labour market. Such a trend would yield social — as well as private — benefits, as a growing stock of human capital may enable the economy to absorb the effects of ageing without experiencing a reduction in output and income per capita. However, international evidence on the relationship between education and economic growth is somewhat inconclusive, ranging from strongly positive to virtually insignificant (see EPAC 1993 for a survey of the literature).

Government intervention may be forthcoming to facilitate access to lifelong education. This could involve the provision of alternative sources of income for workers ‘between jobs’ who want to take this opportunity to retrain. To this end, the transfer of some resources away from traditional education to lifelong education may be required. This could pose a problem given that international experience shows that the existence of fewer children often results in a concentration of spending on this group, without significant savings being achieved (World Bank 1994, p. 35). In other words, instead of a widening of human capital investment to all age groups, ageing leads to a deepening of capital investment in the young.

Even if savings were achieved in the compulsory education sector, they may not be sufficient to fund an expansion of the vocational education and training sector. In 1995-96, public expenditure per student enrolled in vocational education and training was 46 per cent higher than expenditure per school student (ABS 1998a). Thus, if delivery shifted from early education to lifelong education, only about half of a vocational education and training place could be created for each school student that ceased to be funded.

On the positive side, there is greater scope for economies of scale in the delivery of vocational education and training. This is because it tends to be less labour-intensive and unit cost savings are thus more readily achievable through, for instance, the on-line delivery of distance education.

A further avenue for controlling government expenditure in this area may lie with increased contributions from the beneficiaries of lifelong education (employees and employers). Some of the issues bearing on the question of public versus private financing of education are:

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- the expected private benefits from participation (for example, increase in lifetime earnings of a student/employee, increase in labour productivity for the employer);
 - the optimality of employer-funded training supply in the presence of production externalities;¹¹
 - the optimality of student-funded training consumption in the presence of liquidity constraints; and
 - the expected social benefits linked to a higher level of educational attainment of the overall population.

It appears, overall, that issues of financing, efficiency and equity are raised by the question of the provision of lifelong education. Accordingly, the following points could be examined by the conference: (i) the impact on government expenditure of the re-allocation of spending per student from traditional to lifelong education; (ii) the distribution of private and external costs and benefits generated by lifelong education; and (iii) the likelihood of market failure in the provision of lifelong education.

B.5.2 Health

Between 1975-76 and 1990-91, real health expenditure in Australia increased by 31 per cent or 1.8 per cent per annum. Of this yearly increase, only 0.5 percentage points were due to the effects of ageing. The rest was attributable to non-age related increases in the volume and cost of the health services provided (EPAC 1994). While there have undoubtedly been improvements in the quality of the health services consumed in the last few decades, it appears likely that rising health expenditure is also linked to rising expectations in terms of quality of life. The fact that health care expenditure has exhibited a long-term tendency to increase more than proportionally to real income further points to attitudinal changes concerning spending on health (EPAC 1994, p. 37).

From the facts outlined above, it seems clear that an ageing population will require even greater spending on health services. However, predicting trends in public health expenditure over long periods is difficult, as many developments, such as breakthroughs in medical research and trends in private health insurance, cannot be known.

¹¹ Chapman and Stemp (1992) have argued that firms may deliver a sub-optimal amount of training if production externalities arise from training (for example, when other firms are able to benefit from one firm's training of its employees).

Possible questions for the conference to address are: (i) the balance of needs/expenditure between the young/old and the old/old; (ii) the balance of funding between private and public sources; and (iii) the relative contributions of ageing, real income, technology, and consumer preferences to the growth in health expenditure.

B.5.3 Family services

As the balance of population changes from young to old, and the average family size decreases, a re-orientation of public expenditure from child care to elderly care would appear to be appropriate. However, this conclusion may be invalidated as a result of some of the societal changes already mentioned, such the growing incidence of one-parent families, and the increasing labour force participation of women. These changes may actually increase rather than decrease the demand for formal child care in the community; between 1984 and 1996, the proportion of all children receiving formal child care has increased from 12.4 per cent to 20.1 per cent. In the vast majority of cases, the placement of these children in care was attributed to work-related reasons (ABS 1998a).

Other factors are also likely to influence the volume of family services expenditure by governments in future. First, it is unknown to what extent elderly people will continue to act as informal child carers: while the ratio of elderly people to children will increase in time, the former group may also be less likely to provide informal care, if living alone. At present, the percentage of elderly persons living alone is low in Australia (around 20 per cent), which means that a large proportion of the child care burden is borne privately. If, however, this percentage were to increase to levels observed in other OECD countries (for example 35 per cent in the UK), child care expenditure by governments would need to increase commensurately.

Second, the number of elderly parents not receiving informal care from their offspring is likely to grow. This is mainly due to the fact that, with ageing, the number of women (traditionally the main providers of home care for the elderly) who are of an age to support elderly parents is diminishing in proportion to those aged 80 and over, the age group requiring the most care. Furthermore, if present trends persist, an increasing proportion of these women will be in the labour force and thus less able to provide elderly care. One implication of this trend is that the proportion of old people living alone or in hostels/nursing homes is likely to increase more than proportionately to the percentage of elderly people in society.

The net effect of the opposite forces influencing demand for, and expenditure on, family services is difficult to predict. It is therefore of some interest to attempt to formalise and quantify these influences, with a view to suggesting how some

emerging problems may be avoided. Possible areas to be addressed include: (i) expenditure projections for child and elderly care; (ii) the extent to which one form of expenditure may be replaced by the other; (iii) the interplay between the child care burden and women's labour force participation; and (iv) the interplay between the elderly care burden and women's decision to leave the labour force.

B.5.4 Housing and transport

The slowing down of Australia's rate of population growth in the next 50 years suggests that the demand for residential housing is likely to experience a long-term flattening out. However, several factors are likely to counteract this trend:

- the average size of new private houses approved has increased from 178 square metres in 1986 to 189 square metres in 1990 to 212 square metres in 1997 (ABS 1998a);
- the size of the average family/household in Australia is declining, with the result that proportionately more housing has to be built to house the same number of persons as before; and
- the demand for net additions to the housing stock (for example on city fringes) may be replaced to some extent by increased demand for replacement investment (for example, knocking-down existing detached houses and building townhouses in their place).

Apart from a change in the quantity of housing demanded, a change in the type of housing required is likely in decades to come. For instance, anecdotal evidence points to the fact that elderly urban-based Australians are increasingly moving out of the 'typical' Australian detached house and into medium-to-high density housing (townhouses, flats). This hypothesis is supported by the available data on occupied private dwellings: from 1990 to 1996, the proportion of houses declined from 80.7–78.6 per cent, while that of semi-detached/townhouses increased from 7.1–8.1 per cent (ABS 1998a).

If this trend was to persist, an increase in the average age of the population would have two repercussions:

- a decrease in the demand for 'traditional' residential housing; and
- an increase in the demand for medium-to-high density housing.

Assuming that the density of housing is inversely related to the distance from the city center, these changes may imply the progressive depopulation of outer suburban areas and the overcrowding of inner suburban areas. This could entail both advantages and disadvantages from the point of view of governments:

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- the realisation of economies of scale in the provision of housing-related infrastructure (sewerage, roads, utilities);
 - a reduction in expenditure on public housing (due to the ready availability of cheap residential dwellings on the fringes of the city); and
 - an increase in expenditure needed to rehabilitate residential sites (for example, to convert them to agricultural/recreational/industrial uses).

It is clear that the above predictions are highly conditional upon a number of assumptions. Furthermore, they may not apply to the whole of Australia since patterns of intra-State and inter-State migration differ considerably between regions and States.

To a large extent, changes in the provision of transport services will be a function of changes affecting housing. This is because a 'suburbanised' or low-density population requires transport services of a quite different nature than a medium-to-high-density one. If the expansion of suburbs was eventually halted and the population became increasingly concentrated, transport policies would need to heed that fact. This may mean, for instance, that in cities with overcrowded inner city roads, a switch to light rail transport may become inevitable. Furthermore, cities with currently large outer suburban populations should consider curtailing further investment in costly heavy rail or road extensions which may quickly become redundant.

In the bush, the perennial problem of transport between isolated centres may become more acute, rather than less, as the rural population diminishes. With population density falling, it may become uneconomical for private concerns to continue offering transport between rural townships. This may run contrary to equity in access to health, education and care principles, which would mean that greater government involvement in the provision of transport services may become inevitable.

Finally, the delivery of transport services may need to be radically altered in response to the loss of physical mobility associated with population ageing. It may be desirable, for instance, to move away from fixed destination transport modes (for example trains and trams) to more flexible modes such as taxi-like bus services, that can pick up small groups of people at home and carry them to a number of different destinations.

In the light of the above overview of housing and transport matters, the following problems could be usefully investigated in a conference session: (i) the impact on housing and transport demand of the ageing/internal migration/urbanisation nexus; (ii) the adequacy of various modes of transport and transport delivery for an ageing

population; and (iii) the implications of ageing for the quantitative and qualitative demand for housing stock (new/renovated/community).

B.6 Conclusion

As is apparent from the preceding sections, the choice of ageing as the central demographic change issue to be addressed by the conference is likely to prove a fruitful one. The ageing of its population is a problem Australia will inevitably have to confront in the coming decades, which will have significant yet not always easily discernible consequences in many and varied areas of economic activity. In this paper, some of these consequences have been canvassed. The main issues raised — and the lines of investigation suggested — in the process are recapitulated below.

B.6.1 Macroeconomic implications of ageing

1. Implications of ageing for the saving and consumption performance of the Australian economy.
2. Impact of ageing on Australia's current account balance, via changes in saving and investment, and via changes in the balance between private and public saving.
3. Impact of ageing on Australia's rate of growth in per capita real GDP.
4. Forecast of the effects of rising social expenditure on the fiscal balance and on public debt.
5. Issues arising from the public expenditure implications of ageing include: (i) the need to scale back pension payments and coverage; (ii) the need to extend the reach of superannuation through compulsion or the provision of incentives; and (iii) the inter-generational equity implications of various pension/superannuation scenarios.
6. The need for taxation reform, in particular for an expansion of the tax base.

B.6.2 Labour market implications of ageing

7. Implications of the rising incidence of one-parent families within an ageing population for future income support requirements.
8. Influence on early retirement decisions of the availability of social security or superannuation monies.
9. Calculations of the magnitude of the implicit tax on earnings of persons who choose to work beyond the early retirement age.

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10. The attitudes of firms towards hiring older workers, with special reference to the existence of wage/productivity differentials between younger and older workers.
 11. The impact of ageing on the demand (by occupation, by age group, and so on) and supply of labour (using forecasts of participation rates, labour productivity, quality indices, and so on), and hence on unemployment rates. With respect to the latter, special attention could be paid to the importance of wage/productivity/mobility differentials in explaining differential unemployment rates by age and gender.

B.6.3 Implications of ageing for the provision of education and training, health, family services, and housing and transport

12. Education-related issues include: (i) the impact on government expenditure of the re-allocation of spending per student from traditional to lifelong education; (ii) the distribution of private and external costs and benefits generated by lifelong education; and (iii) the likelihood of market failure in the provision of lifelong education.
13. Health-related issues include: (i) the balance of needs/expenditure between the young/old and the old/old; (ii) the balance of funding between private and public sources; and (iii) the relative contributions of ageing, real income, technology, and consumer preferences to the growth in health expenditure.
14. Family services-related issues could include: (i) expenditure projections for child and elderly care; (ii) the extent to which expenditure on the former may be replaced by expenditure on the latter; (iii) the interplay between the child care burden and women's labour force participation; and (iv) the interplay between the elderly care burden and women's decision to leave the labour force.
15. Housing and transport-related issues include: (i) the impact on housing and transport demand of the ageing/internal migration/urbanisation nexus; (ii) the adequacy of various modes of transport and transport delivery for an ageing population; and (iii) the implications of ageing for the quantitative and qualitative demand for housing stock (new/renovated/community).

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C Suggestions for further research

Conference participants suggested avenues for further research, including:

- the future of elderly care;
- ageing and the future of saving;
- retirement behaviour;
- the superannuation industry;
- ageing, the labour market and productivity;
- the relative income/welfare situation of older people;
- ageing and education and training;
- health and aged care funding; and
- the need for longitudinal data.

The future of elderly care

1. How will the changing nature of kinships (*de facto*, divorce, remarriage, step-parenting) affect the provision of informal care in the future?
2. What mix of the following three broad policy options is appropriate for the future support of an ageing population?
 - (a) The withdrawal of public assistance and the enforced reliance on the provision of care by family members or the purchase of market-based services
 - (b) The relieving of informal caregivers of responsibility by providing alternative forms of care
 - (c) The support of informal caregivers through the development of shared care approaches in which state, community and family work together in partnership
3. If mobile services are the key to supporting the aged, what specific problems will regional/rural areas experience? Can these services viably operate in such areas? What are appropriate aims for policies in terms of the elderly in remote areas,

where the closure of facilities inevitably causes great disruption through relocation?

4. Will the redevelopment of middle and inner suburbs offer an opportunity for greater choice and support to retired baby boomers? Will it allow 'ageing in vicinity' if not 'ageing in place'?

Ageing and the future of saving

1. How will ageing affect the national saving rate? Will ageing require a greater saving effort or a reduction in that effort?
2. What is the saving/consumption behaviour of retirees, who tend to be 'asset rich/income poor' on the whole? What role do relatively high levels of house ownership play in that behaviour? Is the life cycle theory of saving verified for Australia?
3. What are the macroeconomic implications of the increased savings generated by superannuation, in terms of growth, income levels, consumption, saving and other variables? Does the destination of those savings (overseas, domestic) matter and to what extent?
4. What are the economic prospects of Generation X? Will this generation be able to save? Will they be able to buy dwellings? Will their wealth be mostly held in non-housing assets?

Retirement behaviour

1. How does the tax and superannuation legislative framework affect retirement incentives? Specific issues such as the impact of the preservation age, lump sum payments, and non-compulsory super for the self-employed require detailed analysis using longitudinal and income and assets data.
2. What factors influence the retirement decision, both for early and late retirement?
3. How could governments promote a gradual disengagement from the workforce, rather than an abrupt termination?
4. Retirement modelling could be improved by incorporating a 'phased' retirement process, rather than assuming a 'sudden and complete' retirement event.
5. The growth of part time employment among older workers has been significant since the 1991-92 recession. More research is needed on this little studied group.
6. Early retirement is the issue that offers the most opportunities in terms of adjusting to an ageing population. It is also worth examining for redistributive

and labour market reasons. Early retirement issues that governments need to investigate are: (i) the raising of the compulsory preservation age; (ii) the modifying of access to lump-sums; and (iii) the eligibility criteria for disability support pensions.

7. Where will Generation X choose to retire, given their current high mobility? They may not have strong ties to any particular location. This will influence the nature and extent of the support they require in future.

The superannuation industry

1. How can governments and the superannuation industry enhance the investment choice of savers, and promote greater competition within the industry?

Ageing, the labour market and productivity

1. How does labour productivity vary? How does labour force participation behaviour change over the age range?
2. Does work performance diminish as one approaches retirement age or is retirement a case of institutional age discrimination? Answers to this question would provide some insight into how increased labour demand flowing from ageing may influence the productivity growth path.
3. Is age discrimination affecting older workers a real concern?
4. What factors drive the labour supply decisions of the elderly?
5. Will the extra years of predicted healthy life result in more work or more leisure?
6. Will the shape of the productivity age profile change under demand–supply pressures?
7. How does the ageing process affect total productivity?
8. Increasing levels of wealth should lower the supply of labour in future (through the work–leisure trade-off). On the other hand, a lower labour force will lower unemployment and create labour shortages, which should push wages up, increasing incentives to enter or remain in the workforce. What is the likely net effect of these two trends in the labour market? More quality data and research, particularly longitudinal data and analysis, are required to enable quantification of these interacting tensions.
9. In the context of the National Strategy for An Ageing Australia, it is desirable to examine employers' attitudes to older workers, the adequacy of training programs for older workers, and broader community attitudes. Results and

recommendations from the present conference should also inform the content of the National Ageing Strategy.

The relative income and welfare situation of older people

1. The influence of both social and economic trends on the relative position of older people requires improved information about the dynamic processes that are associated with these developments. This would best be achieved through a longitudinal survey.
2. To capture the diversity of outcomes for older people, it is necessary to use a broad range of indicators to monitor trends. The concept of economic resources used in analysing trends in living standards is of fundamental importance. Future analysis should pay particular attention to modelling and measuring comprehensive income measures.
3. What does it mean to be old? People, when asked, do not think themselves old, and do not want to be linked to ageing stereotypes. They may even refuse services on offer as a way of differentiating themselves from the 'burden' of the old. More research is needed concerning the attitudes of older persons.

Ageing and education and training

1. How do new entrants evaluate their lifetime returns to education? Research estimating the impact of changes in relative cohort size on educational participation in Australia is required.
2. What is the role of job tenure in firms' hiring decisions? Which factors affecting the hiring probabilities of older workers? Such research would be useful in identifying barriers to the employment of older people.
3. How can informal training be promoted and made more effective? Research is needed not solely on formal education and training, but on informal training as well, if we are interested in issues of workforce quality.
4. Along with the benefits of greater educational attainment, what are the costs? Also, what are the broader aims of educational policy for young persons and adults?
5. What policies might the recent fall in employer funded training?

Health and aged care funding

1. The factors affecting within-cohort health expenditure have the most influence on health spending (much more influence than ageing). But how do they change through time? And how are they influenced by policy?
2. The relationship between growth in GDP and growth in health expenditure is not well understood. Can we expect the latter to grow faster, slower or at about the same as rate that of the former?
3. Should governments change age care expenditure systems from pay-as-you-go to fully funded, as Howe and Sarjeant propose? In other words, should we prepare now for future liabilities, possibly through a payroll levy similar to superannuation?

The need for longitudinal data

1. Many participants stressed the need for quality longitudinal data to inform both ageing research and policy. Such data may shed light on early retirement behaviour, such as leisure valuation and the role of employers. Australia lags significantly behind other countries in terms of the availability of such a dataset.