A Greater Australia:

Population, policies and governance

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committee for economic development of australia

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Editors

Jonathan Pincus and Graeme Hugo

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About this publication
A Greater Australia: Population, policies and governance

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About CEDA

CEDA – the Committee for Economic Development of Australia – is a national, independent, member-based organisation providing thought leadership and policy perspectives on the economic and social issues affecting Australia.

We achieve this through a rigorous and evidence-based research agenda, and forums and events that deliver lively debate and critical perspectives.

CEDA's expanding membership includes more than 900 of Australia's leading businesses and organisations, and leaders from a wide cross-section of industries and academia. It allows us to reach major decision makers across the private and public sectors.

CEDA is an independent not-for-profit organisation, founded in 1960 by leading Australian economist Sir Douglas Copland. Our funding comes from membership fees, events, research grants and sponsorship.

CEDA – the Committee for Economic Development of Australia
Level 13, 440 Collins Street
Melbourne 3000 Australia
Telephone: +61 3 9662 3544
Fax: +61 3 9663 7271
Email: info@ceda.com.au
Web: ceda.com.au

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committee for economic development of australia

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Foreword

It is with pleasure that I present CEDA's latest major research report, A *Greater Australia: Population, policies and governance*.

This publication is a culmination of two years of work and draws together 17 expert contributions from across Australia. CEDA has undertaken this project, under the editorship of Professors Jonathan Pincus and Graeme Hugo, to provide considered discussion on the future population of Australia, dispel myths, highlight constraints and make policy recommendations.

Population is a topic that receives much attention, but comment and debate is not always backed by rigorous analysis.

Public unease with the population debate is often centred around government policy or planning failures, from inadequate service provision to poor infrastructure planning. This highlights the importance of government policy being developed from robust discussions and a strong foundation of facts.

The key policy recommendations CEDA is making as a result of this publication are that:

The Federal Government should establish an Australian Population Council (APC), to coordinate government service delivery nationally in response to population changes. The APC should be responsible for annual projections of demographic change for the purpose of ensuring smooth State and Federal Government service delivery.

In particular, the focus should be on the areas of infrastructure delivery (roads and community infrastructure), education and health requirements. This would allow more proactive policy responses to population changes as they emerge, rather than reactively.

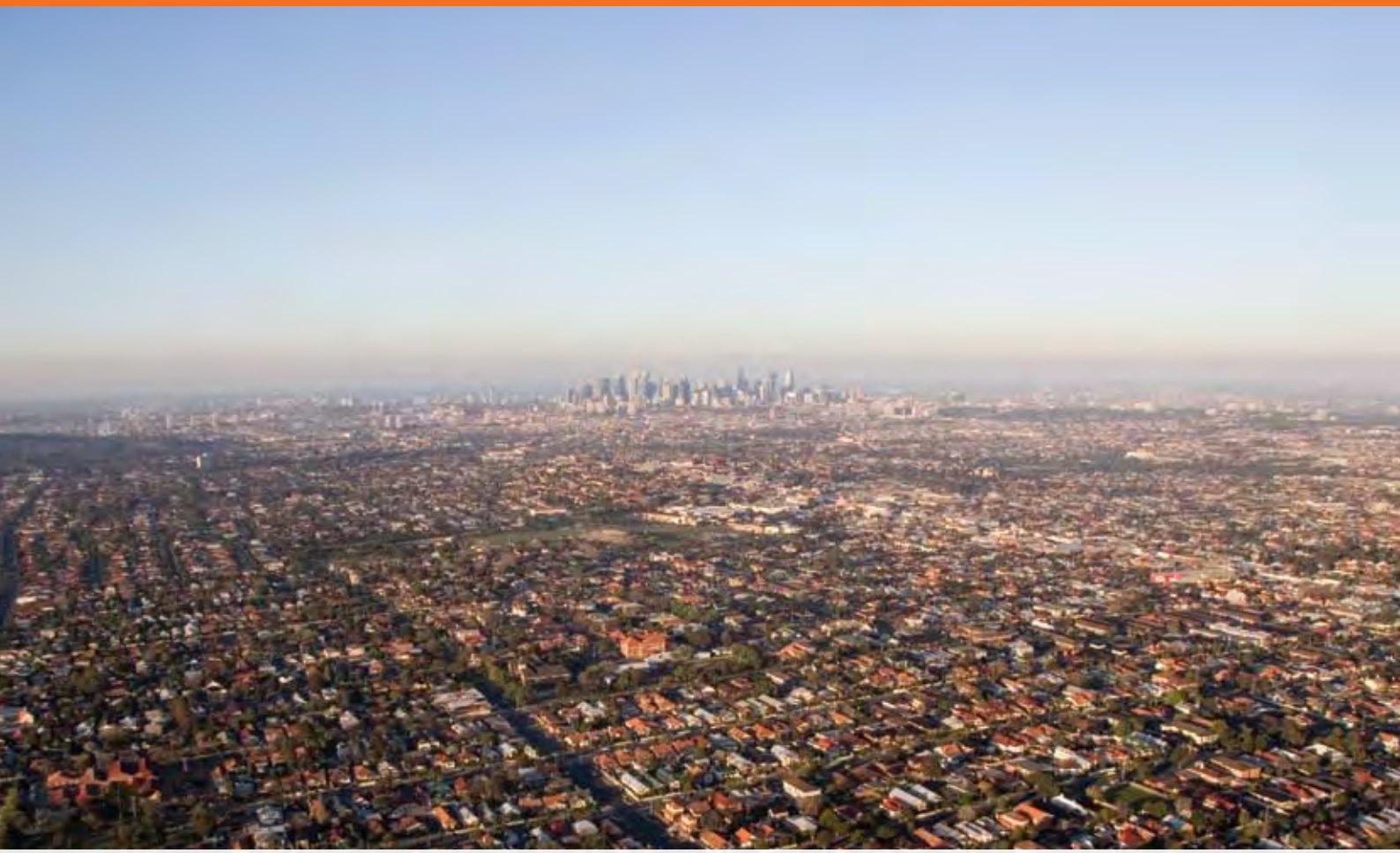
In addition, the Federal Government should supplement the Intergenerational Report, which examines the ramifications of an ageing population, with a Future Generation Report, which examines the participation, education and training solutions that could mitigate the negative elements of Australia's current age structure. For example, examining ways of ensuring longer workforce participation.

The nation's leaders must not shy away from having a robust discussion around Australia's future demography and its implications for public policy. CEDA hopes this publication will provide an important resource in driving that discussion.

I would like to thank the editors and all the contributing authors for their work towards this publication.

Ultimately the greatness of Australia as a place to live and work will be determined by the policies underpinning population change. CEDA hopes this document will contribute to making a greater Australia.

Professor the Hon Stephen Martin
Chief Executive
CEDA



Introduction

Jonathan Pincus and Graeme Hugo

Jonathan Pincus is a member of the Policy and Research Council of CEDA. Jonathan is Visiting Professor of Economics at the University of Adelaide, and an independent economic researcher and consultant. Previously, he was principal adviser, research at the Productivity Commission; Professor of Economics at Adelaide University; Professor of Economic History at Flinders University; and a researcher at the Centre for the Study of Public Choice (Virginia, USA). He is president of the SA Branch of the Economic Society of Australia, and Fellow of the Academy of Social Science in Australia.

Professor Graeme Hugo is an ARC Australian Professorial Fellow, Professor of the Discipline of Geography, Environment and Population and Director of the Australian Population and Migration Research Centre at the University of Adelaide. Graeme has published over 300 books, scholarly journal articles, chapters, conference papers and reports. In 2002 he secured an ARC Federation Fellowship over five years, and in 2009 he was awarded an ARC Australian Professorial Fellowship. He is chair of the Demographic Change and Liveability Panel of the Ministry of Sustainability, Environment, Water, Population and Communities and was appointed to the National Housing Supply Council in 2011.

Responding to the results of its Big Issues survey of members, and wishing to contribute usefully to an otherwise rather unsatisfactory public debate, in 2010 CEDA, with Dr Michael Porter as Research Director, started planning a major project on Australia's population trends, challenges and associated policy choices. The first output was Jonathan Pincus's essay, *A population policy for Australia* in *CEDA's Economic and Political Overview* (EPO) 2011. The present volume is the major end product.

It draws on CEDA's expertise and networks as an independent, non-aligned organisation providing thought leaderhsip, to bring together the best ideas on the various dimensions of a growing, diverse and ageing population. The editors asked experts from a range of disciplines and perspectives to paint a far richer and well-researched picture than was being offered in the rather limited political debate conducted in Australia.

Governments can and should use a wide range of policy instruments to optimise the consequences of changes in Australian demography. Through a suite of sensible social, environmental and economic measures, we can ensure that population growth is accompanied by considerable improvements in the Australian standard of living. CEDA's purpose here is to provide expert and objective evidence and argument, to inform and stimulate the population debate.

Demography and politics

The population of Australia was estimated at 22.8 million in February 2012, making it the 51st most populous country in the world. With a settlement pattern dominated by six major cities, Australia is one of the most heavily urbanised countries in the world. And, as the Panel Report to Minister Burke on Demographic Change and Liveability, chaired by Graeme Hugo, noted:

> *The population of no other medium sized or large country in the world is as influenced by international migration as Australia:*
>
> - *A quarter of the resident population were born overseas;*
> - *Another quarter were Australian-born with an overseas-born parent(s);*
> - *Almost one million were temporarily present at 30 June, 2009; and*
> - *Around one million Australians are living in another country.*

During 2009 and 2010, the Treasury and the Australian Bureau of Statistics (ABS) each released projections that showed the population expanding by more than half, to around 36 million in the coming four decades. This implied a slightly slower rate of population growth (1.2 per cent per annum) than was experienced in the previous four decades (1.4 per cent per annum).

Unfortunately, these relatively modest population projections gave rise to an "anti-growth" sentiment, and to concerns about a headlong rush towards a "Big Australia". It was claimed that 36 million people would be unsustainable, being greater than the country's "carrying capacity". These concerns were reinforced by the announcement that the level of net migration had reached 320,000 in the year ending March 2009, a record, and twice the rate of natural increase.

The importance of good policies

Immigration brings advantages, but it also carries or accentuates some problems – like crowding in the capital cities. Australians can gain from moderate levels of immigration that are supported by good settlement arrangements, and by an adaptable suite of good social, environmental and economic policies – policies that are desirable, whatever the level of immigration, and whatever the size of the population. Fears of crowded Australian communities reflect fears of poor policies, since there are many examples of countries and communities that have prospered with large populations and high population growth rates. The more flexible and adaptable the economy, and the better our government policy settings, then the more likely the benefits of immigration will spread widely throughout the Australian population. (CEDA is of course not alone in its advocacy of better policies: the work of the Productivity Commission must be mentioned in this context.)

Moreover, there needs to be a feedback loop – if the Australian political system can cope well with the growth in population, then a larger population becomes more desirable. However, if the political system cannot cope well with a growing population, as has been widely asserted recently, then the rate of immigration should be lower.

The "barriers" to improved wellbeing arise mainly from policy and institutional restrictions, and not, in particular, from deficient water volumes or any insoluble problems of infrastructure provision. In particular, if we price infrastructure services fairly and efficiently, and facilitate the appropriate investment and associated finance, we can sustain and increase the average living standards of Australians.

The economics of population growth

By 2050, the Australian population will have increased substantially, and could well reach 40 million or more – barring catastrophes, and assuming a realistic rate of immigration – and it will be a significantly older population.

As a practical matter, population policy in Australia boils down to immigration policy. The great bulk of immigrants to Australia are not admitted under family reunion or humanitarian grounds, but chiefly for economic reasons: their presence should increase the wellbeing of the existing Australian population. Who gains and who loses from economic immigration is the focus of Chapter 4.1, by Jonathan Pincus and Judith Sloan.

The standard case for admitting moderate levels of "economic" immigration to Australia can be summed up this way: "economic" immigration greatly benefits the optional immigrants; it may bring overall benefits (or at worst does little harm) to the existing Australian population generally; but some sections of the existing population can be significantly disadvantaged, depending on how the related policies are handled.

However, the case for a larger immigration program may be understated. Most economic modelling of the effects of immigration ignores the possibility that a larger population would itself raise productivity (through economies of scale and scope), and may stimulate innovation. Countries with very low population growth can face major challenges and miss the flexibility from mobile injections of new migrant populations and a growing natural-born workforce. The relative youth, experience and diversity brought through immigration programs greatly enhances flexibility in a growing and changing Australia, an Australia with current city and rural densities far below successful and rich foreign economies.

A more dynamic and vital Australia can benefit from economies of scale and diversity, as well as the creativity and cultural opportunities that have characterised growing populations in many countries.

Demography

One of Australia's leading demographers, Peter McDonald, provides a magisterial discussion of the difficulties of projecting the size and composition of the Australian population (Chapter 2.1). McDonald advocates a stochastic or probabilistic approach, which strongly argues against the setting of population targets.

Please note that we have not allocated chapters to specific subgroups within the Australian population. The future trajectories of growth will differ between the various subgroups. This comment applies especially to the Indigenous population: see Box 1, which draws on the Sustainable Population Study chaired by Graeme Hugo. In addition, we did not ask our authors to focus on differences in the effects on subgroups that may arise from faster or slower population growth, or from changes in the policies discussed in this volume.

Box 1:The Indigenous population

The precise size, composition and distribution of the Aboriginal and Torres Strait Islander (ATSI) populations of Australia are unknown, and probably unknowable. ABS estimate has the current ATSI population at 563,000; non-ABS projections have this rising to about one million in 2040 – at twice the growth rate of the population generally. Indigenous population growth is currently held back by persistently high mortality rates. Although fertility rates have declined, they are still relatively high, due mostly to teenage fertility, and to the decisions regarding identity, made by children of Indigenous adults partnered with non-Indigenous persons. These population dynamics result in an age profile much younger than the Australian average: proportionately many more under 20, with countervailing deficiencies in the over-40s and, especially, in the over-55s.

Source: *Sustainable Population Study,* part 2.7.

The net inflow of migrants has dropped sharply since 2009. Reacting to the deteriorating economic conditions and to concerns about unrelieved pressure on economic and social infrastructure, the Federal Government indicated that it would aim at a lower rate of immigration. It reduced the quota for permanent "economic" entry under the points system and tightened the rules for the temporary entry of students (who often achieve permanent residency on completion of their studies). But there are no moves to reduce the humanitarian quota; limit family reunions further, or to restrict the rights of New Zealanders to settle in Australia.

The Australian Government felt bound by international commitments not to set a quota on the intake of immigrants with 457 visas (the temporary visa for skilled workers). Government can, nonetheless, tighten the rules for this and other visas, or delay their processing. However, there is continuing pressure from business and allied interests in the opposite direction, for a relaxation of the rules and for speedier processing.

In Chapter 2.2, Mark Cully and Laze Pejoski first outline the history of Australia's migration program, leading to an extraordinary opening-up to immigration. The liberalisation of flows of people, great as it was, did not fully match its opening-up to global trade

and capital flows. There have been recent changes in selection mechanisms, including selection by employers and State Governments (subject to the points system); and fluctuations in the number of foreign students (who frequently obtain permanent residence). The chapter outlines developments in the models to forecast immigrant flows, a difficult task.

People self-select into the pool of potential migrants; actual migrant flows depend on demand conditions, and on administrative rules, which Mark Cully and Laze Pejoski lay out. Compared with the existing population, immigrants are younger, better educated, and less likely to speak English at home. By 2050, Australian births will no longer exceed deaths: the natural rate of population growth will approach zero, and so net migration will be the only source of population growth. As a result, in the meantime, the size and composition of the Australian population will even be more heavily influenced by net migration.

Absorbing immigrants

Half of the Australian resident population were either born abroad or have at least one parent born abroad. How has this enormous inflow affected attitudes? Will popular opinion make impossible or support the continuation of past immigration policies? Andrew Markus (Chapter 3.1) provides an excellent overview of surveys of Australian attitudes towards immigration, and towards various immigrant groups. Markus shows that, among western countries, Australians (and Canadians) are the most receptive of immigrants, with over 60 per cent of respondents in support of the existing intake or its increase. Moreover, those who agree that immigrants from many different countries make Australia stronger outnumber those who disagree by a ratio of more than 2:1. The most positive attitudes are towards immigrants admitted on the basis of skill, with 78 per cent in support. In answer to the question "what do you think are the most important problems facing Australia today", a little more than one in eight respondents nominated immigration and asylum issues as the "most important problem'. Nonetheless, the level of support does vary over time, especially in response to a rapid growth in the number of irregular arrivals – and, especially, "boat people" seeking asylum. Although these are still less than half Australia's humanitarian quota; the inability of the government to find an acceptable solution keeps the issue contentious.

In this context, a vital policy is social inclusion, which for immigrants is the up-to-date version of the old policy of assimilation. Graeme Hugo, Patricia Njuki and Sanjugta Vas Dev, in Chapter 3.2, examine social inclusion in four areas of migrant settlement in Australia: improving employment outcomes, especially of recent humanitarian migrants; interventions for migrant children and youth who are at risk; locational disadvantage and regional migrant settlement; and dealing with racism and discrimination.

Dealing with racism and discrimination is especially important, given that it is barely 50 years since the White Australia policy was abandoned. The nature and the speed of change since then, in Australia's economic, Indigenous and immigration policies, left a substantial number of Australians bewildered and antagonistic; and their feelings were not assuaged by a couple of what seemed to have been racially motivated riots.

Sustainability

Concern about the effects of increases in population commonly centre on the environment, and on urban amenities and infrastructure. The first key message of the *Sustainable Development* Panel Report, led by the Hon Bob Carr, is that:

> *"A sustainable Australia is one that allows its people to live socially engaged and prosperous lives in a healthy environment. It means meeting the needs of the current population without compromising capacity to meet future needs."*

This volume offers a series of valuable contributions concerning sustainability, some historical, and others looking to the future. William Coleman (Chapter 1.3) surveys the views of economists (mostly) about the elusive idea of the optimal size of the Australian population. Presumably, the optimal population, whatever it is, is less than the maximum sustainable population, which is sometimes still characterised as the "carrying capacity" of Australia. In Chapter 1.2, Alaric Maude traces the history of this concept in Australia, including disciplinary differences in the frameworks of the "hard" sciences and the "social" sciences.

The idea that, without a larger population, Australia could not defend itself is captured in the slogan "populate or perish", frequently shouted in the middle decades of the twentieth century. Mark Thomson (Chapter 1.1) finds that, whatever its merits in the past, the defense argument for a larger population is no longer convincing.

Environment and climate

Bob Carr's excellent definition, cited earlier, is a great starting point for discussion on sustainability. However, to go further, we need to address the impediments to sustainable growth in the population and economy of Australia. These fall under three headings: the environment, climate change – which go together – and government policy.

To what extent will the natural environment and climate change put a cap on or hamper sustainable growth in population and living standards? Don Gunasakera (Chapter 2.4) summarises what is projected for the climate, worldwide and in Australia, and explores the implications for the pattern of settlement, and for the advantages or disadvantages of a larger population. In Chapter 2.5, Barry Brook argues that greenhouse gas abatement is necessary at a global level, but can only be achieved, at reasonable cost and security, with a technological fix: he advocates much more serious consideration be given to the use of nuclear power generation in Australia.

Graeme Hugo's chapter 2.3 on population distribution shows there has long been a mismatch between the incidence of rainfall, by area, and the density of population settlement. Can a big Australia feed itself (and continue to be a large exporter of food)? Will the cities die of thirst, as some predicted would have happened by now? John Langford and Nathan Taylor (Chapter 4.3) show how trading in water rights allowed the maintenance of economic activity in the Murray-Darling Basin, despite the worst and longest drought in history. They draw on the Australian Water Project, which is being conducted by CEDA, Melbourne and Monash Universities, as Uniwater, and Harvard University. As the vast majority of Australians live in cities close to the ocean, desalinated water offers a secure and affordable supplement to catchment water; and there are new sources being tapped – rainwater runoff, diverted to urban wetlands and underground storage.

Urban matters

A longstanding ambition of Australian politicians has been to encourage decentralisation. Graeme Hugo (Chapter 2.3) discusses the overall stability of the geographical distribution of Australia's population, and the roles played by internal and external migration. He also points to some interesting recent trends, including rapid growth in the populations of many non-metropolitan coastal communities. Regions close to the large conurbations have grown (albeit with growing pains). Drawing on work of the Grattan Institute, John Daley (Chapter 4.4) shows that, although government efforts to promote economic and population growth in some regional areas may have been justified on equity grounds, they do not seem to have been effective; and were very unlikely to have added to the wellbeing of Australians generally.

Henry Ergas provides economic reasoning on urban infrastructure (Chapter 4.2). Ergas lists the salient characteristics of the Australian system of settlement, most of them familiar. The high incidence of home ownership, the low density of settlement, and the high dependence on urban transport were encouraged by favourable tax treatment and by the under-pricing of the services of schools, hospitals and roads. Productivity of urban infrastructure has not improved in years. Efforts to control "urban sprawl" have often been inefficacious, or inefficient and inequitable.

Ergas suggests that, unless governments have clearer and parsimonious objectives – COAG take note – policy is unlikely to improve. Although the task is complicated by environmental considerations and by NIMBY politics, the fact that governance is highly centralised may, slightly paradoxically, make it easier to institute improvements, especially in pricing.

Ageing, health and productivity

The work of the Federal Treasury and the Productivity Commission has raised concerns about the fiscal demands of an ageing of the population and a flow through of earlier population trends. This "greying" of Australia creates demands for expensive social services and aged care, funded in part by tax revenues from a proportionately smaller base of tax payers. But the flip side of ageing is longer potential working lives, delayed major health costs and longer periods of wealth accumulation. These positive dimensions to ageing need to be factored in, so that policies capture the enhanced capacity to sustain, and not restrict service provision later in life. But we also need to look at the full suite of financing options, including enhanced use of self-financing mechanisms that we are already using in childcare, education, health insurance and transport development, and in social security itself through superannuation arrangements.

It has been predicted that in Australia, by 2033, health and aged care will account for one-eighth of GDP. Over 70 per cent of the burden of disease is currently attributable to chronic condition; and that share will rise, as the population ages. Francesco Paolucci and Ian McRae (Chapter 3.4) outline ways in which the health system can be restructured to reduce the burden of chronic conditions. In addition to preventive measures, they emphasise the role of primary care, which should be integrated and coordinated with other services, and supported by the better use of information technology. Such a system should improve risk assessment, and early diagnosis and treatment, as well as assist in practitioner- and self-management of multiple, chronic conditions.

The new demographics, health care advances and resulting leisure and work-force needs, all call for a new look at the institutions and policy choices that underpin our key social and security arrangements. It is fundamentally great news that people are living longer, working for longer periods, and able to enjoy leisure and community engagement well into ages that were once regarded as terminal or unproductive. However, if policies lack the flexibility to make use of extended lives and better health, then Australia could suffer a transitory loss of a high proportion of a skilled and productive workforce, which could lead to national atrophy. Australia requires education and training programs to sustain, re-skill and invigorate mature working and cultural activities, to encourage fuller and meaningful lifetime participation in work, leisure and community service. Good public policies will contribute towards making the Australia population healthier and better-educated, enjoying higher levels of life satisfaction.

Paul Krugman famously said that: “Productivity isn’t everything, but in the long run it is almost everything.” In Chapter 3.3, Dehne Taylor explores how education and training are linked with increases in productivity. Essential for improvements in productivity are increases in human capital per head: higher workforce competencies, knowledge, adaptability and skills. The dynamic parts of the rest of the world are acquiring these fast. To accelerate the growth in Australia’s human capital, Dehne Taylor suggests some innovative extensions of the income-contingent student loan scheme, popularly known as HECS. (The Federal Labor Government has recently announced its intention to extend a HECS-like scheme to VET.)

As editors, we thank the contributors for their enthusiasm for this project, the quality of their contributions, and their cheerful responses to editorial interventions.

Section 1.0
Historical perspectives

1.1
Populate or perish
Mark Thomson

Mark Thomson joined the Department of Defence in the mid-1990s following a career as a theoretical physicist. During this time, he was deployed as a civilian truce monitor to Bougainville in 1997 and as political-military adviser to the INTERFET Commander in 1999. In 2002, Mark joined ASPI as inaugural director of the Budget and Management Program. Mark's research interests include strategy, defence economics and defence industry policy. In November 2005, Mark was a member of the ministerial directed review of military recruitment and retention, and in 2006 he was a member of a review team looking at Australian defence industry policy. In 2008 and 2009, Mark was a member of the ministerial advisory panel for the Defence White Paper.

Introduction

Japan's crushing victory over Russia in 1905 heightened fears of isolation and vulnerability in sparsely populated Australia. The response was a revival of the state-assisted migration programs, which had ceased with the 1890s depression. Between 1906 and the start of WWI, around 150,000 migrants arrived on assisted passage.[1] While economic growth and development were also considerations, the desire to bolster our defences by populating the vast empty spaces of the continent figured prominently. In 1909, the recently retired Governor-General, Lord Northcote, conveyed the sentiment of the time when he said: "It would be comparatively easy for an Asiatic force to seize Port Darwin and march southwards at leisure," concluding that "Australia must speedily solve the problem of population or perish[2]."

Following the disruption caused by WWI, assisted migration resumed in unison with programs to redistribute Britain's excess population across the Empire. Although far from a key motivation, defence remained a factor during this period, within which another 221,000 assisted settlers arrived.[3] Still more migrants might have come but for the Great Depression, which once again put an end to government-sponsored immigration in 1929.

A little over a decade and a half later, the situation was reversed by a close encounter with imperial Japanese ambitions. Well before the end of the war, the Curtin Government had plans in place for a rapid expansion of Australia's population. As Australia's first immigration minister, Arthur Caldwell, put it in 1946:

> *"The call to all Australians is to realise that without adequate numbers this wide brown land may not be held in another clash of arms, and to give their maximum assistance to every effort to expand its economy and assimilate more and more people who will come from overseas to link their fate with our destiny."*[4]

Over the subsequent four decades, an average of 100,000 migrants arrived in Australia every year. But while migration to Australia continues to the present day, the rationale has long since changed. As early as 1965, it was observed that: "The post-war immigration policy, which was thus adopted under abnormal conditions and for predominantly non-economic reasons, has since become a generally accepted part of economic policy."[5]

Until recently, the notion of increasing Australia's population to enhance its defences had been all but forgotten. But in late 2009 the then prime minister Kevin Rudd included national security in the list of reasons why we should embrace a "big Australia".[6] Since then, apart from a couple of supportive newspaper columns[7], the idea has failed to capture the public imagination. It was no surprise whatsoever that the government's 2011 sustainable population strategy mentioned neither defence nor national security.

Nonetheless, the questions remain: Can and should we boost our population to improve our defences? What follows attempts to answer those questions.

Australia's capacity for defence is affected by its population in two ways:

- Directly through the availability of people to serve in the defence force; and
- Indirectly by setting the scale of the nation's economy.

These links are explored below in tandem with a discussion of how much defence capacity Australia needs.

People

For much of the past decade, the Australian Defence Force (ADF) struggled to attract and retain sufficient numbers of personnel. However, over the past two years, the situation has reversed and the problem has been to find enough money to pay the surplus uniformed personnel that have been accumulating in the force. Although the 2008 financial crisis probably reinforced the value of secure employment to defence force members, it's equally likely that the decade-long $3 billion package of recruitment and retention initiatives introduced in 2007 has also played a role. In addition, continuing operations in Afghanistan provide a professional incentive for defence personnel to remain in service. Whatever the reasons, despite unemployment running at around five per cent, the defence force is having few problems maintaining its uniformed workforce of around 60,000 permanent and 20,000 part-time reserve personnel.

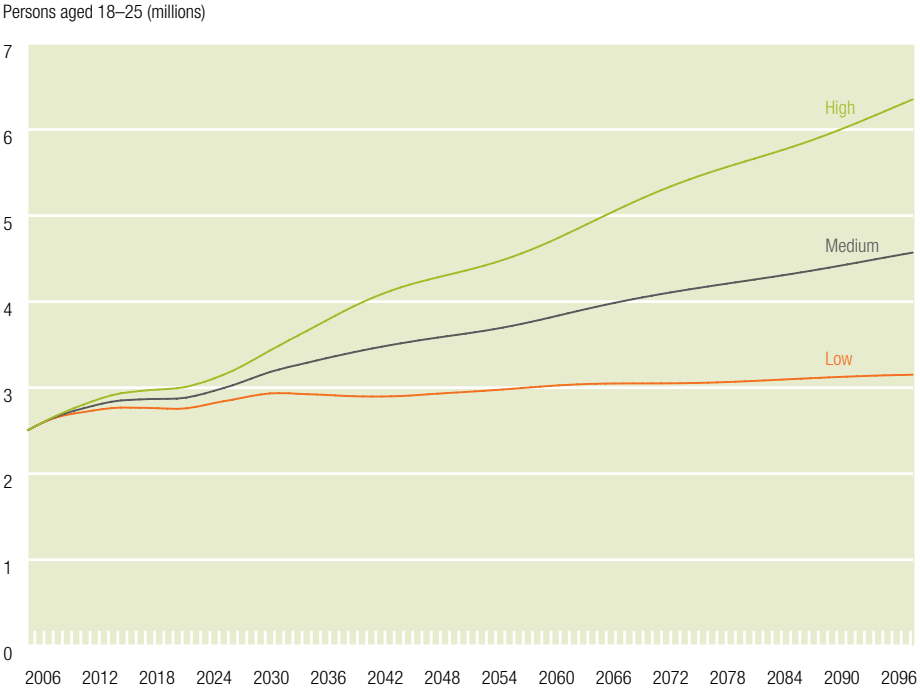
Recent successes notwithstanding, concerns persist that forecast demographic trends will see the defence force struggle to maintain its numbers in the decades ahead. The argument is that the ageing of the population will lead to a diminishing proportion of young people and thereby result in a shortage of recruits. This has led to a least one call for a return to conscription.[8] Given the slim prospects of that happening, an alternative remedy would be to generate additional potential recruits by accelerating population growth.

A close examination of demographic forecasts for the Australian population undermines defence-based arguments for either conscription or a larger population. As Figure 1 shows, the number of persons in the prime recruiting cohort of 18 to 26 is forecast to remain constant (or better) out to the century's end. Moreover, barring a big increase in the size of the ADF, the number of people recruited into the defence force each year will continue to represent but a tiny fraction – less than 0.2 per cent – of the available pool.

But what about the diminishing *proportion* of young persons in the population? If the economy-wide demand for people in the recruiting cohort remains fixed as a share of the population, the diminishing proportion of young people will result in scarcity. There are two reasons why this is not a serious concern. First, even if younger people are preferentially sought by employers, there is likely to be only a limited share of cases where substitution by older workers is infeasible. Mechanisation of agriculture, manufacturing, mining and construction has long ago removed whatever advantage there was in employing young workers. Indeed, apart from ground combat operations, the same is probably true for the defence force. Second, and more important, there is no evidence of a preference for younger workers. The youth unemployment rate (ages 15 to 24) has not fallen below 10 per cent in almost two decades.[9] At the time of writing, there were 281,000 Australians between the age of 15 and 24 years looking for work.

It follows that whatever problems there might be for the defence force in attracting and retaining sufficient numbers in the future, they are unlikely to be any worse than the problems today. If anything, the situation might actually be better. Today's defence force is disproportionately male (85 per cent)[10] and of Anglo-Celtic heritage (94 per cent)[11], which means that it is drawing disproportionately on a limited segment of the available recruiting pool. The ADF has recognised this and has put programs in place to make the defence force more representative of the population it serves. There has been some progress on the gender front – over the past two decades the proportion of women serving full-time in the defence force has more than doubled.

FIGURE 1
FORECAST NUMBER OF PERSONS AGED 18 TO 26



Source: ABS 3222.0 Population Projections, Australia 2006 to 2101

The discussion so far has been based around sustaining the defence force on its present scale. With the defence force accounting for only a tiny fraction of the labour market (0.5 per cent), it's hardly surprising that demographics are not a limiting factor. In fact, there is no reason why the current and forecast population could not support a defence force two or three times larger than currently in place. On recent experience, all that would be needed is a sufficiently competitive employment offer get more people into uniform.

Yet a lingering question remains. What if our strategic circumstances were to deteriorate so severely as to demand a drastic expansion of the force? In WWI Australia mobilised a force of 416,000 from a population of less than five million, and in WWII more than 990,900 served from a population that was still only around seven million. No doubt the Curtin Government had these experiences in mind back in 1946 when they launched the great post-war immigration program.

But times have changed. Nobody contemplates a return to the national mobilisations that typified industrial-age warfare in the first half of the twentieth century. In large measure, this recognises how fundamentally the advent of nuclear weapons has changed the nature of war. Consistent with this, the scale of armed forces held by major powers has declined substantially, conscription has become far less common, and plans for national mobilisation are non-existent.

For Australia, there is another factor at play. Since the 1970s, the strategy for defending our island continent has been based on preventing an attack by interdicting enemy forces in our air and maritime approaches. By doing so, we fully exploit the benefits of our advantageous geography and maximise the benefit of privileged access to high-tech Western military equipment. Of course, the other advantage of an air and maritime strategy is that it substantially limits the demand for personnel. Rather than the hundreds of thousands of troops that made up the expeditionary forces of the twentieth century, our defence is now based on at most a couple of hundred aircraft and tens of vessels.

Though it is rarely conceded, our small army would have at most a very limited role in a serious defence of the continent. It exists to help maintain order in nearby fragile states such as East Timor and the Solomon Islands, and to make small but politically important contributions to United States ventures in places such as Afghanistan and Iraq. However, that doesn't mean that the size of our population is irrelevant to our defence. Although we might not need a large army, we do need a large enough economy to purchase and operate the increasingly expensive military equipment upon which our defence strategy is built.

Population, power and prosperity

To a good approximation, the size of the Australian economy is proportional to the size of its population. All other things being equal, if our population were to grow by 10 per cent, our Gross Domestic Product (GDP) would also grow by 10 per cent. We would also be likely to have a larger industrial base – though this would not readily translate into a military technological advantage given that only the largest of nations possess the economies of scale necessary to develop modern major weapon systems.

So what impact would a larger economy have on Australia's defence? To the extent that national defence is a pure public good, a larger population would not increase the demand for defence. A safe and secure country can be enjoyed by all, irrespective of how many people live here. Of course, this is something of an idealisation. For one thing, a larger population could give rise to additional population centres that would need to be defended against attack. But given Australia's declared strategy of controlling its air and maritime approaches rather than close defence of its cities and industry, the increased demand for defence capacity (as a result of a larger population) would be slight.

On the supply side, a larger population would provide more people to share the economic burden imposed by national defence. With a population 10 per cent larger than at present, we could maintain our current defence capacity with each person contributing nine per cent less on average than at present. But this would probably not be the outcome. National defence is not a binary quantity that is either adequate or inadequate. Rather, defence spending represents an investment to mitigate strategic risk. Higher levels of defence spending allow a wider range of risks to be addressed with confidence. Consequently, assuming that the demand for defence is elastic, if the per capita cost of defence were to fall we would probably choose to have more of it. A likely outcome would be that Australia would spend more collectively, but less per capita, on defence than at present.

From an individual perspective, what could be better? A larger population would allow us each to pay less and yet enjoy better defence. However, it's not that simple. First it's worth examining some real world data. Table 1 displays economic and defence spending data for Australia and selected countries. The emphasis on North Asian countries is no accident. Those arguing for stronger defence have their sights firmly set on the rise of China.

The first thing that is apparent from Table 1 is that some countries devote a substantially larger share of their GDP to national defence. Given the precedents of Israel, Singapore and the United States, it's clear that Australia could more than double its defence expenditure without increasing the size of its population. Of course, there would be an opportunity cost for taxpayers in terms of some combination of private

TABLE 1
DEFENCE SPENDING AND BURDEN 2009

COUNTRY	GDP (BILLION US$)	DEFENCE SPENDING (BILLION US$)	DEFENCE SPENDING AS A SHARE OF GDP (PER CENT)
Australia	976	19.5	2.00
China	4854	70.4	1.45
India	1231	38.3	3.11
Indonesia	542	4.8	0.89
Israel	195	13.5	6.91
Japan	5058	51.1	1.01
Malaysia	193	3.9	2.01
Singapore	182	7.8	4.29
South Korea	837	22.4	2.68
Taiwan	380	9.5	2.50
United States	14,125	661	4.68

Source: The Military Balance 2011, International Institute of Strategic Studies, London.

consumption and non-defence government services. But it would not be so large a cost as to distort our allocation of resources beyond that in other relatively prosperous countries. Moreover, in decades past, Australia routinely spent a greater share of GDP on defence than it does today, with peaks of five per cent and four per cent reached during the Korean and Vietnam conflicts.

It follows that there are two mechanisms available for strengthening Australia's defence. We can devote a larger share of existing economic resources to defence, and/or we can grow the pool of economic resources that is available for defence by increasing the size of the population. While there are other avenues for boosting aggregate output aside from population growth, we assume that such steps will be pursued (to the extent that they are politically feasible) irrespective of concerns about national defence.

Given that a larger population allows individuals to incur a smaller opportunity cost due to defence spending than would otherwise be the case, the question must be asked why other nations have chosen to instead devote a larger share of their available wealth to their defence. To some extent, it's a question of timing. Even with strong immigration, substantial population growth takes decades to achieve. Indeed, populations are forecast to rise substantially in Israel, Singapore and the United States in the decades ahead (though there is no evidence that the affordability of defence is a driving factor for them). In any case, for countries such as Israel, Singapore and the United States, circumstances do not allow them the luxury of waiting for the day when a larger population makes defence more affordable. They have strategic imperatives that must be met today. Moreover, for the United States the demand for defence has historically waxed and waned over time as circumstances and policies changed, so it would make little sense to pursue a policy of aggressive population growth to satisfy what, on past experience, is likely to be a transitory demand.

From an Australian perspective, assuming that there is a strategic imperative for stronger defence, timing considerations arguably favour population growth as a mechanism. Proponents of stronger defence invariably point to the rise of China in the decades ahead as the driving factor. With the timescales for China's rise commensurate with those for significantly boosting Australia's population, the possibility of bolstering our defences through a larger population is feasible.

Irrespective of concerns about defence, natural fertility coupled with the established practice of addressing labour shortages through migration will ensure that Australia's population grows. The question is whether the rate of population growth should be accelerated to make defence even more affordable in the future. National defence is one of many factors to consider in assessing whether to accelerate population growth, and it is beyond the scope of this chapter to survey these many externalities. What we can do, nonetheless, is assess the argument for spending more on defence. If the argument is compelling, the possibility of growing the population to support a larger defence effort remains viable – though still dependent on the net impact of a larger population taking other factors into account. But if the argument is spurious or manifestly weak, the defence-economic argument for a larger population can be dismissed.

Before turning to look at whether there is a strategic rationale for substantially boosting Australia's defences, it's useful to put current plans into an economic, fiscal and military context. The 2009 Defence White Paper set out a two-decade long program of modernisation and modest expansion of the defence force. Funding is based on average growth in the defence budget of 5.5 per cent nominal until 2018 and 4.7 per cent thereafter. In economic terms, this translates into an economic burden that will remain below two per cent of GDP out to at least mid-century.[12]

Despite frequent claims of a looming fiscal crunch due to the ageing of the population, Australia is remarkably well placed to manage rising health and aged care costs later this century. Compared with most other developed nations, we have no debt worth worrying about and forecast levels of aged dependency are comparatively low. While there are going to be public policy challenges in the decades ahead, there is no pending fiscal crisis. If nothing else, the forecast 80 per cent rise in per capita GDP over the next four decades[13] will ameliorate the pain of higher taxation if it proves necessary.

On present plans, Australia will spend more than a trillion dollars on defence between now and mid-century. For that sum we'll have the ability to:

- Conduct humanitarian assistance and relief missions that are substantial within Australia and politically significant areas further afield;
- Deal with most conceivable instances of instability in the fragile states of the South Pacific and East Timor;
- Resolve almost any credible disagreement with Indonesia consistent with our interests, including defeating an attack on our territory;
- Deny our air and sea approaches to small or medium powers;
- Support US ground operations on the scale and at the intensity presently occurring in Afghanistan; and
- Make militarily useful air and maritime contributions to US coalition operations in the Western Pacific consistent with the ANZUS alliance.

So what more might we want to be able to do that would justify higher defence spending and potentially a larger population?

How much defence is enough?

Proponents of spending substantially more on defence have one thing in mind. China. They want Australia to develop military power on a scale sufficient to *at least* maintain a favourable balance of power between China and the United States and its allies.[14] The more ambitious (and pessimistic) want the military wherewithal to unilaterally resist China in the event that the US abandons its allies in the Western Pacific.[15]

Neither aspiration can be dismissed out of hand. There is no doubt that China's rapid economic rise is changing the balance of power in North Asia. Over the past 20 years, China's economy has grown by an average of 10.1 per cent a year[16] and its defence budget by 10–12 per cent depending on the estimate used. In comparison, the United States is struggling with mounting debt and is cutting its defence budget.[17] More importantly, long-term projections of economic growth for the two countries tend to forecast that the Chinese economy will overtake the United States sometime around 2030.[18] Add to this the simmering animosity between the two countries that has been apparent over the past few years – not to mention that the potential flashpoints of Taiwan and the Korean Peninsula – and the possibility of a twentieth-first century great power conflict is all too apparent. And it would be far from unprecedented: from the Peloponnesian wars of the 5th century BC to the cataclysm of WWI, the adjustment of established orders, when new powers emerge, has tended to be a violent affair.

For some, this is sufficient justification for increasing defence spending to three or four per cent of GDP, at a cost of hundreds of billions of dollars over the decades ahead. So far the government has resisted taking up this option, and other US allies in the region appear in no hurry to increase their own defence spending. In fact, defence spending as a share of GDP has remained static or trended downwards in Japan, South Korea and Taiwan over the past 15 years.[19] Nonetheless, the proposal for substantially greater defence spending should be judged on its merits. History is replete with examples of countries going to war poorly prepared after clear warning signs were ignored.

There are at least three arguments against Australia pursuing a major military expansion in response to the rise of China.

First, it is often argued that China's rise is unsustainable and that the balance of power will not change. This is usually accompanied by assurances about the resilience of the United States and its ability to "bounce back" once again. But while it's true that China faces many hurdles on its path to industrialisation and prosperity, as did the United States, the basic mechanism of leveraging global trade to build productivity remains viable. Indeed, China's rise is not unprecedented. Japan rose from the ashes of WWII and increased its per-capita GDP 10-fold in just four decades.[20] The key difference between Japan and China is that the latter has a population 10 times that of the former. If China were to increase its per capita GDP by a factor of three, it would have an economy comfortably larger than that of the United States today.[21] It may be that China's path to prosperity is a difficult one, but it would be foolish to wager our security on the proposition that it is a dead end.

The second argument is that economic interdependence will prevent the United States and China from stumbling into what would be a pointless and costly conflict. And costly it would be. Given the tight interconnectedness of the global economy, the consequences of a breakdown in trans-Pacific trade could quickly dwarf the 2008 financial crisis. If only this could be counted on to keep the peace. The trouble is that most wars start because of fear, honour or stupidity rather than a sober assessment of costs and benefits. It's worth remembering that the first age of globalisation was brought to a crashing halt by WWI. However, one critical change since that time has

been the advent of nuclear weapons. For more than 60 years, no two nuclear armed powers have fought a major conflict. If the specter of nuclear armageddon could keep the United States and the Soviet Union at arm's length despite deep district and fundamentally incompatible interests, surely peace with China can be maintained. This is all the more plausible given that China is tightly integrated into the international system, whereas the Soviets were economically and politically isolated.

What can almost certainly be discounted, because it would be profoundly senseless, is that China will ever renounce global economic engagement and emulate Japan's behaviour in the 1930s and 1940s. However, ultimately there can be no guarantee that China and the United States will be smart enough to avoid a clash of arms over something more minor, and the fact they are preparing the wherewithal to do so does not bode well.[22] If a conflict were to occur, it would be short, sharp and potentially catastrophic. Hopefully the more likely worst-case outcome is a "warm peace" built around a strategic stalemate.[23]

At this point the argument for stronger defence is looking plausible; China's rise cannot be dismissed and the possibility of war cannot be discounted. Yet the third and final argument against a redoubling of our defence effort argues to the contrary. Put simply, it is beyond Australia's capacity to shape the course of Asian strategic affairs by the use of armed force in all but a limited set of special circumstances, irrespective of any credible boost to our economic capacity.

Whatever additional military capability we might be able to muster would only tip the conventional balance of power temporarily in favour of the United States as China continues to grow. To put things in perspective, according to the Pentagon, Chinese defence spending increased by more than the entire Australian Defence budget in the three years between 2006 and 2009.[24] With the Chinese budget compounding at eight to 10 per cent per annum the potential for Australia to make a difference will rapidly diminish in the years ahead. Like it or not, we have about as much chance of shaping the strategic destiny of Asia in the twentieth-first century as Denmark did in Europe in the 1930s.

As for Australia standing alone against China after the United States has decamped for Hawaii just as Britain decamped west of Suez, the circumstances where this would be feasible are limited. No doubt there could emerge a situation where China had some limited interests that it could be persuaded to abandon due to the additional costs we could impose on them militarily (assuming a face-saving solution was available). But if armed conflict is afoot, China would have to be pursuing interests of very substantial importance to start with – why else would they invite international approbation and a costly disruption of trade to threaten us with force?

But what if there was a complete breakdown of international norms and China began to emulate Japan of the 1940s? Because China has nuclear weapons, any notion of refighting the battle of the Coral Sea is fanciful – and not within our capacity anyway. By 2050, China is forecast to have an economy 20 times larger than Australia's,[25] and no plausible program of accelerated population growth can redress that imbalance. If US protection was absent, China could take their time and do whatever they want to us. If this extreme scenario is to be taken seriously (it probably should not) the only course of action would be a nuclear weapons program.

Conclusion

A substantial case for accelerating the growth of Australia's population cannot be built on the basis of defence considerations; and certainly not on that basis alone. In the decades ahead, we will have more than enough people to meet the manpower needs of our defence force many times over. And while a larger population would make defence more affordable by spreading the cost over a larger number of taxpayers, this would have to be balanced against the other costs and benefits of a larger population.

Ultimately, the case for a larger population would have to be made on economic grounds, with the affordability of defence being but one consideration. Of course, the importance of defence in such an analysis increases with the scale of our defence effort; the more we spend on defence, the greater the opportunity cost. But as we've seen, the argument for a bolstering our defence effort beyond current plans is weak. A greater investment in defence would increase our costs without a commensurate improvement to our security.

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1.2

A century of debate about population and the environment: Key issues

Alaric Maude

Alaric Maude is an Associate Professor of Geography in the School of the Environment at Flinders University. He has taught and researched regional development and population issues for several decades, in Australia, Malaysia, Tonga and Indonesia, and is a co-author of *Developing Australia's Regions* (2003). He has also taught a masters topic on sustainable environmental management for over a decade. Since retirement in 2004 he has been involved in a variety of research and consultancy projects, one of them on the environmental implications of immigration into Australia for the Department of Immigration and Citizenship. This included an historical review of the population-environment debate in Australia, which has been extensively rewritten for his chapter in this publication.

There has been over a century of debate in Australia about the relationships between population growth and the environment. This chapter mainly focuses on the academic contributions to this debate. A wide range of disciplines have been involved, from the physical and environmental sciences to the social sciences and economics, and this has produced differences in the way population-environment issues have been framed and analysed, and in the policies advocated. This chapter reviews the history of some of the key themes and issues, and explores the ways that the debate has evolved over time.

Australia's carrying capacity

The population-environment debate in Australia started in the early 1900s with disagreement over how many people could be supported, or "carried", by the land and other environmental resources of the young nation. The optimists, or "boosters" as they were termed, spoke of future populations of from 100 to 300 million people. Their arguments were based on comparisons with the United States and Europe, and they viewed land simply in terms of its area, not its productivity. If an area of land in Europe supported so many people, then the same number could be supported in Australia, although in making these calculations the optimists generally did leave out a large part of central Australia as too dry.

A vocal critic of this position was Griffith Taylor, the founder of Australia's first university department of geography (at Sydney University in 1921). On the basis of inventories of regional resources and latitudinal comparisons with other regions in the world, he proposed that the continent could support a maximum of 65 million at the standard of living of Western Europe, and later reduced this to 20 million at a standard of living comparable to that of the United States. His estimates of Australia's population carrying capacity were based on the climatic potential for agricultural settlement and on industrial development based on the known coalfields.[1]

Other estimates of carrying capacity were based on potential food production rather than areal comparisons with comparable but longer settled environments.[2] In the 1930s, Mullet and Wadham used calculations of the food production capacity of the land to estimate that a population of between 40 and 50 million could be supported.[3] More sophisticated estimates were produced in the second half of the century. Gifford and his colleagues, using data from the 1960s, calculated that Australia's potential food production, combined with assumptions about agricultural technology, diets and standards of living, could feed a resident population of about 30 million if 50 per cent of food protein produced was exported, and up to 80 million with a lower protein consumption and no agricultural exports.[4] These calculations were revised nearly 20 years later, producing estimates of "supportable" populations of from 96 to 206 million people.[5] However, the authors of the revised estimates concluded that:

> *"The dramatic differences between the population estimates of the earlier and current studies is good evidence that the specified procedures are simply incapable of being used to infer anything meaningful for population policy."*[6]

The carrying capacity of Australia was the subject of an inquiry by a House of Representatives Standing Committee in 1994. The Committee argued that this depended on human choices and not on the physical limits of the environment, and concluded:

> *… it is not possible to determine a specific upper limit beyond which Australian society would be at threat. "Carrying capacity" is a combination of political, social, environmental and cultural factors. What is, or is not supportable, for the longer term will depend on whether people are prepared to modify their behaviour in resource use.*[7]

In recent years the concept of carrying capacity has largely fallen out of favour, not only because estimations depend on subjective assumptions, but also because it has limited relevance in an economy in which domestic shortages of renewable or non-renewable resources can be overcome through trade, technological development or substitution.

Resource constraints

Population-environment issues were not matters of much public debate during the 1930s to 1960s but interest returned in the 1970s, perhaps as a reaction to the rapid and sustained population growth of the post-war period[8] The National Population Inquiry, which commenced its work in 1971 and reported in 1975, described the emergence at this time of new challenges to the policy of population growth through immigration. These included concerns over:

> *…the danger of depleting mineral reserves following the tremendous expansion of both Australian and overseas investment in the extraction and export of a wide range of mineral ores (iron, bauxite, uranium, coal); the increasing pollution engendered by industrial concentration and population growth in major capital cities; [and] fear of environmental deterioration of coastal playgrounds, estuaries, and native forests by excessive development and their uncontrolled use by a growing and increasingly affluent population.*[9]

This revealed a shift in thought about Australia's population size away from the earlier focus on carrying capacity to issues of resource constraints and environmental quality.

Studies over the last four decades have generally failed to identify significant national resource constraints on projected population growth, but have identified some local and regional constraints. In the 1970s the National Population Inquiry did not express any concern over physical and resource constraints:

> *The conclusion relevant to this study which seems to follow from the kind of analysis undertaken is that resources are not likely to impose an early ceiling upon the population that can be carried at existing levels of living. A minimum level might be three times the present population; the maximum might well be several times greater, depending upon such factors as technological developments, expanding markets, and increased availability of resources compared with the present state of knowledge.*[10]

However, Douglas, a geographer also writing in the 1970s, suggested that the limitations to the population that Australia could sensibly support were related to the supply of land close to the coast and with relatively reliable water and reasonably fertile soil. This type of land was valued in Australia, and it was scarce. It was now in demand not only for agriculture and food production, but also for forestry, urban settlement, industrial development, mining, waste disposal and recreation. In addition, he pointed to the accompanying problems of coastal erosion and pollution.[11]

Resource constraints were examined in much more detail in 2001 in a large study of options to 2050 for Australia's population, technology, resources and environment, commissioned by the Commonwealth Department of Immigration and Multicultural and Indigenous Affairs. The study, by the CSIRO, explored the effects on infrastructure, resources and the environment of population scenarios out to the year 2050 based on net immigration rates of zero persons per year, 70,000 persons per year, and 0.67 per cent of the current population size each year. Physical modelling of a very large number of demographic, resource and environmental variables to identify future resource and environmental issues was used.[12] It concluded that:

- The only food issue related to a likely decline in fish stocks, and otherwise domestic food production was projected to be adequate under all population scenarios to 2050 and beyond, although increased consumption could reduce exports and consequently affect international trade balances.
- Water availability was not likely to be a constraining factor under any of the population scenarios, except perhaps in Sydney and Melbourne by 2100, provided that major changes in water management occurred over the next 50 years.
- Stocks of oil could become a constraint on transport unless there was a major transition to a new energy economy.[13]

Using a different method of analysis, a 2007 report by the Australian Academy of Technological Sciences and Engineering (ATSE) came to broadly similar conclusions. Through an examination of climate change, water, energy, transport, waste management and social infrastructure, and the planning and investment issues involved in accommodating a larger population, it concluded that there were no inherent physical, resource or technological barriers to the accommodation of a population of 30 million by 2050.[14] However, Bartlett (2006) has questioned the adequacy of Australia's coal and natural gas resources at the current high rates of export.[14]

Environmental quality

The effects of population growth on environmental quality also became an issue in the 1970s. In 1971 the Australian Institute of Political Science held a summer school on immigration and population, and the proceedings were published as a book.[15] Fenner, a biologist, pointed to pressures on resources, especially water, and to the growing pollution produced by an industrial economy. He questioned the capacity of the world's ecosystems to cope with continued economic and demographic growth, and argued for a lower rate of population growth in Australia to enable the country to improve the quality of the social and physical environment, and for the eventual stabilisation of the population. In the discussion of Fenner's paper, Borrie, a demographer, commented that this approach ignored the roles of technology and markets in overcoming resource shortages. Borrie also argued that slowing population growth was not an effective way to address environmental problems, and advocated economic and administrative means of changing environmental behaviour.

In the same publication Neutze outlined the effects of population growth on the quality of life in the major cities as measured by accessibility, the social environment and congestion. He advocated for slower urban growth distributed over a larger number of cities. Commentators again pointed to other ways in which the problems of large cities might be managed rather than through reduced population growth. Although Neutze was an economist who was criticised by social scientists, these differing opinions reflected different viewpoints on population-environment issues, broadly between environmental scientists on the one hand and social scientists on the other.

A significant contribution to the environmental quality theme was made by a book published in 1984 by the Australian Conservation Foundation.[17] It contained four chapters on renewable and non-renewable resources, environmental quality and degradation, and environmental amenity. It concluded that a transition to more sustainable ways of using the environment depended on a reduction in population growth. A 1992 report by the Population Issues Committee of the National Population Council, which had been asked by the prime minister to examine the major issues that could arise from the increase in Australia's population, reached some similar conclusions:

- Population growth has a major impact on ecological processes and systems, natural capital as an amenity, the ability of environmental processes to absorb wastes, and biological diversity, and these effects are not reflected in market prices.
- Australia's population concentration into large, low density cities has led to air and water pollution and consequent public health problems, and to marine pollution, the loss of bushland and wetlands, reduced housing affordability and a declining quality of life.
- "…national ecological integrity would be best served by an active population policy that resulted in a reduced rate of population growth."[18]

Harding states that this was: "The first government commissioned study to recommend that population-environment linkages should have a centrally important place in discussion of population/immigration in Australia."[19] However, the dominant view of Australia's population issues over the last several decades has tended to marginalise the role of population growth in environmental degradation.

Defining population-environment problems

In the population-environment debate there has been considerable disagreement about which environmental problems can properly be regarded as caused by population growth rather than by factors such as overseas demand or poor environmental practices. For example Fincher, a geographer, wrote in a 1991 report for the then Bureau of Immigration Research that:

> *"Domestic population growth may cause congestion of recreation or wilderness areas. This can be managed, and indeed new recreation and wilderness areas can be (respectively) developed and identified. It also needs to be emphasised that the development of our tourist industry is partly driven by the demands of overseas residents and the investment of foreign capital, as our agricultural industry has been. The demands of overseas, would-be tourists and business people are transforming many of our recreation and wilderness sites, as much as the demands of the domestic population."*

> *"Claims of direct or simple links between population numbers and agricultural sustainability, or the land degradation which prevents agricultural sustainability, are often far too simplistic. Land degradation in Australia is the product of damaging farming practices which have occurred through the past 100 years, and have been responses to the demands of export markets and foreign investors as well as to calls on local farmers to feed the Australian people. Large population size was not, and is not, the cause of this situation – in fact it has been argued that population levels were, in the past, too low and that inappropriate farming methods developed in part to compensate for this."*[20]

Similarly, in the 1994 House of Representatives Standing Committee's report on Australia's population "carrying capacity", the Committee stated that it was troubled by many submissions in which:

> *The almost universal explanation offered for contamination of river systems, for problems of waste disposal, and for excessive water use is identified as population growth alone, without any attempt to suggest more appropriate land management, developing new techniques in waste disposal and treating pristine water as a premium product.*[21]

A report in 2000 by the Australian Academy of Technological Sciences and Engineering (ATSE), on Australia's population futures, went further by classifying a range of environmental problems according to their link with population growth. The report identified four problems with a strong link to population growth – the pollution of land and groundwater; the pollution of coastal waters, rivers and lakes near major urban centres; the depletion of freshwater stocks near large urban areas; and urban air pollution. Another nine issues were considered to have only a tenuous link with population growth. One of these was greenhouse gas emissions, because:

> *… any increase in greenhouse gases from an enlarged population in Australia could be small on a global scale, might be off-set by greenhouse reductions in other nations (assuming immigration) and, importantly, would probably be caused by economic and transport patterns (as opposed to population per se).*[22]

Another was the loss of biodiversity, because this was caused by land clearing for agriculture, and agriculture was not directly linked to the size of the population within Australia.

The eight environmental issues that the report argued had no link with population growth (ie there was no reasonable possibility that an enlarged population could directly cause a significant worsening in the issue) included:

- The degradation of soils through salinity, acidification and erosion, which the ATSE report contended was the result of inappropriate land management practices, and
- The degradation of rivers and lakes in rural areas, which the report argued was caused by irrigation for agricultural production, not directly by population, and as much of this production was for export it would not be affected by population growth.

The 2000 ATSE report also argued that urban environmental problems were not just the result of population numbers, but also of the structure and functioning of Australia's cities (and particularly urban sprawl and consequent car dependency), the high level of resource use and waste production by world standards, and the low stocks of fresh water near the major population centres because of Australia's dry climate. The report went on to contend that the application of a range of technological, behavioural, pricing and settlement planning strategies could improve environmental outcomes even with significant population growth.

The 1994 Standing Committee's comment and the ATSE report both hint at a view that it would be (technically) feasible, with sufficient money, to counter any detrimental effects that population growth has on the environment.

The 2000 ATSE report was the subject of a critique by Jones[23], an ecologist, the following year. He argued that the judgement of what was "strong" and what was "tenuous" was too subjective, that the cumulative effect of a number of "tenuous" issues could be substantial, and that the report downplayed the role of population if it is indirect, as in the case of irrigation to produce agricultural exports. Exports were needed to pay for imports, and demand for imports increased with population growth. He further

suggested the argument that much of the environmental damage caused by land clearing and habitat loss had occurred when the population was much smaller ignored the very high rate of land clearing over the last 50 years.

A paper by Hamilton[24] did not address the ATSE report, but implicitly argued against its conclusions on the "tenuous" link between population growth and greenhouse gas emissions. He contended that growth in population would directly increase energy used in households, travel by car, and air travel. Population growth would also increase the size of the economy, and through this indirectly increase energy use in the services sector, manufacturing for the domestic market, construction, road freight and rail freight. A further argument has been that population growth caused by migration into Australia raises global greenhouse gas emissions as migrants adopt the high energy consumption patterns of the Australian population.[25]

Disciplinary differences

Differences over the role of population growth in Australia's environmental problems have frequently followed a disciplinary division, with some economists and social scientists taking a restrictive view of the contribution of population growth and physical and environmental scientists taking a broader view. This division also spills over into differences over the policies to be followed to address these problems. An example of disciplinary differences was noted earlier in the contrasting views of Fenner and Borrie at the 1971 summer school of the Australian Institute of Political Science. More recent examples can be found in the contrasting opinions expressed in the debates over the 2002 CSIRO Future Dilemmas report referred to earlier[26], and a 2010 report which used a development of the same CSIRO model of stocks and flows in the Australian economy. [25] These debates have been complex, and are not possible to cover adequately in this chapter, but the issues they raise should be central to public policy thinking on population-environment issues.

The major issues on which the disciplines tend to differ can be summarised as follows:

- Is population growth a factor in only a few of Australia's environmental problems, or in a much wider range?
- Is population policy only about managing the Australian labour market through controlled immigration, or is it also about protecting environmental quality and sustainability?
- Can environmental problems be addressed solely through environmental policies and better management, or does the limited success of these policies in the past mean that a reduction in population growth is also needed?
- Will resource constraints be overcome through the effects of rising prices on technological innovation, substitution and exploration for new resources, or are there likely to be physical resource limits that pricing won't overcome?
- Can technology enable Australians to keep their present lifestyles, or is a substantial reduction in the material and energy content of these lifestyles essential?
- Can the environmental problems produced by the concentration of population growth in a small number of large urban areas be managed by market-based policies, new infrastructure and better technology, or are there political, financial and engineering capacity limitations that will make this very difficult to achieve?

Further progress in the population-environment debate in Australia is likely to depend on reaching a consensus between the disciplines on the answers to these questions.[28]

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1.3

Pipe dreams and tunnel visions: The course of population debates in Australia

William Coleman

William Coleman is a Reader in economics at the Australian National University, whose leading interests are macroeconomics, the history of economic thought, and the contested position of economics in Australian society. His co-authored *Giblin's Platoon: The Trials and Triumphs of the Economist in Australian Public Life,* which won the 2006 Bruce McComish Prize for Economic History. As 2012 Oliver Smithies Fellow of Balliol College, Oxford, he is currently researching a history of neoliberalism. He is also editor of *Agenda: a Journal of Policy Analysis and Reform*.

Introduction

Australia is notably, if not notoriously, a land of much space but few people. Its population density is, correspondingly, almost the lowest of any country in the world: only Namibia and Mongolia record a lower figure. Australia's extreme divergence from the common human experience has been a magnet for strong reactions; and Australia's small population has frequently been judged as either a failing or a blessing. These judgments have been undaunted by the dense many-sidedness of the population question, including economic, demographic, geographic and strategic considerations. This very complexity has generated not so much a dialectic, but expressions of faith (in one direction or another), or (sometimes) agnosticism. As a result this debate has had little direction or progress.

This Tartarian wilderness

It is not entirely surprising that the earliest treatment of population issues in Australia was supplied by someone who never set foot on the continent, Edward Gibbon Wakefield (1796–1862). Although composed from within the walls of London's Newgate prison, Wakefield's 1829 *Letter from Sydney* vividly painted a picture of a recent and enterprising immigrant to New South Wales, who had been frustrated at every turn in his attempts to unlock the wealth that lay latent in his estate. With not yet 70,000 inhabitants of New South Wales, the new arrival perceives Australia, "would never be anything but a half-barbarous, Tartarian, ill-cultivated, poverty stricken wilderness, until in the course of nature, some hundreds of years hence, the population should become more dense".[1]

Wakefield's *Letter* is a plea for numbers; but it is a plea for numbers made much more significant by his analysis of how greater numbers would benefit. In the *Letter* (and later efforts) Wakefield reveals himself as a genuine political economist; and one whose economic ideas received a respectful nod from J.S Mill.[2]

Wakefield had two themes. The first is the need for a larger population in order to drive wages down so as to generate a profit rate that will make investment worthwhile. To Wakefield the "evil attendant upon a scarcity of labourers" is "an extravagant rate of wages, which by giving to the labourer a very share of the produce, prevented the capitalist from accumulating".[3]

Wakefield's second theme is a need for change in the structures of production if greater population is to use the Smithian division of labour benefits that a greater population makes possible. Here Wakefield targets the impolicy of settling immigrants to foster an economy of peasant proprietors. As Mill supportively noted:

> *"Mr Wakefield was the first to point out that the mode of planting new settlements, then commonly practised – setting down a number of families side by side, each on its piece of land, all employing themselves in exactly the same manner, – can never be other than unfavourable to great production..."*[4]

What is needed for "great production" are production structures that specialise and produce "for surplus", not subsistence households. Mill (following Wakefield) also suggested that the specifically Smithian productivity gains realisable by a larger (and more specialised) workforce would be reinforced by the greater degree of "co-operation" that a greater supply of labour would allow. Thus two men shifting large objects will (by co-operation) shift more than twice the mass that one man would shift.

Whatever the merits of Wakefield's case for specialised production structures,[5] it needs little comment that Wakefield's hostility to increased population being realised in the form of "yeoman landholding" was opposed to the repeated and largely futile efforts at "selection" and "closer settlement" by Australian governments from the 1860s.[6] But his stress on the "cooperation" productivity benefits of an increased labour input had repercussions on notions of an ideal population a century later.

1888 and all that

If Wakefield furnished some materials that could be deployed in the economic analysis of population growth, the Centenary of European settlement in 1888 provided the occasion of some ebullient forecasts of Australia's population growth over the next century. Australia's population had increased over the preceding 10 years by a remarkable 84.6 per cent (reaching the 3 million mark in 1888), a decadal rate not remotely approached again.[7]

From London the *Spectator* declared: "There is every reasonable probability that in 1988 Australia will be a Federal Republic, peopled by 50 million English speaking men." A more sustained reverie was provided by Edward Pulsford, ardent free-trader, adversary of White Australia and '"one of the last survivors in Australia of the spirit of nineteenth-century liberalism".[8] In *1888 and 1988*, an extensive article in the *Daily Telegraph's* Centennial Supplement of 23 January 1888, Pulsford ventured Australia's population in 1988 would be 60 million.[9] The basis of this growth would be development of the underdeveloped. He stated:

> *"Whatever may be the condition of the purely tropical portion of Australia in 1988, we think we hazard little when we express the conviction that in that year the remainder of the continent will have been opened up and occupied, and that many blank spaces at present found on the map of Australia will before the next century be filled with the names of prosperous and populous towns."*

Pulsford's optimism was also implicitly based on the pursuit of correct economic policies. The breakdown by colony he envisaged (New South Wales 20 million, Victoria 8 million, Queensland 10 million, South Australia 10 million, Western Australia 10 million, Tasmania 2 million) indicates protectionist Victoria would have the slowest growth of all, and indeed would sink to the second smallest in numbers.[10]

The upshot was confidence in the destiny of the small marginal society. He continued:

> *"What notice could the fate of a handful of men at the other side of the world be expected to attract when the French Revolution with all its horrors transfixed mankind? Yet perhaps the coming centuries will regard the ultimate consequences of the foundation of these colonies as of greater imp than the French Revolution of 1789."*

Pulsford sets the template for enthusiastic visions that recurred over the next two generations.

Clearly these visions were entirely untroubled by the Malthusian bad fairy. This in some measure reflects that Henry George's *Wealth and Poverty* – a highly popular analysis of economic growth in Australia – was vehemently anti-Malthusian. Part of the recipe of George's influence was that he straddled left and right by combining an animus towards inequality with a robust defence of the market. George's greeting card to population growth cohered both with the "liberal-left" of the day and with the interests of business.

The grey 90s

The heady expectations of growth of the Centenary were not to survive the reverses of the 1890s – industrial disputes, banking crisis, drought and an economic contraction that was "one of the most severe ever recorded".[11] From 1891 the decadal population growth rate sank each year; and in 1903 the annual rate was only 1.1 per cent, the slowest annual rate since 1810. This was due in significant measure to a slump in migration, but falling fertility also played a role. The crude birth rate had dropped from 35.5 in 1888 to 25.3 in 1903. This was first noted by TA Coghlan (1855–1926), Government Statistician of New South Wales, in his *Childbirth in New South Wales: a Study in Statistics*. He deemed that as a matter of public policy, "the decline in the birth rate is an extremely serious matter"[12] and various other figures agreed. In the judgement of a later historian: "By 1903 many prominent Australians feared that the decline was evidence of national decay comparable with that in France."[13] In the space of 15 years it seemed Australia's prospects had changed from leaving France in the dustbin of history, to joining her in the dustbin. A response was a New South Wales Royal Commission, chaired by Charles Kinnaird Mackellar, an energetic public health reformer who dominated its proceedings "in a manner uncharacteristic of his usually careful approach to scientific enquiry".[14] The Royal Commission gave the first ventilation in Australia of "natalist" policies.

The population anxiety of the new Commonwealth was aired also by Sir George Handley Knibbs (1858–1929) the inaugural Commonwealth Statistician, who wrote that:

> *"The annual rate of increase in the Commonwealth population for the quinquenium 1901–1906 was practically identical with the annual rate of Germany, the figures being respectively 1.49 per cent and 1.47 per cent. In view of the sparsity of the population of Australia... the rate of increase equal only to that of such a densely populated country as Germany cannot be regarded as satisfactory."*[15]

Knibb's choice of Germany as comparator might not have been entirely innocent in these years of burgeoning international tension. Obviously Australia's population was not irrelevant to the consequences of those tensions. Visiting luminaries cautioned Australia on her vulnerability.

> *Lieutenant-Colonel Baden-Powell, replying at a reception extended to him at Hobart, uttered a warning with regard to the Yellow Peril. The Chief Scoutmaster said he had travelled through China and Japan, both of whom were looking for neighbours who had territories they could dispossess, and he was extremely glad the Commonwealth was taking the course it was in, doing something to meet such an emergency.*[16]

Boosters and knockers

The agitated aftermath of the First World War was a time of "brave new worlds". Some countries had revolutions. Others adopted Temperance. The visionary creed that Australia seemed to embrace was "development", and its manifesto was *Australia Unlimited* by Edwin J. Brady of 1918, a one-time secretary of the Australia Socialist League, friend of Henry Lawson and publisher of Katherine Mansfield's first short stories. *Australia Unlimited's* 1083 pages and copious photographs is prefaced by Dorothy Mackellar (the daughter CK Mackellar of the previously mentioned Royal Commission on fertility). Its credo is forthright:

> *We intend to utilise within the boundaries of our Commonwealth opportunities we have hitherto wasted or left underdeveloped. In this building up there will be opportunities for labour and capital unequalled in the histories of industrial civilisation ... It is the policy which is going to make Australia the richest and most powerful, … nation in the world.*[17]

Clearly the "rapid peopling of this great continent" would be requisite for these ambitions. Brady did not seriously attempt a population target, but flags in passing 100 million[18] (and urges that Western Australia acquire a population equal to that of England and France combined).[19] Brady's tenet of a large population as a concomitant of development was repeatedly given a still more quixotic expression by the Prime Minister Billy Hughes. He said:

> *"Increased population was necessary for Australia, which was one of the most fertile countries in the world, and had an ample rainfall provided that it was conserved. He instanced Mildura and Renmark, which, he declared, were veritable paradises without angels and flaming swords. Mr Hughes referred also to Burrinjuck, where, he asserted, a good living could be obtained from 10 acres of land. He maintained that the Murray Valley was destined to equal the Nile in value of production."*[20]

Hughes had no very steady estimate of the population Australia should seek. Sometimes he suggested 25 million[21], at others around 100 million. As quoted in the Brisbane Courier in 1921:

> *[Hughes] did not hold with gloomy pessimists that because of geographical causes Australia would never be able to hold a big white population. He believed that some day it would hold a population nearly as big as that of the United States (109 million in 1921).*[22]

The 1920s was certainly the period of heroic estimates of Australia's potential population; thus Albrecht Penck, hydrologist at the University of Berlin, mooted 480 million.

These fancies were confronted by Thomas Griffith Taylor, the "foundation head of Australia's first university geography department, in Sydney". In a highly influential 1926 paper, "Frontiers of Settlement in Australia", in the *Geographical Review* of the American Geographical Society[23], Taylor argued that Australia was sparsely populated for good reason:

> *"The writer sees no reasonable hope of close settlement in most of empty Australia, for the sufficient reason that nature has not endowed it with a suitable environment. No government can alter this fact."*

Taylor went on: "No regions better deserve the title of desert than the vast uninhabited (and under present conditions, uninhabitable) areas [of Australia]." These facts, he said, "were unpleasant (but) sensible men and women, however, had to face them....The nearest geographical parallel to inmost Australia was the Sahara desert." He underlined this with numerous photographs of dismal "gibber plains" (in implicit rebuttal of the cheerful plates of *Australia Unlimited*) and the observation that Australia's "frontier" – defined as "one person per four square miles" – had been *retreating* towards the coast since 1900. The empty spaces were becoming emptier still.[24]

Neither could the uninhabitable emptiness be transformed by infrastructure investment; "railways can do practically nothing to advance population in regions where the environment is not attractive", with the consequence that "the £10,000,000 proposed to be spent on the building of the north-south [Alice Springs-Darwin] railway would be money wasted....the money could be put to considerably better use in districts capable of carrying large population.[25] [26]

Taylor's stony rebuttal of populationist imaginings provoked considerable ire. Such as this letter in the Sydney Morning Herald:

> *Sir,*
> *It was reported the other day that, prior to his departure for the United States of America, Professor Griffith Taylor made the astounding statement that Australia could not carry a population of more than 20,000,000 people! As Schiller says – "E'en the gods rebel in vain against such crass stupidity". If he said that this wonderful continent of ours could accommodate 200,000,000 he would have been saying something nearer the mark. Why, Queensland alone has room and opportunities for a population of, at least, 60,000,000 people. If the learned professor talks in this wild fashion in America – well, Australia will not get much of an advertisement.*
> *I am, etc*
> *B HODSON.*[27]

The controversy reached the United States, where Australia's consulate saw fit to rebut Taylor in the *New York Times*:

> *"I desire to state that efforts of the Commonwealth and State Governments in Australia are centred in a policy designed to exploit vast areas awaiting only the advent of settlers to turn virgin country into highly productive land… Australia enjoys generous rainfall, and it is only a question of locking the water for discreet distribution to our rich lands."*[28]

Taylor did not actually repudiate all hopes for the "fertile south east". Perhaps in consequence his own views on the population Australia could reasonably expect were mobile: sometimes he ventured 20 million (*Geographical Review*), sometimes 30 million,[29] other times 40 million,[30] and even, in his *Environment and Race*, 50 million plus[31]. For this last suggestion, Taylor received censure from what would later be called environmentalists. David Stead, "marine biologist, a founder of, and during its early years the main driving force behind, the Wildlife Preservation Society of Australia"[32] repudiated Taylor's upside estimate: "Personally, I find it hard to believe that Australia can support such a large population as, say 50 to 60 million on anything like our present standard of living or comfort with food drawn from its known natural resources."[33]

With few allies in Australia, Taylor gladly left Sydney University for a position at the University of Chicago.[34] But Taylor's message was not forgotten and was pressed again in 1942 in *The Myth of Open Spaces*, by William Douglas Forsyth, then of the Department of Information. Forsyth dryly observes that "in a 150 years of settlement less than 10 per cent of the land in Australia has been thought worth purchasing".[35] He stresses that attempts to secure population growth by rural settlement would press against the universal momentum to urbanisation since the industrial revolution. But by this time the arguments for population had changed.

Optimum population

The 1929 official inquiry by four eminent economists into protectionism, *The Australian Tariff: an Economic Inquiry*, had played Ricardo to Wakefield's Smithianism on the question of population. The working model behind the *Inquiry's* logic supposed the Australian economy being composed of two sectors: an agricultural sector, where a diminishing marginal productivity of labour prevailed; and a manufacturing sector, where a constant marginal productivity of labour prevailed. This assumption implied a stylised history whereby with a very small population of Australia would be exclusively agricultural, and consequently any population increase would push down marginal and

average productivity in agriculture, to the detriment of living standards. In this stylised history, population increases would depress productivity until the marginal productivity of labour in agricultural was reduced to equality with the marginal productivity of labour in manufacturing, at which point a manufacturing sector would appear, and absorb all further population increases. The expansion of the manufacturing sector would stave off further declines in marginal productivity. Nevertheless, the per capita income in the economy would still decrease with every increase in population, since the *average* productivity of labour in the ever expanding manufacturing is less than *average* productivity in the now stationary agricultural sector[36]. The upshot of this logic was that the *Inquiry* was tacit anti-populationist. But the *Inquiry* accepted as a parameter the impossibility of stopping population increases, let alone reversing it.

But a sense of possibility might have thrown some doubt of the inevitability of diminishing average products in the face of a larger population. Suppose Australia's population could be transformed back to that of 1829: would it really be true that a population of 65,000 would provide Australians a higher living standard than 65 million? Was there, indeed, any evidence of a Ricardian pressure on living standards while Australia's population was growing 100 fold over the previous 100 years? Ricardian productivity effects, it would seem, must have been balanced by Smithian effects. That inference provided the context for the blooming of the concept of "optimum population" in Australian policy debates in the inter-war years, a concept which turned on a contest between Smithian and Ricardian productivity effects

This concept of optimum population supposed there was some unique population level – the optimum – that would, in given circumstances, maximise any given country's output per head.

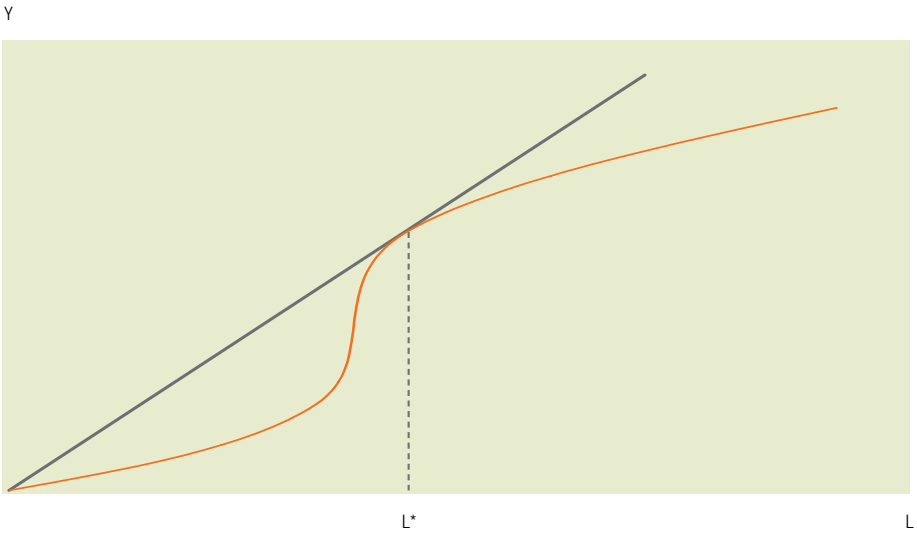
There were two sources of this notion: Knut Wicksell (1851–1926) and Edwin Cannan (1861–1935).

The notion of an optimum population had been first aired by the neoclassical economic theorist Wicksell, who, having thrown over the evangelical Christianity of his youth, had adopted birth control as his religion. This new faith raised an economic question that Malthusianism of classical economics could never ask. Under Malthusianism, population was endogenous; so no matter what technical conditions prevailed population would adjust until per capita income was such that net reproduction was zero. But if population could be controlled, then population could be a policy choice variable, and a "best" population that secured the largest per capita income could become a rational goal. In that regard, Wicksell's work on "optimal scale" of the firm – the scale that was not too small or too large – was clearly suggestive of an optimal scale of an economy, and therefore of its population.

But it was Edwin Cannan at the London School of Economics who had articulated in 1920s the most distinct rationale for the existence of a unique per capita income-maximising level of population; its existence reflected the operation within an economy of both diminishing and increasing returns.

As we have noticed, if returns were diminishing at all levels of population (the Ricardian effect), then income per head evidently would rise with every reduction in population; and the optimum would be indefinitely small. But if returns were increasing with every increase in population (Smithian effects) then clearly income per head would rise with every increase in population; and the optimum would be indefinitely large. But suppose at low levels of labour input, increases in labour reap productivity gains through making possible a Smithian "division of labour" or "specialisation". But suppose also, that at higher levels of labour input these benefits of specialisation and co-operation will be counterweighed by the reduced productivity of labour (manifested in the burgeoning

FIGURE 1
THE BENHAMITE OPTIMUM POPULATION



of Ricardian rents) that will be consequent upon the greater ratio of labour to natural resources. Specifically suppose that returns were increasing for low population, say below L*, but decreasing above L*. Then output per head is maximised at L*, the point where the elasticity of output to labour is unitary. L* is the optimal population (see Figure 1). Any population below L* we could call "suboptimal", and any population above we might call "supraoptimal".

Benham

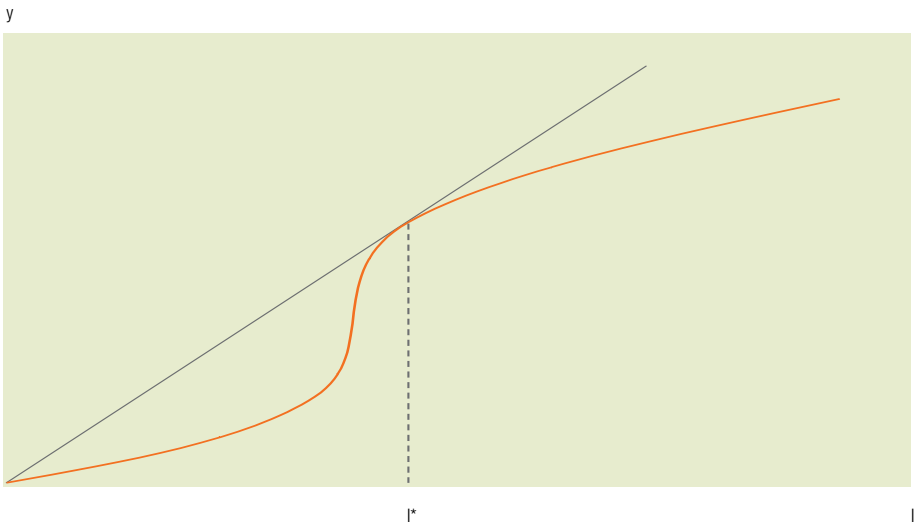
It was from Cannan's class rooms that there arrived in 1923 at Sydney University FC Benham, "of those days…a self-confident, occasionally even brash, young man"[37], who threw himself into Australian policy debates. In a chapter of *The Peopling of Australia*, Benham ventured the first estimate of Australia's optimal population.

He explains that at low population levels "a greater population will be able to take fuller advantage of economic co-operation per head"[38] but at a sufficiently high population "instead of new occupations being created (in response to more people), there would simply be more persons in each existing occupation", and the reduced "natural resources per head" would dominate. He moves forthwith from these a *priori* considerations to declare: "I am inclined to think that optimal population (of Australia) is somewhere between 10 and 15 million"[39]. Regrettably, Benham gives barely any justification of this conjecture, beyond suggesting that since between 1901–1913 productivity of labour rose by 30 per cent there could be no diminishing returns; a shaky inference that neglected both technical progress and capital accumulation. Perhaps Benham felt the thinness of his case because in his own book *The Prosperity of Australia: An Economic Analysis*[40], he shies off any number. In considering the impact of greater population on division of labour and reduced natural resources per head, he concludes: "It is impossible to say which of these tendencies would outweigh the other."

In fact, in addition to empirical uncertainties, there are significant theoretical difficulties with the Benhamite notion of optimal population.

Firstly, there is the embarrassment that at the Benhamite optimum all output is paid to labour.[41] Thus the Benhamite optimum inadvertently takes the appearance of the Wakefieldian workers paradise and land owners' nightmare. The optimum is supremely optimal for labour, but pessimal for other factors.[42]

FIGURE 2
AVERAGE LABOUR PRODUCTIVITY MAXIMISED NO MATTER HOW FEW PEOPLE



That the Benhamite optimum has a wages share of one at the optimum raises a puzzle: In Wakefield's vision was not the wholesale absorption of national income by labour a pathology of a sub-optimal population; a pathology that was to be relieved by the higher productivity that (Benham agrees) is secured by an optimal population? It appears we need to dig a bit deeper into the technology represented in Figure 1. But the most obvious rationalisation makes things still worse for the Benhamite optimum. The production relation of Figure 1 is most easily rationalised as fundamentally one between the output per unit of land (Y/N =y) and factor intensity: Labour per unit of land, (L/N= l). In this attempt to capture the Benhamite vision we are to suppose that the average productivity of labour rises with labour per unit of land until some critical intensity is reached il*; and above that critical intensity the average productivity of labour falls with labour per unit of land.

But under such an "intensity" characterisation of Figure 1 there is, in fact, no unique 'optimal population'; under such a characterisation the maximum average product of labour can be secured no matter how small the supply of labour. In Figure 2 the average product of labour is maximised at l*, as that provides the tangent ray from the origin. But l* can be secured no matter how small the total supply of labour *simply by leaving some natural resources ("land") idle*. Thus all the productivity benefits that were supposedly dependent on a "large" population are secured by a population no matter how small. After all, the marginal product of land at any intensity less than l* is *negative*, and consequently land will be left idle; left idle until the ratio of labour to cultivated land has risen to l*. Thus for all L less than l*N, an increase in L would not cause an increase in the labour intensity with which natural resources are worked; it would only reduce the amount of land left idle. The "very march of the frontier" that excited populationists is revealed as no other than the market maintaining the productivity of labour at its maximum in the face of greater population.

The Benhamite optimum might seek – and find – refuge in other rationalisations of Figure 1. Taking up Wicksellian themes against Cannanite ones, one may argue that Figure 2's *intensity* rationalisation of Figure 1 is mistaken; and that any increase in average productivity with population turns on the *scale* of inputs, rather than intensity. In this scale interpretation it will make a critical difference to the average productivity of labour whether one hour of labour is applied to one square metre of land; or a million hours are applied to a million square metres; despite the intensity being the same. To pursue the scale riposte to Figure 2's intensity rationalisation of Figure 1 – if 999,999 hours of labour input is withdrawn from cultivating the land then average productivity cannot be maintained by withdrawing 999,999 square metres of land from cultivation.

In mathematical terms, the scale interpretation of Figure 1 could be captured by:

$$y = y(l)s(L)$$

$$s'(L) > 0 \text{ for } L<L_{critical}$$

$$y'(l) > 0 \text{ and } y''(l) < 0 \text{ for all } l.$$

This will result in an average productivity of labour positively related to population for low levels of L, but a negative relation at higher levels; and so an optimal level of population.

However, there is also a difficulty in such "scale" rationalisations of the optimum population: as long as positive scale effects are operative there can be no production equilibrium. As long as positive scale effects are operative, any enterprise can always increase its profit (or reduce its loss) by increasing the scale. Thus any enterprise always wants to get bigger: at least until scale economies are exhausted. Every enterprise wishes to assume a scale that will exhaust scale economies.[43] Assuming scale economies are not exhausted by the Australian population – and even at the optimum population, scale economies are *not* exhausted[44] – this means any single enterprise would like to assume a scale as large (strictly speaking, larger) than the whole economy. Such a wish hardly seems to accord with reality.

An attempt could be made to salvage the scale rationale for optimum population by invoking the existence of scale economies that are *external* to the firm; so that while all firms will experience scale effects as the economy grows, no single firm has the private incentive to try to reap them by increasing their own scale. However, Tibor Scitovsky was not exaggerating in saying: "The concept of external economies is one of the most elusive in economic literature."[45] One might add that even if such economies can be identified – and Scitovsky judged examples 'not easy to find' – we are required to ask in a post-Coasian world why are these external economies not internalised? Again, answers to this query may be advanced, but the point is Benham's seemly apparent simple rationale for optimal population now ends up in a tangle of considerations regarding the force of "Coase's Theorem".

That both the scale and intensity rationalisations advanced above of Figure 1 are problematic does not, of course, imply no successful rationalisation of optimum population exists. The point is simply that the Benhamite optimum eludes the simple rationalisation which its advocates assumed it had.

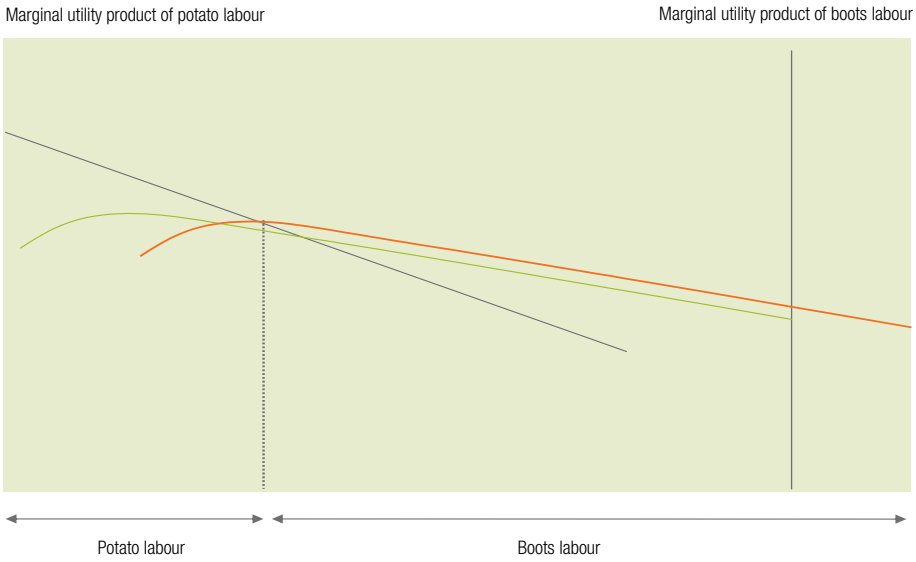
Smithies

Not long after Benham's effort, a different attempt at theoretical rationalisation of optimum population was provided by Arthur Smithies in 1938, on his return to Australia after completing a PhD under JA Schumpeter at Harvard[46]. Rather than analyse a single good economy, Smithies considers a two sector economy just as *The Australian Tariff* did implicitly. Whereas *The Australian Tariff* assumed constant marginal productivity in manufacturing, Smithies explores the implication of increasing marginal productivity in manufacturing, and demonstrates that alternative assumption destroys the anti-populationism of the *Inquiry*.

Consider, said Smithies, an economy where one good ("boots") is produced under perpetually increasing marginal products, and a second good ("potatoes") produced under perpetually diminishing marginal products. It is clear that there is a welfare efficient allocation of labour between the two sectors, that can be usefully presented in a diagram (Figure 3, not drawn by Smithies) which plots the marginal utility product of potato labour and the marginal utility product of boots labour.[47]

FIGURE 3
A SMITHISIAN EQUILIBRIUM

FIGURE 4
EVERYBODY HAPPIER WITH MORE POPULATION



Crucially, Figure 4 shows an increase in population would *increase* the marginal utility product of labour in *both* sectors; and increase the average utility product of both sectors. However, further inspection of such figures reveals that increased population would not be indefinitely improving, as the marginal *utility* product of boots labour does ultimately diminish on account of the diminishing marginal utility of boots, (as manifested in the downward sloping portion of marginal utility product of boots labour). It is easy to see that a sufficiently large increase in population would bring that downward portion into play, with negative consequences. Therefore the overall conclusion is that some extra population is improving, but not an unlimited increase: "There is a magnitude of population which realises the maximum standard of consumption."[48]

Regrettably, Smithies rationalisation of an optimum population invokes theoretical problems that he is negligent in treating. To invoke increasing marginal products may create a unique optimum population, but increasing marginal products famously play mayhem with neoclassical distribution analysis. Certainly, it is impossible for labour to be paid its marginal product in manufacturing. Consequently the equimarginal product

characterisation of the allocation of labour in Figure 3 will not represent the market equilibrium.

But however incomplete and theoretically beleaguered was the notion of optimum population, several Australian economists in the 1930s and war years felt they could show the existence of an optimum, and even quantify it. For example, the Queensland Bureau of Industry, under the direction of Colin Clarke, estimated Queensland's optimal population at 5 million. The Bureau also deemed the optimum size of a Queensland city to be 200,000, perhaps surprisingly low.

However, in the post-war period, the attraction of the concept of an optimum population waned. Already by 1949 Peter Karmel, the economist most expert in demographic issues at the time, was stating: "With regard to the optimum population of Australia, it should frankly be stated that we have very little knowledge of what such a population should be."[49] Economists in the subsequent 50 years found little appeal in the concept.[50] As a result, the National Population Council in 1991, extensively shaped by economists, concluded: "It is inappropriate to enumerate an optimum population level or carrying capacity for Australia," and this was also the view of the National Population Inquiry report of 1975.

Australians as an endangered species

Perhaps Australia's rapid growth in population in the post-war took the wind out of estimates of the optimum, as population glided past the lower bound of Benham's "10–15 millions" in 1959, and the upper bound in 1981. But while the "baby boom" is firmly fixed in retrospective perceptions of the post-war period it did not dominate the consciousness of the first wave of post-war population commentators and controversialists. On the contrary, their vision was deeply coloured by the decline in fertility and population growth in the inter-war period, during which the fertility rate dropped from 3.119 in 1921 to 2.178 in 1936. In 1936 SH Wolstenhome, an economics honours student at Sydney University, prepared the first cohort projection of Australian population[51],[52] that concluded that – even after allowing for annual immigration of 45,000 – population would peak at about 8.9m in 1981, and then begin to fall. The 1944 National Health and Medical Research Committee estimates were slightly more despondent still.

Arthur Calwell's *How Many Australians Tomorrow?* of May 1945, used these projections to raise the alarm, and clamour for policies to encourage fertility and immigration. He stated:

> *"I wonder how many of us have ever thought how much we Australians are like koalas? We both belong to dying races…In 1945 there are 7 million Australians but by 1965 there will be only about 8 million if we go on reproducing at our present rate. And after that according to the statisticians, our population will come to a standstill and get smaller and smaller every year …if we are prepared to bleed to death in the national sense, as we have been doing for more than a decade, our end is certain and inevitable.*
>
> *Population is our number one problem …and it my duty to awaken my fellow Australians to the perils that will always hang over them unless this land is peopled to its carrying capacity."*

Immigration would appear to be the obvious remedy. And the memory of Arthur Calwell is inseparable from his role as Australia's first Minister for Immigration from July 1945. But it is worth stressing that in *How Many Australians Tomorrow?* Calwell does not

invoke immigration is a leading remedy for low population growth. He contends that the principal problem is fertility not immigration. The policies that he favours are natalist.

The advocacy of natalist policies to solve an alleged population problem was not restricted to one party or one "social philosophy". At the 12th Summer School of the Australasian Institute of Political Science in 1947 William Wentworth (not yet an MP) avowed: "It seems inevitable that unless (there is) a radical change in policy or outlook, we shall experience in about 1950 a fall in the number of births quite without precedent in this country. There is catastrophe only four or five years ahead."[53] He suggested that the parents of a child would be eligible for a tax rebate for life, even after the child had passed 16 years. Wentworth also proposed that suffrage be based on children. A father would have an extra vote for every son; a mother would have an extra vote for every daughter.[54]

These positions soon lost their currency as the post-war population surged; in 1949 and 1950 population was growing at 3.24 per cent per year. Attention shifted to immigration rather than population, and for about 20 years it seemed Australia was unconcerned about population.

A tired brown land?

Since 1970 population controversy has reappeared. It was initially centred upon anxieties about global population growth in the context of "limits to growth" consciousness, and reinforced by concerns for the Australian environment.[55] In the 1990s these anxieties were reinforced by a hostility to population that, although rooted in life sciences, was "anthropocentric" rather than "biocentric" in orientation, in that the focus was on the loss of amenity and "urban quality of life" supposedly resulting from higher population.[56] The creation of micro parties such as the Stable Population Party of Australia and Stop Population Growth Now Party – supplementing the creation in 1988 of the green pressure group Sustainable Population Australia – are manifestations of this "quality of life" case against population.

But not all contention has been negative. At the National Population Summit of 2002 the then Victorian Premier Steve Bracks collected a number of public identities (including Malcolm Fraser, Bob Hawke, Phil Ruddock, Anne Summers, Tim Flannery and Tim Costello) to contribute to a collection of papers that in tendency is populationist.[57] Malcolm Fraser voiced sentiments that brought to mind an earlier period, stating: "There is no reason why we could not grow 2.5 times by the end of this century (2100). We would then be a nation of 45 to 50 million people. Our influence would be infinitely greater than a nation that has stood still for 50 years." Economists – who had largely left the study of population for demographers – were also favourable. Ross Garnaut, implicitly reviving an argument of Benham and Smithies, suggested that Ricardian rents are "of small importance in contemporary Australia" but overheads are significant, and so larger population would be beneficial. Alan Fels argued that small population denies economies of scale, and fosters a lack of competition. Max Corden was another moderate populationist economist. From economists resisting the "think big" of the 1920s, it appeared economists were resisting the "think small" of the 1990s.

Conclusion

A retrospective on attempts to understand the implications of Australian population growth is not impressive. We see analysts sometimes misled by current demographic tendencies – and blindsided by later demographic shifts; other times casting a *priori* net that become tangled in submerged complexities; or fixated on one dimension of a problem with many aspects. Australian population has proved a complex topic that at the same time both calls for intense study and defies it.

I would like to thank Jonathan Pincus for his useful criticisms of an earlier draft. I am also indebted to the comments of Graeme Wells, and to John Hawkins for drawing my attention to the significance of Edward Pulsford.

Endnotes

1 Wakefield, Edward Gibbon, *A letter from Sydney and other writings on colonization*, p 19, London, J.M. Dent.

2 Wakefield's father managed some financial affairs of David Ricardo.

3 Wakefield, Edward Gibbon, *A letter from Sydney and other writings on colonization*, p 17, London, J.M. Dent.

4 Mill, *Principles of Political Economy*, 3 Chapter VIII.

5 How to ensure that increased population did not result merely in a more extensive collection of subsistence households? Wakefield's answer: sell Crown land at a price that was out of reach of the bulk of the population, leaving labour to either work as hired hands in surplus producing agricultural properties, or to seek work in towns and thereby promote the division of labour. The revenues from land sales would also pay for infrastructure in a way that would at least partly justify the high price. This fiscal manoeuvre was used in 19thc South Australia, and favoured by the Commonwealth Development and Migration Commission of 1928. Otherwise Wakefield received a mixed reception locally and only partial implementation.

6 EOG Shann, *An Economic History of Australia,* chapter 12; David Cameron, 'Closer Settlement in Queensland: the Rise and Decline of the Agrarian Dream,' 1860s–1960s, in Davison, Graeme and Marc Brodie *Struggle country: the rural ideal in twentieth century Australia*, Clayton, Vic. : Monash University ePress

7 The largest decadal rate of growth subsequently recorded was 55 per cent in 1958.

8 *Australian Dictionary of Biography.*

9 Pulsford adds: "The next Centennial must, however, have one sad record in the matter of population. The aboriginals of Australia will have been long extinct ... Poor fellows, it was not for their good that Cook 'discovered' Australia'."

10 Pulsford was the author of *Freedom in New South Wales Versus Oppression in Victoria.*

11 Otto C Lightner, *The History of Business Depressions.*

12 Coghlan, p 25.

13 Neville Hicks, *The Sin and the Scandal: Australia's population debate, 1891–1911.*

14 *Australian Dictionary of Biography.*

15 Commonwealth Year Book, 1911

16 *Clarence and Richmond Examiner*, Tuesday 11 June 1912.

17 Brady, p 101.

18 Brady, p 159.

19 Brady, p 680.

20 *The West Australian*, 22 August 1921 p 7.

21 "Australia", said Mr Hughes, "is big enough for a population five times its present size. It wants more people." *Barrier Miner*, 27 October 1920.

22 *The Brisbane Courier,* 23 September 1921 p 7.

23 Taylor, Griffith, "Frontiers of Settlement in Australia" *Geographical Review*, Vol. 16, No. 1

24 The emphasis on desert is accompanied by a disparagement of Tropical Australia: "The oft-quoted success of almost all economic tropical plants in the Botanical Gardens at Darwin speaks of the care of the director rather than the capability of the Territory." (Griffith, *Environment and Race,* p 274).

25 *The Sydney Morning Herald*, 30 April 1926 p 12.

26 £10m is $682m 2010 prices. In fact, the completion of the Alice Springs to Darwin railway in 2004 cost $1300m.

27 *The Sydney Morning Herald*, 6 November 1928 p 8.

28 Carolyn Strange and Alison Bashford, *Griffith Taylor*, National Library of Australia p 130.

29 *The Argus*, 23 April 1948 p 1.

30 *The Sydney Morning Herald*, 30 April 1926 p 12.

31 Taylor, Griffith, *Environment and Race, a Study of the Evolution, Migration, Settlement and Status of the Races of Man*, London, p 334.

32 Wikipedia

33 *The Sydney Morning Herald*, 7 November 1928 p 10.

34 See Carolyn Strange and Alison Ashford, *Griffith Taylor*, and Joseph Michael Powell, *Griffith Taylor and "Australia unlimited"*, for accounts of Taylor's confrontation with populationists.

35 W.D. Foresyth, *The Myth of Open Spaces,* p 68.

36 See William Coleman, Selwyn Cornish and Alf Hagger, *Giblin's Platoon: The Trials and Triumphs of the Economist in Australian Public Life*, ANU EPress

37 S.J. Butlin, 'Frederic Benham: 1900–62', *Economic Record* 38(83), p 386–388.

38 F.C. Benham, 'The Optimum Size of Population' *The Peopling of Australia,* P.D. Phillips ed, p 254.

39 F.C. Benham, 'The Optimum Size of Population' *The Peopling of Australia*, P.D. Phillips ed, p 257.

40 F.C. Benham, *The Prosperity of Australia: An Economic Analysis.*

41 This property of the optimum is pointed out by J.D. Pitchford, *The Economics of Population: An Introduction:* at the optimum the average product of labour equals the marginal product, which is what labour is paid in a competitive environment.

42 Of course, one could imagine redistributions between factors so that the optimum actually improves all.

43 ∂Y/∂N = y(l)–ly'. The right hand side is negative if y<"0. We are simply registering the well known proposition that in the production relation depicted in Figure 2 the economy is always in the region in excess of l*.

44 Or it wishes to be of zero scale.

45 Maximisation of average product entails Ny(l)s' = y(l) s/l – y's. Since the RHS is positive, s' must be> 0 at the optimum population. Scitovsky, "Two Concepts of External Economics", *Journal of Political Economy*, Vol. 62 p.143

46 Arthur Smithies, 1938, The future of the Australian Population, in *Australian Population*, Sydney, Australian Institute of International Affairs.

47 The marginal utility product of potato labour = marginal utility of potatoes* marginal potato product of labour.

48 Smithies sophisticates his analysis by allowing for international trade. If all boots were exported for an importable. there would be marginal utility product of *boot export* labour that would bear the same general shape as boot marginal utility product of boots labour; but would bend down more sharply on account of a second downward pressure in addition to diminishing marginal utility: the terms of trade worsen as boot production is increased.

49 Peter Karmel, *Population and Policy*, p 21.

50 Pitchford appears to be the only post 1930s economist who explores it.

51 Martin Bell, 1992, 'Demographic Projections and Forecasts in Australia: a Directory and Digest", Australian Government Publishing Service.

52 SH Wolstenholme, 'The Future of Australian Population:' *Economic Record* 12 (23), p 195–213.

53 W.D. Borrie, 1947 *A White Australia: Australia's Population Problem.* That WD Borrie, "the founder of Australian demography" entitled this volume *A White Australia: Australia's Population Problem* is another reminder that the European ethnicity of Australia's population was almost universally treated as a policy parameter in this period. It is the rarity of the exceptions that are interesting: Griffith Taylor recommending the "mingling" of white Australian population with Asians, and FW Eggleston's 1937 remark that "a mixture of races is on the whole good".

54 A more measured pessimism about fertility in post-War Australia is found in Peter Karmel, 'Population Replacement – Australia, *Economic Record* 25 (49) 83–88.

55 In 1971 John Coulter (Australian Democrat Senator 1987–1995) explained: 'Why is it that population cannot continue to expand indefinitely? Quite simply the planet earth is finite and at our present rate in a few hundred years there will be standing room only, only a few hundred years after that the heat radiated by human bodies would raise the temp of the earth surface to that of molten iron." *Population, the main polluter: condensed papers symposium*, Australian and New Zealand Association for the Advancement of Science, South Australian Division

56 K.D Cocks, *People Policy: Australia's Population Choices*, and Mark O'Connor, *This tired brown land.* Doug Cocks stated: "Population growth will reduce per capita share/access to those unique natural goods, like snow-fields, beaches and recreational rivers, which not even the most prosperous economy can create."

57 Steve Vizard, Hugh J. Martin and Tim Watts, *Australia's Population Challenge.*

Section 2.0
Population futures

2.1
Forecasts and projections of Australia's population

Peter McDonald

Peter McDonald is Professor of Demography and Director of the Australian Demographic and Social Research Institute at the Australian National University. He is President of the International Union for the Scientific Study of Population for the years, 2010–2013. He is frequently consulted on the issue of population futures (causes, consequences and policies) by governments around the world, especially in Australia, Europe and East Asia. In 2008, he was appointed as a Member in the Order of Australia. He is Deputy Director of the ARC Centre of Excellence in Population Ageing Research.

Conventional population projections

Until 2002, official Australian population projections were made only by the Australian Bureau of Statistics and they were published as **projections**, the outcomes of sets of assumptions about what future demography might be. The ABS projections are long-term, at least 50 years into the future, and are based on assumed scenarios relating to the future levels of the three input parameters: fertility, mortality and international migration. The assumptions or scenarios are derived from analysis of past trends and expert opinion about the future directions of these three parameters. Conventionally, the ABS makes a large number of projections leaving it to users to select the series that they consider most appropriate. However, in presenting the results of these projections, the ABS gives priority to one, central projection and most users adopt this for their planning purposes. As a matter of course, agencies of the Australian Government across the full range of responsibilities base their future estimates on the ABS projections.

This situation changed in 2002, when the Department of the Treasury issued its first Intergenerational Report based not on the ABS official projections but upon its own projection of the future.

In 2002, the Australian Treasury published its first Intergenerational Report (IGR) and, importantly, associated the outcomes of its population projection with long-term implications for government receipts and outlays. The first IGR called for adjustment of the then policy settings (in health expenditure) on the basis of a projected deficit of receipts against outlays by 2050. The argument was made that planning had to begin immediately for the fiscal deficit that would arise from the ageing of the population by 2050. This very definitive association of current policy with population outcomes in 50 years time had the effect of providing long-term population projections with a degree of certainty that they had never had before. The Treasury did not surround its projections with warnings about uncertainty, as the ABS had always done, because current policy recommendations were based on the projections. The media reported the IGR results largely uncritically.

There have been two more IGRs published since 2003, in 2007 and 2010, and so the situation of competing official projections has continued. However, the most recent ABS (2009) and Treasury (2010) projections were very similar to each other. It might have been presumed that this similarity would have provided both projections with greater credibility, but the 2010 IGR results were met with both acceptance and disdain in the media. While the 2009 ABS projection of a 2050 population of 35 million went almost without comment, the 2010 IGR projection of 36 million caused a storm.

In the media, the 2010 IGR, like its predecessors, was reported in the language of certainty (with my emphasis added in the citations):

> *Australia's population is **expected** to reach 35 million by 2050 according to projections from Treasury's Intergenerational Report.*[1]
>
> *Treasury now says **it expects** migration numbers to tail off to an average of 180,000 for the next 40 years.*[2]
>
> ***Forecasts** from Treasury's latest intergenerational report predict that Australia's population **would reach** 36 million by 2050.*[3]
>
> *The Federal Government's recently released 2010 Intergenerational Report **argues that rapid population growth is needed to support an ageing population.***[4]

However, with greater frequency than at any previous release, the 2010 IGR was also greeted with disdain (with my emphasis in the citations):

> *Its (Treasury's) projections of future budgetary costs in 2049–50 are of* **no value.** *Treasury does not know with any precision what will happen in the next 40 years. IGR1, in 2002, told us that by 2041–42, the ageing of society would put the budget in deficit by five per cent of GDP. Yet by 2007, IGR2 had virtually halved the forecast deficit that year to 2.7 per cent of GDP. And now IGR3 has halved it again to a forecast deficit of just 1.3 per cent of GDP.* [5]

> *Successive reports have shown* absurdly different *population projections. For example, IGR2002 estimated that, 40 years later, Australia's population would be 25.2 million. Five years later, IGR2007* predicted *that the population would rise to 28.5 million. Three years later, IGR2010 predicts Australia's population in 2050 will be 35 million. The differing reports show that Treasury's population* predictions are worthless.[6]

The disdain from these journalists arose from the high degree of inconsistency between the three successive IGRs, over a period of just seven to eight years as shown in Table 1.

TABLE 1
POPULATION AND FISCAL DEFICIT OUTCOMES IN SUCCESSIVE INTERGENERATIONAL REPORTS

	(MILLIONS)	END POINT FISCAL DEFICIT (AS A % OF GDP)
IGR1: 2002/03	25.2	5.0
IGR2: 2007	28.5	2.7
IGR3: 2010	35.9	1.3
Really Big Australia		0?

In fact, the differences between the IGRs **are** due very largely to the effects of higher levels of migration upon the age structure of the population. The age distribution of net migration to Australia in recent years has been very young, younger than it has ever been, with over 70 per cent of net migration being aged less than 30 years.[7] Many of these immigrants go on to have babies in Australia adding to the impact of immigration on the age structure. The popularly heard view that immigration does not influence the age structure because immigrants themselves grow old is incorrect. Immigration has only a small impact on the age structure because the annual number of immigrants is small compared to the size of the total population. The impact of immigration on age structure is also subject to diminishing returns, that is, the effect becomes smaller as migration increases. This is why, as shown in Table 1, it takes lots of immigrants and lots of population increase to have a relatively small effect on the age structure of the population. Nevertheless, an increase of population from 26 million to 36 million reduces the fiscal deficit from five per cent to 1.3 per cent of GDP.

The release of the 2010 IGR gave release to a debate about the desirable size of Australia's population in the future. This debate continued through the 2010 Federal election with both major parties promising to lower migration. Labor proposed future net migration of 180,000 per annum and the Coalition, 170,000 per annum – essentially the same levels used in the 2009 ABS projections and the 2010 IGR projections that led to the projected population of 36 million by 2050. The political debate also led to the appointment of a Minister for Population, the first in Australia's history. Under his overview, an enquiry into Australia's future population was launched. The enquiry reported in June 2011. The most significant statement in this report is the following:

> *It is more useful for governments, businesses and communities to focus on ways of improving our wellbeing, protecting our environment and making better use of the resources we have, rather than trying to determine an absolute limit to our population and focusing efforts on restricting growth in order to not exceed this "limit".*[8]

The report also refers to the high degree of uncertainty that must be attached to long-term population projections and the limited scope that any government has to influence the end result. Given this position of government, there is a question about how the next IGR should be constructed and, more broadly, about how population forecasts or projections should be made into the future. These are the questions that are addressed in the remainder of the chapter.

Stochastic population projections

Faced with similar dilemmas, the direction in world demography is towards stochastic population forecasts.[9] The stochastic approach attaches probability distributions to future trends in the input parameters, fertility, mortality and migration. These distributions are obtained from an analysis of past time trends and/or through the use of probabilistic (subjective) expert opinions. Effectively, the inputs are the same as conventional projections, analysis of past trends and expert opinions about the future, but the stochastic approach is more programmed or objective in its portrayal of the future. Stochastic projections also enable probability statements to be made about the likelihood of particular outcomes. For example, Tom Wilson, using the stochastic approach has recently reported that there is a 95 per cent probability that Australia's population in 2050 will lie between 29 and 43 million. Wilson also said that this range adequately covered future uncertainties such as "fertility rates, major recessions, government migration policy, major crises which generate refugee flows and demand for labour in the Australian economy".[10] Interestingly, Wilson's most likely estimate for population in 2050 was 36 million, the same as that previously projected by the conventional approaches used by ABS and the Treasury.[11]

Hyndman and Booth in an earlier stochastic projection of Australia's population were much more circumspect especially about the time frame of the forecasts:

> *Time series methods such as we have used here are most useful for short to medium-term forecasting. The width of the prediction intervals shows that the methods become increasingly less informative over time, and as a result we have chosen to restrict our forecasts to 20 years.*[12]

My own view is that the language of stochastic forecasts such as "95 per cent confident", while framed to convey uncertainty succeeds in providing an undue level of certainty to the forecasts. The difference between the Wilson forecast and the Hyndman and Booth forecast provides the evidence. The Hyndman and Booth forecasts were 95 per cent confident that Australia's population in 2023 would lie between 22 and 26 million. The Wilson forecast is 95 per cent confident that Australia's population in 2023 will lie between 26 and 28 million. Why are the two forecasts so confidently different? The answer is not that they used different methodologies but that Australia's demography changed immediately after Hyndman and Booth had completed their forecast; both fertility and net migration increased substantially. This suggests that in making forecasts, greater attention should be given to better methods to assess changes in demographic parameters in the short-term. The following propositions should be applied to population forecasting and population projections in Australia.

Proposition one

We cannot possibly know what the levels of fertility, mortality and migration will be in the 2050s.

- The mothers of the 2050s are not yet born themselves. How can we possibly estimate how many babies they will have and when they will have them?
- If labour demand is the main driver of migration, what will labour demand be in the 2050s? Or humanitarian or family migration?
- There is considerable dispute about the future trend in mortality (slowing down or continued improvement).

Proposition two

For long term projections (eg. 50 years), it is more logical to do "what if" projections or scenarios because then we can see exactly what is involved in reaching a particular outcome. And it is transparent that the outcome is a "what if".

Proposition three

For most policy purposes, we would do better making **forecasts** of population in the **next decade** that are based, not only on recent demographic trends, but also on predicted behavioural change (fertility) and estimates of future labour demand (migration).

Proposition four

Some features of population are able to be forecast on a longer-term basis, especially the future aged population. The population aged 80+ in 2041 is a projection forward of the population aged 50+ now. Fertility will have no impact on this population and migration will have only a minor impact. There will be a range of variation in mortality, but stochastic projections are able to handle this variation very well.

This gives rise to the possibility of using different approaches for different age segments of the future population.

Proposition five

Future demography is not determined by statisticians, economists or demographers sitting in their offices and **exogenously** dreaming of the future, stochastically or otherwise. Future demography will be **endogenously** determined by social, economic and environmental factors.

Short-term forecasts of fertility

Getting the number of births wrong in the short-term involves substantial costs. In the six years from 2004 to 2009, there were 152,000 more births in Australia than there would have been if the number of births had been as projected in the 2003 IGR population projections. This is equivalent to over 250 primary schools each with 600 students, or 8000–10,000 primary school teachers. Gearing up to build schools or to train teachers constitutes a substantial problem when the projections are so wrong so fast.

The annual number of births is not only a product of the number of children that women have across their lifetimes (the quantum of fertility), it is also a product of when (at what age) they have their births (the tempo of fertility). Changes in the timing of births and their flow-on effect into future years are the main cause of errors in forecasting births in the short-term. Despite this knowledge, little attempt has been made to take the timing of births into account in making birth forecasts.

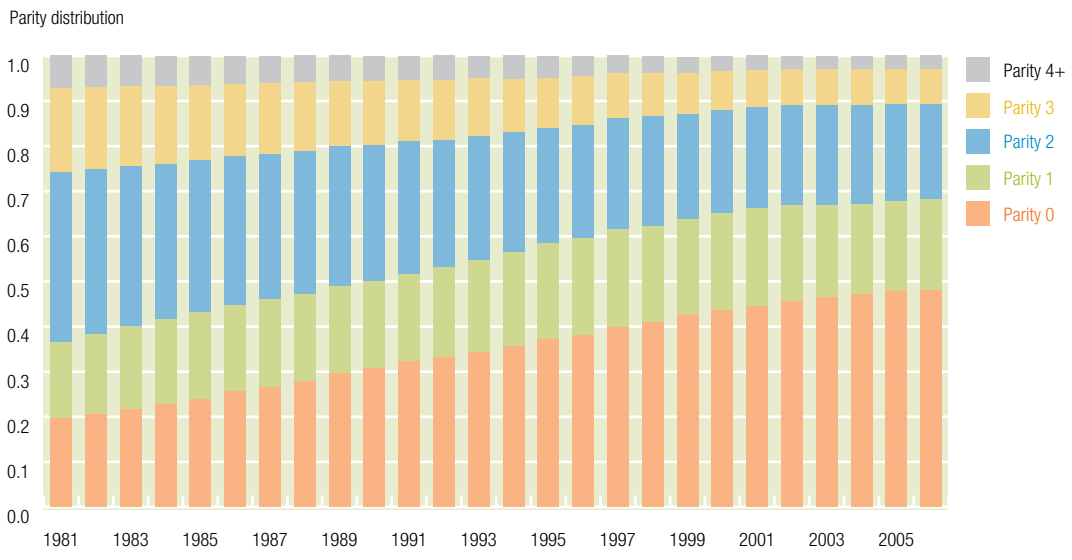
Forecasting of births, whether by conventional methods or stochastic, relies upon age-specific fertility rates (and their sum, the total fertility rate) as input along with the projected female population by age. In other words, the only factor taken into account in estimating whether a woman will have a birth in a given year is her age. In fact, age alone is not a good predictor of whether or not a woman gives birth. Age alone tells us almost nothing about the timing or tempo of fertility. The reason that forecasting of births is so often wrong in the short-term is that no attention has been paid to changes in the timing of births in the forecasting method.

McDonald and Kippen have investigated the use in forecasting of births of three parameters: age, parity and the duration of time since the previous birth.[13] They have observed that, at least in Australia, rates of second and higher order births by age, parity and duration have remained essentially constant in Australia from 1981 to 2000. The implication of this is that if we are able to forecast **first** birth rates by age, the incidence and timing of all subsequent births can be predicted with great accuracy. To forecast first births, we must use birth cohorts of women so that we can take into account the proportion that has already had a first birth.

Figure 1 shows the number of children ever born to Australian women reaching age 30 in the given year. The lowest block in the chart shows the proportion that has no children by age 30. This proportion rose from just under 20 per cent in 1981 to almost 50 per cent in 2006. This demonstrates the massive change in the timing of the first birth that took place in Australia over these years. However, it is also evident that the delay of the first birth slowed to a halt in the most recent years shown in the chart. At least in the short-term, we could forecast that the timing of first births for cohorts of women will not change in the future. This means that the timing of all births subsequent to the first could be forecast on the basis of the already forecasted first births.

The accuracy of forecasting of births subsequent to the first is also supported by Figure 1 – the proportions having second, third and fourth births by age 30 have also levelled off in recent years. Errors in this forecasting method will be much lower than in forecasts that use only age because the birth history of each woman (her current age, the number of children that she has had already and the interval since the most recent

FIGURE 1
PARITY (THE NUMBER OF CHILDREN EVER BORN) DISTRIBUTION OF AUSTRALIAN WOMEN REACHING AGE 30 IN THE GIVEN YEAR, 1981–2006



Source: McDonald, P. and Kippen, R. 2011. *Forecasting Births*. Australian Census Analytical Program, Feature Article, Australian Bureau of Statistics, www.abs.gov.au/ausstats/abs@nsf/Latestproducts/

FIGURE 2
PROJECTION OF FERTILITY FROM 2000–2005 USING THE MCDONALD-KIPPEN APPROACH

Source: McDonald, P. and Kippen, R. 2011. *Forecasting Births.* Australian Census Analytical Program, Feature Article, Australian Bureau of Statistics, www.abs.gov.au/ausstats/abs@nsf/Latestproducts/

birth) are all factored into the forecast. This is an important point. Errors in forecasting births are not only due to errors in forecasting future birth rates, where there are timing changes, forecast errors are also due to poor specification of the population that might have a birth. For example, in the McDonald-Kippen analysis, while women aged 28 were much more likely to have a birth than women aged 38, women aged 38 who had their last birth three years ago were much more likely to have a birth in a given year than women aged 28 who had had their first birth 10 years ago.

Figure 2 demonstrates the effectiveness of the McDonald-Kippen method. Births from 2000 to 2005 were projected from 2000 assuming that rates of birth by age, parity and duration would remain constant over this period at the 2000 levels. The trajectory of the projected total fertility rate (TFR) is the same as that of the observed total fertility rate. The method correctly projects a turning point in the trend in the total fertility rate. Failure to project this turning point using only age as an input parameter led to the forecast errors that have already been noted for projections of births made around 2002 or 2003. Because McDonald and Kippen assume constant three-parameter birth **rates** in the projection, the projected upward trend in the total fertility rate is due entirely to the fact that the structure of the population at risk is considered in terms of three characteristics (age, parity and duration) rather than one (age). The addition of parity and duration to the description of the population structure, given constant first birth rates in the projection period, enables the projection to take into account the cumulated population outcomes of delay of the first birth over many years prior to the projection period. Thus, this is a method that builds in the effects of the tempo of fertility.

In future, births should be forecast using this three parameter model. In Australia, it would be safe to assume that rates of second and higher order births by age, parity and duration remain constant into the future. There is some possibility that the introduction of paid maternity leave may alter the time to the second birth (as it did in Sweden in the late 1980s) as women time their second birth in order to qualify for paid leave. This would have to be monitored in the Australian case but, for the time being, the constant assumption is likely to be reasonable. This means that forecasting of births becomes a matter of forecasting the timing and incidence of the first birth. Models for this purpose, including stochastic models, could be investigated. The methodology described here would also be enhanced if birth registration data were available by age, parity and duration since the previous birth.

Future net overseas migration

In 2006, the Australian Bureau of Statistics changed the definition of the population of Australia to better reflect the long-term presence in Australia of temporary residents.[14] Prior to 2006, temporary residents had been included in the population but in a relatively inaccurate way. The new definition introduced in 2006 is that a person is counted into or out of the Australian population if he/she did or did not spend 12 out of the past 16 months in Australia. This is measured through observation of passport movements. The main effect of the change in definition has been the inclusion of many temporary residents in the Australian resident population category, who would not previously have been counted as Australian residents. It is believed that the two categories most affected are overseas students and Long-Stay Business (457) visa holders. For two years, Net Overseas Migration (NOM) was published using both the old (category jumping) method and the new (12/16) method. In 2004–05, NOM using the new method was 19,000 higher than by using the old method and, in 2005–06, it was 24,000 higher (Table 1).

The data in Table 2 indicates clearly that the large increase in NOM that occurred from 2004–05 to 2008–09 was associated with the very large increase in arrivals of long-term temporary immigrants, many of whom would not have been counted into the Australian population using the pre-June 2006 definition. From 2004–05 to 2008–09, the increase in net migration of permanent settlers was 15,000 while the increase in net migration of long-term temporary immigrants was 107,000.

Table 4 shows the dominance of students in the temporary migration gain. Many students in Australia for more than one year return home in the teaching break at the end of the year and would not have been counted in the Australian population using the pre-June 2006 definition because they did not spend a continuous 12-month period in Australia.

In 2008–09, the number of temporary long-term arrivals exceeded the number of temporary long-term departures by almost 200,000 and, using the new definition, this number was added to the Australian population. International students were by far the largest sub-group of these temporary migrants. The very high level of NOM became

TABLE 2
NET OVERSEAS MIGRATION (NOM), AUSTRALIA, 2003–04 TO 2009–10 BASED ON THE OLD (CATEGORY JUMPING) METHOD THE NEW (12 FROM 16 MONTHS) METHOD (THOUSANDS).

YEAR	NOM (CATEGORY JUMPING METHOD)	NOM (12/16 METHOD)
2003–04	100.0	–
2004–05	123.8	142.6
2005–06	146.8	171.1
2006–07	–	232.8
2007–08	–	277.3
2008–09	–	299.9
2009–10[(a)]	–	198.3

(a) preliminary

Sources: (1) ABS Technical Note – *'12/16 month rule' Methodology for Calculating Net Overseas Migration from September quarter 2006 and onwards.* (2) ABS. 2011. *Australian Demographic Statistics, March Quarter 2011.* ABS Catalogue No. 3101.0. Canberra: ABS

TABLE 3
CHANGES IN ARRIVALS, DEPARTURES AND NET MIGRATION BY BROAD MOVEMENT CATEGORIES, AUSTRALIA, 2004–05 TO 2008–09, (THOUSANDS)

MOVEMENT CATEGORY	2004–05			2008–09		
	Arrivals	Departures	Net	Arrivals	Departures	Net
Australian citizens	69	91	–22	81	83	–2
New Zealand citizens	38	17	21	48	17	31
Permanent settlers	76	4	72	92	5	87
Long-term temporary immigrants	142	60	82	279	90	189

Source: ABS. Migration 2009-10.ABS Catalogue No. 3412.0. Canberra: ABS. Pp.30-31.

TABLE 4
NET OVERSEAS MIGRATION BY SUB-CATEGORIES OF TEMPORARY MIGRATION, AUSTRALIA, 2008–09 (THOUSANDS)

TEMPORARY MOVEMENT SUB-CATEGORY	NET OVERSEAS MIGRATION
International Student	122
Long-stay Business (457)	31
Working Holiday Maker	23
Visitor	22
Other Temporary	–9
TOTAL	189

Source: ABS. *Migration 2009–10*. Catalogue No. 3412.0. Canberra: ABS. Table 3.16.

the subject of considerable debate during the 2010 election campaign but most participants in this debate were unaware that the high level of migration in 2008–09 was due to the temporary movement of international students. The debate was even more ill-informed because the Australian Government, through a policy change relating to progression to permanent residence by students made in February 2010, had already put in place mechanisms that would substantially reduce the numbers of international students in net terms flowing in and out of Australia. Between 2008–09 and 2009–10, net migration to Australia fell from 300,000 to 198,000 (Table 2). In the 2010 election, the Labor Party had favoured a net migration level of 180,000 while the Liberal party favoured 170,000. Thus, there is very little difference between the major political parties.

The analysis above strongly suggests that net international migration in the next decade should be forecast by breaking international migration into at least nine component movements: Skilled Permanent, Family Permanent, Humanitarian, International Students, Long-Stay Business, Working Holiday Makers, Australian Citizens, New Zealand Citizens, and Other Temporary. Potentially, the student movement could be further subdivided into types (university, vocational, school and other). Some of these movements will be largely a function of labour demand in Australia (Skilled Permanent, Long-Stay Business, New Zealand Citizens and, to a lesser extent, Working Holiday Makers). Labour demand and wage levels in Australia relative to other high-income countries will also have a strong bearing on the net migration of Australian citizens. It is interesting to note that in 2008–09, net migration of Australian citizens was close to zero and that fewer Australians left in 2008–09 than had left in 2004–05 (Table

3). This had a lot to do with the favourable employment circumstances in Australia. The Humanitarian movement will be determined by government policy and the Family movement is likely to continue on a gradual rising trajectory in line with the travel movements of young people.

In the short-term, however, it will be the student movement that drives the main fluctuations in net international migration as has been the case in the past five years. Recently, the Australian Government has announced a new, more liberal policy designed to attract higher numbers of international students to Australia and provides a means for these students to remain in Australia for two to four years after they graduate (to start from 1 July 2012).[15] These initiatives will flow through to a higher level of net international migration.

In the absence of an economic recession, the strong likelihood is that net overseas migration to Australia will rise again through 2012, 2013 and beyond. Given the new initiatives in relation to overseas students and the likely continuation of strong labour demand, it will be difficult for the Australian Government to maintain net migration around its preferred level of 180,000.

Long-term prospects for population

Like fertility in the long-term, net overseas migration is unknowable in the long-term. Net migration in the 2040s will be determined by labour demand in Australia and Australian wages relative to the rest of the world in 2040 and by the policies of whatever government Australia has at that time. Given the extreme uncertainty surrounding long-term levels of fertility, mortality and migration, the conclusion of the Australian Government's recent report on population policy that Australia should not have a population target is highly apposite.

Endnotes

1 ABC Lateline 18/09/2009

2 Jacob Saulwick, SMH, 02–02–2010

3 Matthew Moore and Yuko Narushima SMH, 10–04–10

4 Chuck Berger, SMH, 25–02–10

5 Tim Colebatch, The Age,

6 Peter Westmore, News Weekly,

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8 Department of Sustainability, Environment, Water, Population and Communities. 2011. *Sustainable Australia – Sustainable Communities. A Sustainable Population Strategy for Australia.* Canberra: Commonwealth of Australia, p. 25.

9 Bongaarts, J. and Bulatao, eds. R. 2000. *Beyond Six Million: Forecasting the World's Population.* Washington: national Academy Press; Lutz, W., Sanderson, W. and Scherbov, S. 2004. *The End of World Population Growth in the 21st Century: New Challenges for Human Capital Formation & Sustainable Development.* London: Earthscan.

10 Wilson, T. 2011. Sydney Morning Herald 15–05–11.

11 We could probably say with 95% confidence that 95% of planners would simply use the most likely trajectory.

12 Hyndman, R. And Booth, H. 2008. "Stochastic population forecasts using functional data models for mortality, fertility and migration.' International Journal of Forecasting. 24(3): 323–342.

13 McDonald, P. and Kippen, R. 2011. *Forecasting Births.* Australian Census Analytical Program, Feature Article, Australian Bureau of Statistics, www.abs.gov.au/ausstats/abs@nsf/Latestproducts/

14 ABS Technical Note – *'12/16 month rule' Methodology for Calculating Net Overseas Migration from September quarter 2006 and onwards.*

15 Senator the Hon Chris Evans, Minister for Tertiary Education, Skills, Jobs and Workplace Relations and The Hon Chris Bowen, Minister for Immigration and Citizenship. Joint Media Release, 22 September 2011. 'Boost to International Education Sector in Response to Knight Review'.

2.2

Australia unbound? Migration, openness and population futures

Mark Cully and Laze Pejoski

Mark Cully is Chief Economist of the Australian Department of Immigration and Citizenship. He was head of research on employment relations for the UK Government in the late 1990s. Mark returned to Australia in 1999 to join the National Institute of Labour Studies as Deputy Director, and was then General Manager at the National Centre for Vocational Education Research for six years. He is the current chair of the OECD's Working Party on Migration.

Laze Pejoski is a Senior Adviser with the Department of the Prime Minister and Cabinet heading the G20 and Global Economy area. Prior to this he worked with the Department of Immigration and Citizenship as the Director of Migration Forecasting, Modelling and Analysis (he prepared this chapter while in this role). Laze was also a Senior Economist with Access Economics specialising in macroeconomic analysis and health economics. Laze began his career with the Treasury working on international finance and budget policy.

Introduction

In late September 2009, social researcher Mark McCrindle issued a press release claiming that Australia's population would reach 22 million on October 1.[1] He went on to speculate as to whether the new arrival would be a baby boy or girl. The *Herald Sun*, along with many other newspapers, fell for the bait and ran a story picturing a doting young couple with their new-born child. Still, the reporter was smart enough to point out that the new arrival was more likely to be an incoming migrant than a baby. In fact, migrant arrivals adding to the population have been out-numbering births on an annual basis since the mid-1990s.[2] In all likelihood this situation will continue for many years to come, not only due to fertility rates remaining below natural replacement levels but also as a result of Australia's increasing openness to migration flows.

In this chapter we explore how and why Australia has become more open to migration flows. This openness has been much less heralded than the opening of the Australian economy to capital and trade flows but, we argue, should be seen as an additional element in Australia's embrace of globalisation in the last quarter of the 20th century. We go on to examine some of the implications of this trend continuing for the population of Australia.

There are three features of migration flows that matter for the future of the population of Australia: size, mix and character.

On size, it is not pre-ordained. It is true that the tools to regulate the size of the net migration intake are available to government. It is also the case that Australia has more scope than most in enforcing its migration regulations, a virtue of being an island state. It is wrong to infer from this, though, that government can and should set and adhere to migration or population targets. Besides the fact that government cannot regulate against the return of Australian citizens or people leaving Australia, be they Australian citizens or otherwise, nor the ebb and flow of trans-Tasman movements, it is not at all apparent that government can buck wider economic and social forces that drive people movement. These forces are pushing movement levels – inflows and outflows – higher.

On mix, it is important to recognise that new migrants are atypical. A new migrant and a new-born child both add to the population but they are not otherwise equivalent. New migrants are mostly of prime-working age, are better educated than the population at large, come mostly from countries whose first language is not English, are overwhelmingly drawn to cities, have in many instances a social and cultural background which makes Australia foreign to them for at least in the initial years of settlement, and have networks and connections that span the country they left and Australia, facilitating their settlement and further entwining global relationships. As population growth due to natural increase gradually peters towards zero in coming decades – a result of the demographics of ageing – the attributes of new migrants will shape and alter the dimensions of the population of Australia even more than they do now.

On character, migrant flows are becoming more transitory and transnational and, in the process, testing the conventional idea of migrants as settlers. The scale of temporary migration in Australia is large. On any given day, there are around one million temporary migrants resident in Australia, a stock of people that is steadily churning as visas expire, their places taken by those newly granted visas. There are also substantial flows, both out and back in, of Australian citizens. The number of Australian-born people living abroad is estimated by the OECD to be around 320,000 in 2005–06, equivalent to 1.9 per cent of the Australian-born population resident in Australia and elsewhere.[3] Many of the Australian citizens on the move were, of course, once new migrants.

Since 2002 Australia has permitted dual nationality, in common with a growing number of countries. While data is hard to come by, and one should be cautious about over-statement, significant numbers of people are now constructing for themselves a transnational identity.

The good news is that Australia is better placed than other developed nations to harness the benefits of, and changing attributes towards, migration for those who presently live here and those to come. It has well-developed systems for managing migration flows, for screening and selecting migrants in those categories where visa numbers are limited, and for settling and integrating migrants who choose to call Australia home. This stands in marked contrast to many other countries who resist the arrival of new migrants while their resident population age, wither and expire.

Australia's migration in historical context

The title for this chapter is prompted by Geoffrey Blainey's opening lecture in his 2001 Boyer series. In *Australia Unlimited*, Blainey argued that much of Australia's history from the mid-19th to the last quarter of the 20th century was guided by a vision: "All of the vast continent had … to be developed and peopled."[4] This found common expression in the phrase populate or perish, first uttered by former prime minister Billy Hughes in 1935.[5]

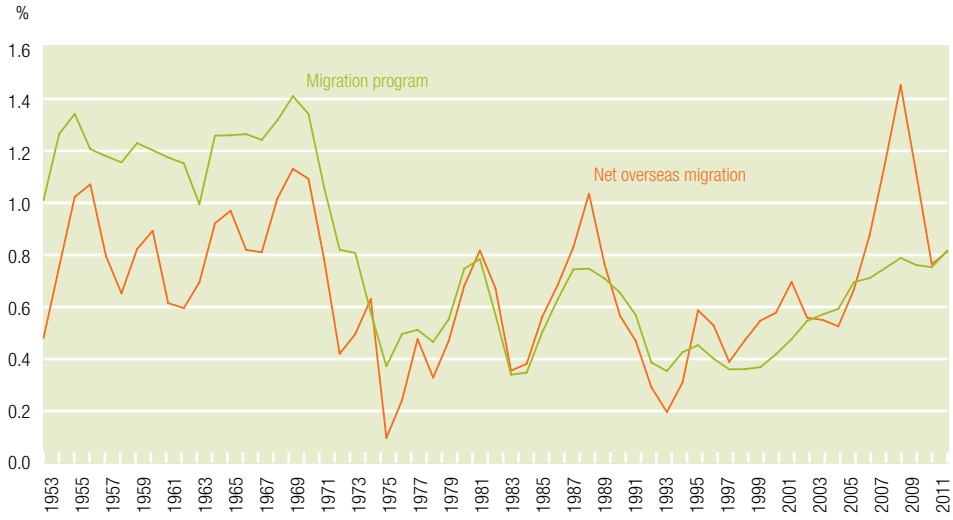
When Arthur Calwell was appointed the first immigration minister in 1945, the population of Australia was 7.6 million and at its most homogenous since white settlement. The Census of 1947 recorded that 10 per cent of the population had been born overseas. Four in five of these had been born in the United Kingdom, Ireland or New Zealand. The number of Chinese migrants, which had reached around 40,000 in the wake of the 19th century gold rush, had dwindled to 6400.[6]

The scale of the post-war migration influx was truly remarkable. Figure 1 shows the annual number of visas granted (under what has come to be known as the Migration Program)[7] was equivalent to adding more than one per cent to the population for every year throughout the 1950s and 1960s. In part this was to compensate for relatively high return rates – as can be seen by the sizeable gap between the number of visas granted and the net migration addition to the population. Years before a working holiday maker program was introduced, canny young Brits took advantage of a subsidised passage to Australia to experience life abroad and worked to save the money for the return trip home. Others returned to by now restored countries in Europe.

Since the mid-1970s, there has been a close correspondence between the relative size of the Migration Program and the migrant contribution to population – the population spike in the late 2000s, as discussed below, a rare exception. It is likely that this closeness is due to a better alignment between costs and motivations of individual migrants, following the removal of subsidised passage and the effective opening of migration pathways to people of developing countries, a result of the abandonment of the White Australia policy.

If the period up to 1970 can be thought of as fulfilling Billy Hughes's maxim, the ensuing quarter century showed a degree of ambivalence, with macro-economic conditions becoming the main determinant of government set Migration Program planning levels. Sharp cuts were introduced in the wake of the recessions of the mid-1970s, early 1980s and late 1980s. Since the mid-1990s, though, there has been a steady increase in the Migration Program and in the net migration intake, a result of more liberal policy settings, especially an openness to greater flows of temporary migrants.

FIGURE 1
THE MIGRANT CONTRIBUTION TO POPULATION GROWTH, 1953–2011 (PER CENT)



Source: Department of Immigration and Citizenship and Australian Bureau of Statistics. The net overseas migration data for 2011 are from DIAC forecasts.

Over the decade ending 2010–11, the Migration Program averaged 139,400 per year, and in 2011–12 is expected to reach a record high in volume terms, double the size of the program a decade earlier. The net migration intake peaked in 2009 and is now back in alignment with the Migration Program.

The legacy of these migration flows is a transformed population, one that would be close to unimaginable to an Australian from its post-World War II starting point. For a start, it is a population that is three times larger. Whereas migrants made up one in 10 of the population in 1947, by 2010 it was approaching three in 10. Of the six million people in Australia who had been born overseas, almost four million had been born in a country where English was not the main language. And, whereas the United Kingdom and New Zealand have continued to be major sending countries, they now jostle for first place in different visa categories among migrants from China and India.

Migration flows and the population count

For clarity, it is worth spelling out the interaction between migration flows and population numbers.[9]

The concept of who counts into the population is a political and social construct, often contested. In Australia, the concept adopted for use in official statistics is persons who are "usually resident" in Australia. What constitutes usually resident has evolved over time. The present definition is that persons arriving in Australia add to the population count if they spend at least 12 months in a 16 month window living in Australia. Conversely, those who leave Australia and are away for at least 12 months in a 16 month window are subtracted from the population count.

The 12-in-16 month rule means the vast bulk of the almost 30 million border crossings per year have no bearing on population numbers. It also means that people who are not permanent residents of Australia can be counted as additions to the population, so long as they satisfy the residency rule. Persons who have counted into the population remain in it even if they leave Australia – however many times – so long as their time out of Australia adds up to fewer than four months within a 16 month window. The operation of this rule means that most international students doing vocational or higher

TABLE 1
VISA AND RESIDENCY STATUS OF NOM ARRIVALS AND DEPARTURES, YEAR ENDING DECEMBER 2009

CATEGORY	ARRIVALS (000s)	DEPARTURES (000s)	NOM (000s)	DESCRIPTION
Permanent	88.5	5.9	82.6	Persons holding a permanent resident visa granted under the Migration or Humanitarian Programs. Planning numbers are set annually.
– Skilled	41.5	3.5	38.0	
– Family	35.0	2.4	32.6	
– Humanitarian and other permanent	12.0	0.0	11.9	
Temporary	238.8	92.2	146.6	Persons holding a temporary resident or visitor visa. Numbers of these visas are generally uncapped.
– Students	138.6	36.5	102.1	
– Skilled workers	30.7	14.9	15.8	
– Working holiday makers	33.1	12.4	20.7	
– Visitors	36.3	18.9	17.4	
– Other temporary	0.2	9.4	–9.3	
Citizens	119.8	99.3	20.5	Citizens of both countries have the right to live and work in Australia.
– Australia	39.1	18.4	20.8	
– New Zealand	80.7	81.0	–0.3	
Other	31.6	34.5	–2.8	Includes returning permanent residents and other unknown.
Total	**478.8**	**231.9**	**246.9**	

Source: Net Overseas Migration Travellers Characteristics Database, Australian Bureau of Statistics.
Note: Visa and residency status is defined at the point of entry or exit.

education courses will be included in the population count for at least the duration of their course. On the other hand, most working holiday makers depart Australia within a year and therefore do not add to the population count, nor subtract from it when they leave.

Within this framework, net overseas migration (or NOM) comprises the net gain or loss of population through immigration (or return migration) to Australia and emigration from Australia. Estimates of NOM are obtained from passenger travel cards that travellers complete when they exit or enter Australia in combination with information from passport control and passenger movement systems. The Australian Bureau of Statistics publishes official population statistics quarterly. These include the components of population change: at a national level this comprises births less deaths, and NOM arrivals less NOM departures.

Preliminary estimates of NOM are published with a two quarter lag. They are modelled on patterns of traveller behaviour observed in final NOM data for the corresponding quarter one year earlier. Final estimates of NOM are published with a six quarter lag, to allow sufficient elapsed time to encompass the usually resident rule.

Various attributes of NOM arrivals and departures are captured from the passenger travel cards and other administrative systems. This includes visa and residency status. Table 1 shows the visa and residency status of NOM for the year ending December 2009, the most recently available final data. It ought to be noted that 2009 was a year of exceptionally high population growth attributable to migration, for reasons discussed in more detail below. Here remarks are confined to illustrating conceptual issues in the table.

The visa and residency status of those counting into, or subtracting from, the Australian population is as at the time of entry or departure. The very low number of departing permanent residents, relative to arrivals, is because most permanent residents go on to become Australian citizens who are then recorded against this category should they depart from Australia.

As can be seen, the net migration figure is a result of large movements of people in both directions in many different sub-categories. The scale of the flows was equivalent to 3.2 per cent of the total Australian population (measured at the start of the reference year), an indication of the rate of population churn or openness to people movement.

Over the reference period, the smallest contributing arrivals category (disregarding the "other" category) was permanent arrivals. Astute readers may wish to know why the number of arrivals in this category fell far short of the approximately 184,000 visas granted under the Migration and Humanitarian Programs in that same period.[10] The main reason is that many of the visas granted under these programs went to people already in Australia as temporary migrants, especially former students.

The granting of a permanent residency visa to a temporary migrant already onshore has the same effect on the population as one granted to a person outside Australia. On the one hand, the temporary migrant adds to the population, either in the reference year or an earlier one. On the other, granting a visa to them denies a place that would otherwise have gone to a new permanent resident coming from offshore, which does not therefore count into NOM. If, taken to a logical extreme, all permanent residency visas went to onshore temporary migrants, the permanent arrival contribution to NOM would be zero, irrespective of the size of the Migration Program. In fact, it can be shown that, subject to certain conditions, the level of net overseas migration is largely set by the size of the Migration Program, even where the number of temporary visa grants is uncapped.[11] This transition in visa status also helps to explain why temporary resident arrivals are much larger than departures, rather than in balance.

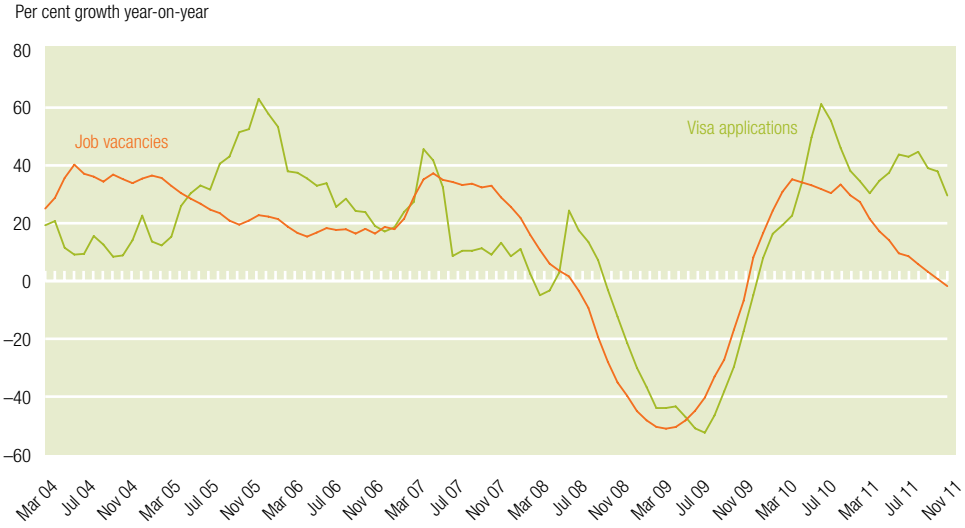
Migration flows, globalisation and the nation state

The categorisation of migration flows in the preceding table reflects the administrative rules in place when people migrate to and from Australia, not the underlying forces that drive flows. There is a growing literature on the determinants of migration flows, with important contributions coming from both economics and sociology.

We do not intend to cover this literature in this chapter,[12] but rather wish to make a different point: these underlying forces constrain the effectiveness of the administrative rules designed to determine the numbers of immigrants admitted, as well as who is admitted from among those seeking entry.

Consider, for example, household formation that traverses national borders. In 2001–02, Australia granted 33,300 visas to foreigners who had married or partnered with an Australian citizen or permanent resident. In 2011–12, that number is expected to reach 42,000, a figure insufficiently high to fill a growing backlog of applications. With more people crossing international borders for tourism, business, long-term stays or study – the United Nations World Tourism Organisation,[13] for example, reports that international tourist arrivals reached 940 million in 2010, up from 25 million in 1950 – there are bountiful opportunities for cross-national relationships to form. Liberal democratic states may, in some instances, find this disquieting, but it is an area that most find extremely difficult to regulate and control.

FIGURE 2
ANNUAL GROWTH IN JOB VACANCIES AND VISA APPLICATIONS FOR TEMPORARY SKILLED MIGRANT WORKERS, 2004–11



Source: Department of Immigration and Citizenship and ANZ Bank.
Note: Growth rates are derived as 3 months ending over same period one year earlier.

Another example is temporary migrant workers. Australia has operated a temporary skilled worker program, colloquially known as the 457 scheme – in reference to the visa sub-class number – since the mid-1990s. The program allows employers to hire foreign skilled workers, subject to satisfying various sponsorship and eligibility requirements, such as paying the going rate for the job, if they are unable to source workers locally. There is no cap on the number of visas that can be issued. As can be seen in Figure 2 the inflow of workers under this scheme is highly responsive to labour market conditions in Australia, here measured by the number of job vacancies, as reported each month by the ANZ Bank: the two series move closely in tandem.

This was most evident during the labour market downturn associated with the global financial crisis of 2008 and 2009. Total job advertisements peaked in April 2008 at 275,000 then fell by more than half to trough at 125,000 in July 2009. Monthly applications for temporary skilled worker visas peaked at 6300 in June 2008 then reached a trough of 2500 in October 2009. The magnitude of the peak-to-trough decline was similar in both series, 55 per cent for job vacancies and 61 per cent for temporary skilled workers. Since the trough, both series rebounded in line with improved labour market conditions during 2010, then fell away again during 2011 as below-trend growth in economic activity moderated the demand for labour.

Both examples serve to illustrate the point that migration flows are greatly influenced by social and economic forces to which governments can respond to positively – through adaptive and flexible policy settings – or negatively, through attempts to stop or reverse these forces, with the attendant risk of failure. Australian Government policy has become increasingly adaptive and flexible over time. An important adaptive feature is the extent to which those other than government and individual migrants, are given agency and influence in the migration system.

With respect to skilled migration, employers now have such a significant role that it can be reasonably characterised as a hybrid system.[14] Traditionally, applicants for skilled migration were selected on the basis of their attributes and capabilities (assessed via a government-administered points test); permanent residence was granted with no requirement to have arranged employment beforehand. Since the mid-1990s, employers themselves have been given the ability to select migrants through employer

sponsorship, subject to eligibility conditions, such as meeting the requisite level of proficiency in English. The rationale here is obvious: employers know what skills they are seeking and if they can identify these themselves, while adhering to government set rules, it is more efficient for all parties (employers, migrants, government) to facilitate their role in the selection process.

Similar arrangements have now come into play, or are being developed, for state and territory governments via state migration plans, for large resource employers via enterprise migration agreements, for niche occupations that fall outside normal skilled migration channels (for example ski instructors) via labour agreements, and for regional areas of Australia via regional migration agreements. Following the recent Knight review, consideration is also being given to expedite the granting of visas to higher education students where providers wishing to enrol them accept the bona fides of their student status, rather than have government administrators make this assessment.

The two examples described above also reinforce the point made in the introduction that the scale of migration flows is not pre-ordained by government fiat. Attempts to set migration or population growth targets will either not be met in practice, or give rise to unintended and perhaps undesirable consequences (such as skill shortages). Analysts in the United Kingdom, for example, are sceptical that the government can meet its pre-election commitment to reduce net migration to below 100,000 per annum by introducing tighter entry policies.[15] The most recent data from the Office for National Statistics shows net migration to the United Kingdom was 252,000 in 2010,[16] a rise from the previous year, driven by a fall in emigration.

There are good reasons for thinking that Australia's open stance towards migration will continue, with high and possibly growing levels of inflows and outflows. Inflows are likely to be driven by unmet labour demand, with an ageing population providing fewer new workers to maintain and grow economic activity levels. Outflows will correspondingly rise because of the in-built circularity inherent in much temporary migration. They may also rise with greater opportunities abroad for emigrants and returning migrants.

As the living standards of those in newly industrialising countries converge with those in the developed world, migration dynamics will alter. There will be greater competition between countries for skilled migrants, and emigration from the developed world will rise as immigrants return to their country of origin. A possible implication of this is that Australia's highly selective policy settings around skilled migration may need to become less selective so as to maintain a constant inflow of new migrants. The likelihood of this eventuating is low. The main reason for drawing this conclusion is that Australia's draw on the international pool of migrants is relatively slight. For instance, China is now the largest source country for entrants under the Migration Program, but that constitutes only around two persons per annum per 100,000 of the Chinese population. As Chinese living standards rise, so too will educational attainment and professional employment, raising the likelihood that more Chinese nationals will meet Australia's selective requirements.

One area where Australia is certain to face growing competition from other countries is international education. For tertiary education, Australia ranks third among OECD nations in the overall volume of students.[17] Other countries will seek to enter this market, or increase their market share, as Australia's experience shows that it is a profitable economic activity and creates a flow of potential future settlers through a two-step migration process. This is not, however, a static market. The number of international students in 2009 was 3.7 million, almost double what it was a decade earlier. Around 2.2 per cent of tertiary students enrolled globally studied outside their home country in 2009. Both of these figures are likely to rise in coming years. Australia remains very well placed to, at the very least, maintain a constant volume of international students.

We have shied away in this section from discussing the flow of irregular migration as there is little that can be said with certainty. With a non-contiguous border and a universal visa system, Australia has a much greater ability to counter irregular migration flows than just about any other country in the world. Testimony to this is the number of visa over-stayers, which numbered fewer than 54,000 in June 2010, and represents around one per cent of those arriving in Australia on temporary visas. Most visa over-stayers are tourists who depart shortly thereafter. The number of asylum seekers arriving by boat has surged in the past couple of years. History suggests these surges come in cycles.[18] Those granted protection in recent years have been absorbed within the existing planning levels for the Humanitarian Program.

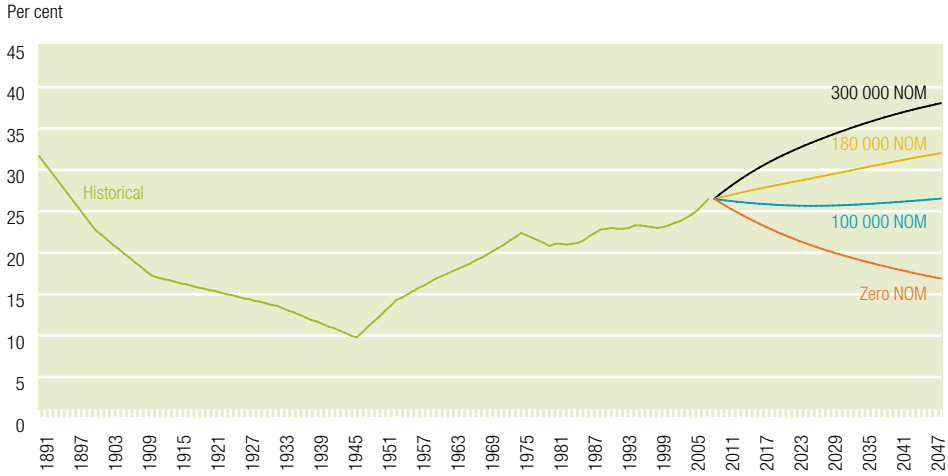
Migration flows and population forecasts and projections

The preceding section should not be taken to mean that governments are powerless to regulate migration flows or the attributes of immigrants. It requires adaptive strategies, not reactive ones. The main adaptive strategy the Australian Government has at its disposal is responding to forecasts of the likely near future. Since 2010 the Department of Immigration and Citizenship has developed a short-term forecasting model of NOM arrivals and departures. The forecasts have a four year horizon. They are revised quarterly and made publicly available on the department's web site.[19]

The model is based on data showing the propensity of different categories of visa grants to flow through to NOM arrivals, while NOM departures are forecast from trend data on the relationship between the stock of different visa and residency categories and outflows from that stock. The model incorporates Treasury forecasts on the Australian economy and International Monetary Fund forecasts on the global economy – as these are related to inflows of temporary skilled workers, emigration, and return of Australian citizens – and assumes no policy change over the forecast period. That means, for example, the size and mix of the Migration and Humanitarian Programs in the current year is assumed to continue over the duration of the forecasts. The model can be used to test scenarios, such as a change in the economic outlook or a policy change, for example a variation in the size of the Migration Program. It can also be used to identify changes in parameters when flows in visa categories depart significantly from the forecasts. It therefore provides government with highly valuable information that it can draw upon when considering policy options around the size and mix of the Migration Program or the likely consequences of changes in visa policy settings.

Had such a tool been available from the mid-2000s, it would have been possible to advise the government more precisely about the looming population growth consequences of the growth in temporary visas, especially among international students. The growth in visas granted to students arriving from outside Australia doubled in the space of four years, from 117,400 in 2004–05 to 226,900 in 2008–09. This was not matched by growth in students departing from Australia having completed their course. Many remained to do further courses. Many lodged applications for permanent residence as a skilled migrant, and remained in Australia pending the outcome of their application. As a result, temporary residents counting as NOM arrivals in the population soared, with no corresponding increase in NOM departures, pushing the overall level of NOM to record highs and Australia's overall population growth to among the fastest in the developed world. It was not until the nexus between student visas and permanent residence was severed in 2010 that the adjustment came as offshore student visa grants fell and NOM departures started to increase. The most recent data from the

FIGURE 3
HISTORICAL AND PROJECTED SHARE OF AUSTRALIANS BORN OVERSEAS, 1891 TO 2050 (PER CENT)



Source: Australian Bureau of Statistics and Department of Immigration and Citizenship projections.

Australian Bureau of Statistics shows that the fall in NOM has now ceased, and the Department's forecasts are for it to gradually increase to around 200,000 persons per annum by 2015.

Beyond 2015, the size and mix of NOM arrivals and NOM departures will shape and transform the population in Australia even more than it has done over the past 60 years. This is because the relative importance of natural increase in population growth will diminish, while that of the net migrant intake will increase.

Elsewhere in this volume there are discussions of population projections, which we do not intend to rehash. An important implication from our preceding analysis, however, is that the size of the future migration intake is highly uncertain, as are the various sub-components. They are, as the econometricians say, stochastic variables. If that is accepted, it makes long-term population projections like those published by the Australian Bureau of Statistics, and those included in the 2010 Intergenerational Report, hazardous to use as a basis for population planning. Demographers are increasingly looking to Bayesian and stochastic approaches to population projections, ones which assign probabilities to different population outcomes. It may be fruitful to explore these in Australia (as Peter McDonald suggests, in Chapter 2.1).

One useful application of population projections can be to answer "what if" style questions. As the parameters around fertility and mortality rates are far more stable than for net migration rates, it is possible to answer questions about the future population of Australia by supposing there are different average levels of net migration.

This approach is adopted to project the size of the overseas-born population in Australia by 2050 using a standard demographic model. As far as possible the model is designed to be consistent with that used by Treasury in the *2010 Intergenerational Report*.[20] Four different net migration scenarios are modelled, incorporating the latest official data on births, fertility rate, deaths, life expectancy and the age-gender composition of NOM.[21] Core assumptions are an unchanged total fertility rate of 1.92 births per woman from 2011 and continuing upward trends in life expectancy. The four scenarios are a high level of NOM (300,000 per annum), a medium level (180,000 per annum), a low level (100,000 per annum) and a no net migration scenario. The assumption of a constant level of NOM – rather than, say, a constant rate of NOM to population – follows the approach taken in the 2010 Intergenerational Report and the medium NOM scenario is the same as that used in its base case projection.[22] For each scenario the total size of

the Australian population is projected for each year through to 2050, and the size of the overseas-born sub-population within it. The results are shown in Figure 3.

Focusing just on the 2050 projections the results show:

- For zero NOM the total population is projected to be 25.6 million, around 4.3 million of whom would be born overseas. This would represent a decline from the current level of 6 million;
- For a NOM of 100,000 per year, the overall population rises to over 31 million with around 8.2 million being born overseas;
- With a NOM of 180,000 per annum the total population would reach 35.5 million of whom a projected 11.4 million would be overseas-born; and
- Finally, a NOM of 300,000 per annum, very high by historical standards, would result in a projected population of more than 42 million, with over 16 million overseas-born.

One way of interpreting Figure 3 is that the number of overseas-born in the population is almost certain to rise. The endogenous demand for new workers is almost certain to guarantee a level of NOM above the low-level scenario of 100,000 per annum, given rising aged dependency ratios. If NOM was to be at that level it would roughly ensure that the share of overseas-born in the population remained constant. In other words, any average value of NOM in excess of that level will result in an increasing share of the Australian population that is overseas-born.

The ability of the existing resident population to absorb and welcome these new migrants will be a challenge, but our history since post-World War II ought to give us confidence.

Conclusion

This chapter has examined the inter-relationship between migration and population, a topic that often generates more heat than light. We have endeavoured to provide light, and have come up with several conclusions that are important pointers for the future of Australia.

First, Australia is likely to remain a country that attracts and welcomes a high proportion of immigrants. A variety of reasons support this conclusion, including the reception and opportunity Australia provides to migrants, its openness to migration flows, and the pull factors of rising labour demand as the population ages and cross-border household formation.

Second, the size, mix and character of migration flows are key determinants of what the population of Australia might look like by mid-century; and more so than over the previous half-century. Although the degree of uncertainty around each of them is high, it is likely that the size of the migrant population will rise, as will its share of the total Australian population. Our best way of facing the future is to be adaptive and flexible, drawing upon sound knowledge of the near future.

Finally, Australia has an enviable record in managing migrant entry and settling newcomers. Our overseas-born population has the lowest unemployment rate among OECD countries, and the children of migrants do as well as the native born in international secondary assessment tests, whereas they do worse in almost all other OECD countries. There is no reason to suspect that we won't be able to maintain this high international standing.

The views in this chapter are to be attributed to the authors, and not to their employers or the Australian Government.

Endnotes

1 McCrindle Research 2009, 'Australia Hits 22 Million on 1 October 2009', accessed at http://www.mccrindle.com.au on 17 February 2012. McCrindle gazumped the Australian Bureau of Statistics whose population clock – which projects the current population – did not click over to 22 million until some weeks later. It transpires McCrindle was the more accurate forecaster: it was subsequently shown that the official population count went past 22 million sometime around the middle of August 2009.

2 Australian Bureau of Statistics (ABS) 2008, *Australian Historical Population Statistics 2008*, Cat. No. 3105.0.65.001

3 Widmaier, S and Dumont, J.C 2011, 'Are Recent Immigrants Different? A New Profile of Immigrants in the OECD', OECD *Social, Employment and Migration Papers*, No. 126, OECD, Paris.

4 Blainey, G 2001, *This Land is All Horizons*, Boyer Lectures 2001, ABC Books, Sydney. The title for the lecture came from a 'booster' book of the same name by E J Brady, published in 1918.

5 Australian Dictionary of Biography, accessed from http://adb.anu.edu.au/biography/hughes-william-morris-billy-6761 on 17 February 2012.

6 Statistics in this paragraph come from ABS 2008, op cit.

7 Australia has a range of migration programs. What is known as the Migration Program refers to the granting of permanent residence visas for skilled and family migrants within the annual planning levels set by the Australian government. There has been, since the late 1970s a separate Humanitarian Program that grants permanent residence visas to persons requiring protection under the 1951 Convention Relating to the Status of Refugees. The program also offers resettlement to people outside Australia in great humanitarian need.

8 Statistics in this paragraph come from ABS 2011, *Migration 2009–10*, Cat. No. 3412.0.

9 Readers seeking more detail on migration flows and visa grants are referred to *Population Flows: Immigration Aspects*, published annually by the Department of Immigration and Citizenship.

10 Estimated by taking the average of visas granted in the 2008–09 and 2009–10 program years.

11 Leaving aside movements of Australian citizens and residents and New Zealand citizens, NOM arrivals (*A*) comprise temporary arrivals (*TI*) plus arrivals of persons outside Australia granted permanent residence (*EP*).

If all temporary visas expire in the next time period, NOM departures (*D*) comprise temporary arrivals in the previous time period (TI_{t-1}) less those granted permanent residence (*IP*).

The size of the Migration Program is given by *EP + IP* so long as all visa places are taken up in the time period.

$NOM_t = A_t - D_t = (TI_t + EP_t) - (TI_{t-1} - IP_t)$, which can be re-arranged as $(TI_t - TI_{t-1}) + (EP_t + IP_t)$

If $TI_t = TI_{t-1}$, then the first term is zero and NOM is equal to the size of the Migration Program.

This mathematical relationship can be violated on two grounds: first, if there is continued year-on-year growth in temporary visa grant numbers then NOM will exceed the Migration Program each year by the difference between TI_t and TI_{t-1}; and, second, that temporary visa holders are able to remain in Australia without ever becoming permanent residents. The historical trend is that the net movement of Australian residents and citizens and New Zealand citizens, who all have free right of entry and departure, is a small, positive contributor to NOM.

12 On the economics of migration flows see, for example: Beine M, Docquier F and Ozden C 2011, 'Diasporas', *Journal of Development Economics*, vol. 95, no. 1, pp. 30–41; Ortega F and Peri G, 'The Causes and Effects of International Migrations: Evidence from OECD Countries 1980–2005', *NBER Working Paper* 14833, National Bureau of Economic Research. A more sociological literature is canvassed in de Haas H 2011, 'The Determinants of International Migration' *DEMIG Working Paper 2*, International Migration Institute, University of Oxford.

13 United Nations World Tourism Organisation 2011, World Tourism Barometer, accessed from http://mkt.unwto.org/en/barometer on 17 February 2012.

14 Papademetriou D, Sommerville W and Tanaka H 2008, 'Hybrid Immigrant-Selection Systems: the Next Generation of Economic Migration Schemes', in *Talent, Competitiveness and Migration*, Transatlantic Council on Migration.

15 Cangiano A 2011, 'Demographic Objectives in Migration Policy-Making', *Policy Primer* series, Migration Observatory, University of Oxford.

16 Office for National Statistics 2011, *Long-term International Migration*, November 2010.

17 Organisation for Economic Cooperation and Development 2011, *Education at a Glance 2011*, OECD, Paris.

18 Phillips J and Spinks H 2009, 'Boat Arrivals Since 1976', Background Note, Parliamentary Library, Australian Government, Canberra

19 The most recent forecasts are contained in Department of Immigration and Citizenship 2012, *The Outlook for Net Overseas Migration, December 2011*, DIAC, Canberra. A detailed description of the forecasting method can be found in the outlook for May 2011.

20 Treasury 2010, *Australia to 2050, the 2010 Intergenerational Report*, Australian Government, Canberra.

21 The model uses:
- The age and gender split of Australians born and overseas born from *Migration Australia* (Cat 3412.0).
- A total fertility rate of 1.921 births sourced from *Australian Demographic Statistics* (Cat 3101.0). Age specific fertility rates from *Births Australia* (Cat 3301.0).
- Births, deaths, and life expectancy sourced from *Australian Demographic Statistics* (Cat 3101.0) and *Australian Historical Population Statistics* (Cat 3105.0).
- Population by single year of age sourced from *Population by Age and Sex*, Australian States and Territories (Cat 3201.0).

22 Under the medium scenario, the projected population in 2050 is 35.5 million, slightly below the Treasury projection of 35.9 million.

2.3
Population distribution and internal migration

Graeme Hugo

Professor Graeme Hugo is an ARC Australian Professorial Fellow, Professor of the Discipline of Geography, Environment and Population and Director of the Australian Population and Migration Research Centre at the University of Adelaide. Graeme has published over 300 books, scholarly journal articles, chapters, conference papers and reports. In 2002 he secured an ARC Federation Fellowship over five years, and in 2009 he was awarded an ARC Australian Professorial Fellowship. He is chair of the Demographic Change and Liveability Panel of the Ministry of Sustainability, Environment, Water, Population and Communities and was appointed to the National Housing Supply Council in 2011.

Introduction

The Australian population debate has been dominated by the numbers issue: How many Australians? A big Australia vs a small Australia? What is Australia's carrying capacity? What is Australia's optimal population? This dichotomisation and simplification is unfortunate because the challenges and opportunities presented by population change in Australia over the next few decades are as much to do with population composition and spatial distribution as they are about numbers. This chapter focuses on the spatial, and argues that an important part of any sustainable population strategy for Australia must involve consideration of where the future population will live and the configuration of the settlement system and policies which work toward achieving a better balance between the distribution of resources and population.

The present preoccupation with gross numbers has not always characterised the population debate in Australia. Concerns about population distribution go back a century and indeed were often front and centre in the debate. Accordingly after summarising the main features of the contemporary Australian population distribution, a brief historical review of policy and public concern with the spatial dimension of Australia's population is presented. The attention then turns to factors that have shaped the past, and will influence population distribution into the future. Policy issues relating to future population distribution are then presented.

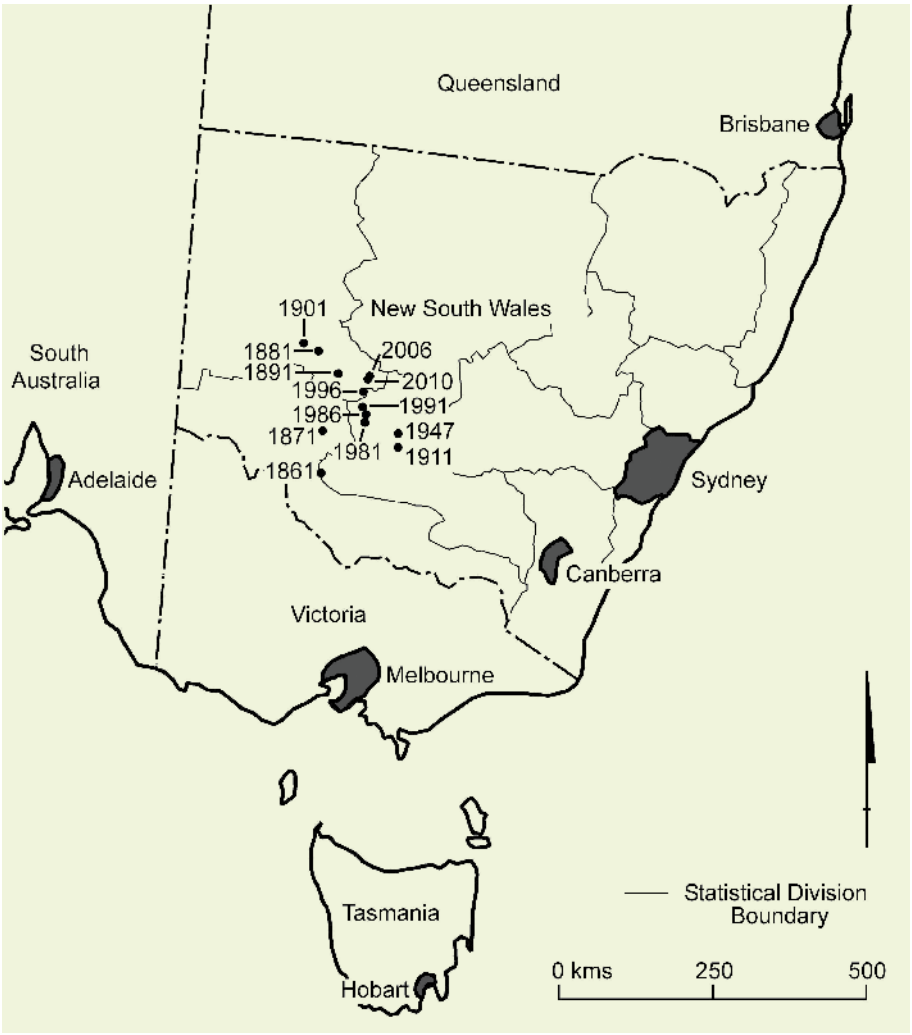
A distinctive population distribution

In discussing Australia's population distribution, one is confronted with a striking paradox of mobility and stability. On the one hand Australians are the most mobile society in the contemporary world. The 2006 census indicated that 16.8 per cent of Australians had moved their permanent place of residence in the last year and 45.5 per cent in the last five years. Moreover, 23.9 per cent of the Australian population was born in another country, the highest proportion for any middle-sized or large country. In addition, at any one time there are almost one million foreigners in Australia on some form of temporary visa; and about one million Australians reside abroad. Hence the Australian population is one of the most residentially mobile in the world.

On the other hand, there has been a great degree of stability in the overall spatial structure of the national population distribution. About a century ago the geographer Griffith Taylor argued that the structure of Australian population distribution had been fixed by the 1870s and his argument is still substantially sound. Figure 1 shows the centre of gravity of the Australian population since 1861 and indicates that it has moved very little over the subsequent 150 years. Despite massive population growth the basic structure of the spatial distribution of the population has remained fairly stable. This is in contrast to the United States where there has been significant westward and southward shift in the centre of gravity of the population distribution over the same period.[1]

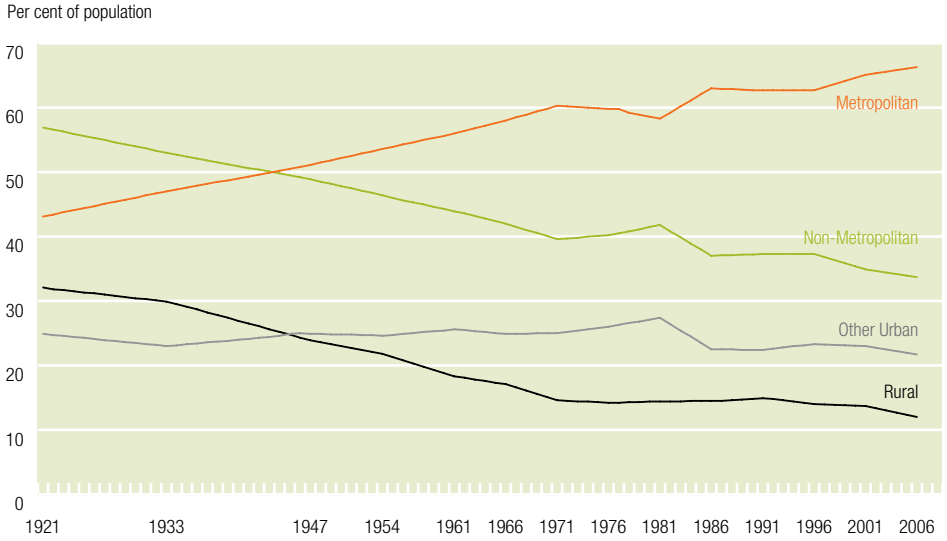
Moreover, despite a popular narrative of massive internal migration from non-metropolitan to metropolitan areas, there is also a high degree of stability in the proportions of the national population living in metropolitan, other urban and rural areas. Figure 2 indicates that there has been relatively little change over the last few decades in the proportions of the national population living in the three main sections of state categories identified by the ABS.

FIGURE 1
AUSTRALIA: CENTRE OF GRAVITY OF POPULATION, 1861–2010



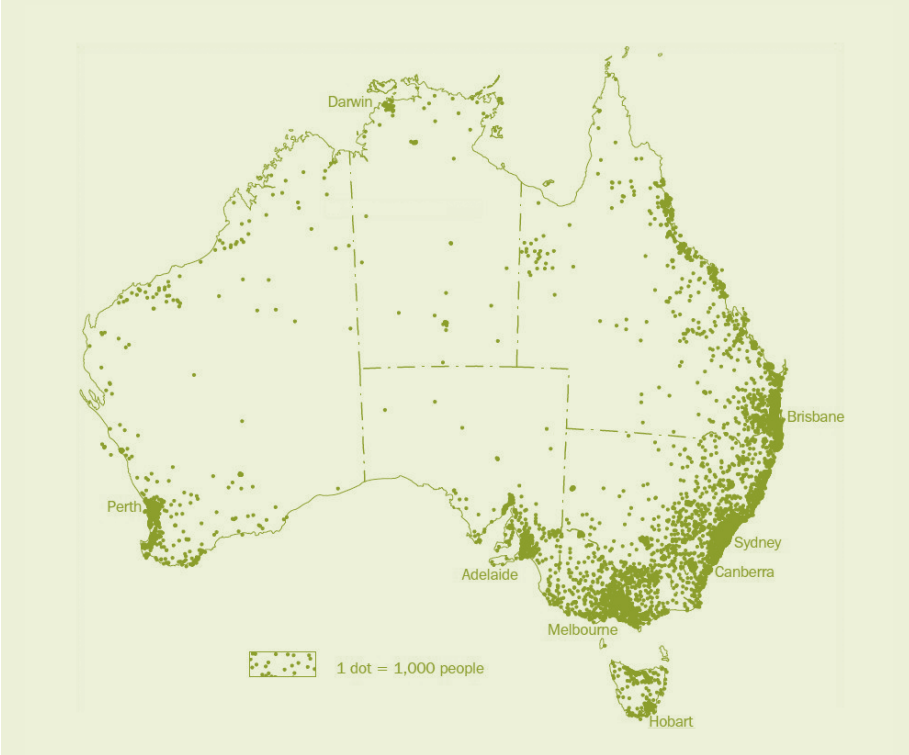
Source: Calculated from ABS Historical Statistics

FIGURE 2
AUSTRALIA: CHANGING DISTRIBUTION OF THE POPULATION BETWEEN URBAN AND RURAL SECTORS, 1921–2006



Source: Australian Censuses, 1921–2006

FIGURE 3
AUSTRALIA: DISTRIBUTION OF THE TOTAL POPULATION, 2006



Source: ABS, 2008, 192

As well as being relatively stable, the Australian population distribution and settlement system are distinctive. Figure 3 shows the spread of population across Australia is quite uneven involving:

- A low population density of two persons per km^2;
- A high level of urbanisation – 87 per cent live in urban areas;
- A concentration within capital cities – 64 per cent;
- A strong coastal orientation with 81 per cent living within 50 km of the coast; and
- An uneven density – 76 per cent of the people live on 0.33 per cent of the land area with a density of 100 persons or more per km^2 while 0.8 per cent of the population live on 70.5 per cent of the land area at a density of 0.1 persons or less per km^2

Table 1 shows there has been an overall shift away from the southeastern states to the northern and western parts of the country. In 1947 the states of New South Wales, Victoria, South Australia and Tasmania accounted for 78.4 per cent of the national population, but by 2006 they had 67.9 per cent of the total. The offsets were that Queensland increased its share from 14.6 per cent to 19.7 per cent and Western Australia from 6.6 per cent to 9.9 per cent. This has been a function of structural change in the Australian economy in the last 30 years, with the south eastern states, heavily reliant on manufacturing, suffering substantial losses of jobs in this sector.

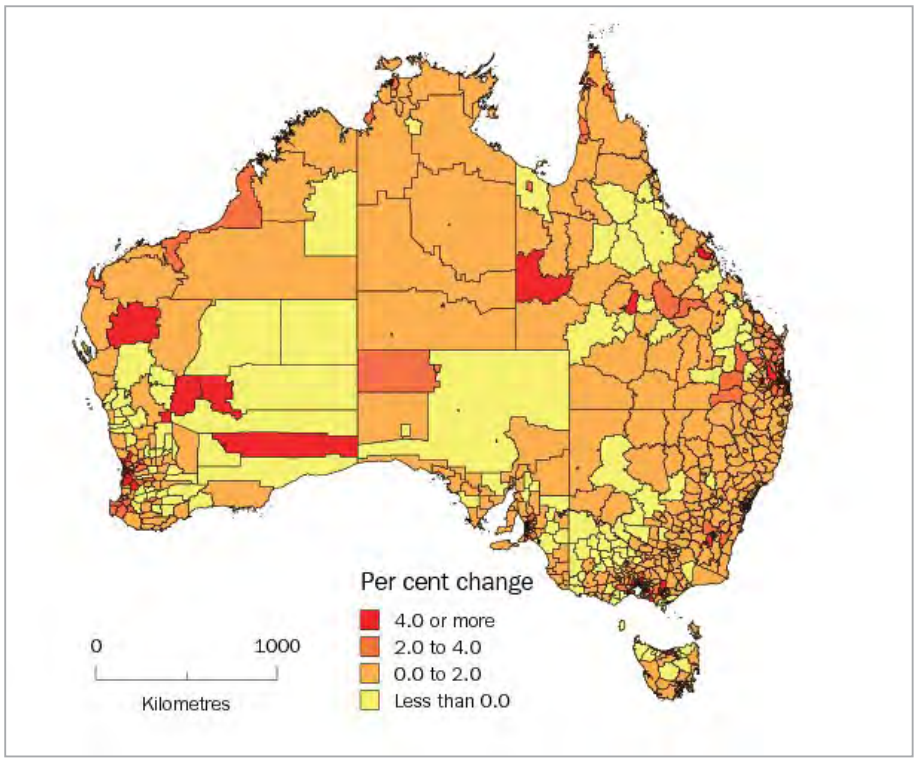
Although there has been little change in the proportions of the national population living within metropolitan and non-metropolitan Australia, there have been substantial shifts within these sectors. Figure 4 shows contemporary patterns of population change by statistical local area, with a clear pattern of growth being concentrated in coastal areas and areas around major regional cities and a few internal mining areas. On the other hand, those losing population tend to be located inland. It has been argued by

TABLE 1
AUSTRALIA: DISTRIBUTION OF POPULATION BETWEEN STATES AND TERRITORIES, 1881–2006

STATE/TERRITORY	1881	1901	1921	1947	1961	1976	1996	2001	2006
	PER CENT								
New South Wales	33.3	35.9	38.6	39.4	37.3	35.5	33.9	33.8	33
Victoria	38.3	31.8	28.2	27.1	27.9	26.9	24.6	24.7	24.8
Queensland	9.5	13.2	13.9	14.6	14.4	15.2	18.2	18.7	19.7
South Australia	12.3	9.5	9.1	8.5	9.2	9.1	8.1	7.8	7.6
Western Australia	1.3	4.9	4.9	6.6	7	8.4	9.6	9.8	9.9
Tasmania	5.1	4.6	3.9	3.4	3.3	2.9	2.6	2.4	2.4
Northern Territory	0.2	0.1	0.1	0.1	0.2	0.7	1	1	1
Australian Capital Territory	0	0	0	0.2	0.6	1.5	1.7	1.6	1.6
Total (per cent)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Total (million)	**2.2**	**3.8**	**5.4**	**7.6**	**10.5**	**13.9**	**18.3**	**19.4**	**19.6**

Source: Rowland, 1982, 25; ABS, 2000, 2003, 2006

FIGURE 4
AUSTRALIA: STATISTICAL LOCAL AREA POPULATION CHANGE, 2009–10



Source: ABS, 2011a

TABLE 2
AUSTRALIA: POPULATION CHANGE BY REMOTENESS AREA, 1996–2010

REMOTENESS AREA CATEGORY	POPULATION CHANGE	GROWTH RATE (%) PA			
	1996–2006 ('000)	1996–2001	2001–06	2008–09	2009–10
Major Cities of Australia	2069.2	1.8	1.4	2.2	1.8
Inner Regional Australia	330.2	0.3	1.4	2.1	1.8
Outer Regional Australia	9.3	–0.7	0.8	1.7	1.2
Remote Australia	–12.2	–0.7	0.0	0.9	0.8
Very Remote Australia	–5.7	–0.5	-0.2	1.2	1.1
Total	2390.8	1.2	1.3	2.1	1.7

Source: Australian Bureau of Statistics

some[2] (e.g. Holmes, 1994) that there are two regional Australias – the coastal areas challenged by dynamism and growth, and inland Australia experiencing stability or decline. Certainly there is considerable variation across regional Australia in economic and demographic development. This is evident in Table 2, which examines the rate of population change in Australian remoteness areas.[3] There is a pattern of higher population growth levels in more accessible areas although the impact of the mining boom is evident in the recent increase in growth in very remote areas after a decline recorded up to 2006.

More than three decades ago the CSIRO wrote:

> *"That Australia is a dry continent is an intrinsic part of our national ethos, and the present distribution of population is in a large measure related to the supply of water and the disposal of effluents.*
>
> *"The availability of water constitutes one of the major factors in determining the size and distribution of Australia's population."*[4]

While water has played, and will continue to play, an important role in shaping Australia's population distribution, pointed to a substantial mismatch in Australia between water and population. Table 3 presents his data which showed that Far North Australia had 52 per cent of annual mean surface run-off but only two per cent of the national population while Southern Australia had only half of this proportion of the run-off but 82 per cent of the national population. Moreover, he pointed out that the water resources in the more closely settled parts of the country were already under pressure at that time (Pittock and Nix, 1986):

TABLE 3
THE MISMATCH BETWEEN WATER AND POPULATION

	FAR NORTH AUSTRALIA (%)	SOUTHERN AUSTRALIA (%)
Population	2	82
Potentially Arable Land	4	65
Annual Mean Surface Run-off	52	27

Source: Nix, 1988, 72

> *"By far the largest volumes of uncommitted water are in northern Australia and Western Tasmania. In the most heavily populated regions of south western and south eastern Australia surface waters are committed to a high degree and the consequences of climate change are potentially most serious."*[5]

The CSIRO (1973), writing 15 years earlier, concluded also that most of the available water in closely settled south eastern Australia had been committed.

Debates regarding population distribution

Debates on Australia's population go back to the early nineteenth century.[6] However, concerns about the distribution of the population and the balance between urban and rural populations began to be expressed only in the early years of Federation.[7] Environment had played an important role in shaping Australia's population development but it was not until the 1920s that there was a substantial public discourse on this issue. Until then the dominant philosophy was to expand Australia's population to facilitate development.[8] This philosophy gathered strength in the early years of Federation. Powell[9] demonstrates that Brady's[10] work *Australia Unlimited* was representative of the prolific booster literature of the time. It proclaimed a mix of imperialist, nationalist, racist and expansionist sentiments underpinned by a faith in the nation's unlimited resources; these optimistic views were embraced by many in government, the media and in industry. However, as Borrie[11] points out, this optimism was increasingly being countered by scientists who questioned the ability of Australia to absorb unlimited population growth (see Maude and Coleman in this volume). While there were many such commentators, the geographer Griffith Taylor[12 13] was the most outspoken and controversial. He argued not only that environmental limitations were a major constraint on Australia's "carrying capacity" but also greatly restricted the parts of the continent that could be closely settled.

The early decades of the post World War II period represented a high point of concern about population distribution in Australia and the potential and practice of *decentralisation*. There had been a history in Australia of anxiety about the "balance" between urban and rural populations[14] and this was part of the thinking behind land settlement schemes following the two world wars.[15] However, in the 1950s and 1960s focus of the discussion of decentralisation moved from agricultural expansion and rural depopulation to a concern with rapid growth and emerging diseconomies in Australian cities. There was discussion about relocation of manufacturing and service activities into non metropolitan areas rather than an extension of agriculture at the centre of decentralisation policy. State governments produced reports on decentralisation[16 17 18] and there was debate on how much encouragement of decentralisation was desirable, and whether it should be more selective.[19] By the late 1960s the focus was on selective decentralisation and especially the potential role of "growth centres" in decentralising population and encouraging growth in regional areas.[20] By the early 1970s, the concentration of the Australian population in capital cities had reached unprecedented levels and was attracting increasing concern.[21] Neutze[22] had analysed the increasing diseconomies apparent in Australian cities; there was concern that large cities added to income inequalities[23]; and there was increasing pressure to develop a coherent national urban development strategy.[24] With the development of the Cities Commission and the Department of Urban and Regional Development in 1972, the newly elected Labor Federal Government saw Canberra become involved in settlement and population distribution for the first time in the post-war era.[25] A National Growth Centre Policy was developed and investment in regional centres like Albury-Wodonga was initiated.[26]

TABLE 4
VIEWS OF AUSTRALIAN GOVERNMENT REGARDING POPULATION SPATIAL DISTRIBUTION SIZE AND GROWTH, 1976–2009

YEAR	VIEW ON SPATIAL DISTRIBUTION	VIEW ON POPULATION SIZE AND GROWTH
1976	Major change desired	Satisfactory
1986	Major change desired	Satisfactory
1996	Minor change desired	Satisfactory
2009	Minor change desired	Satisfactory

Source: United Nations, 2010

Moreover, there were the beginnings of a search for developing a comprehensive national settlement policy.[27] Such was the level of activity that in 1978, Pryor[28] was able to compile an impressive list of state and federal authorities and specific policy measures related to decentralisation. However, as Whitelaw and Maher pointed out: "Attempts to create a national settlement strategy in the early 1970s lost momentum with a change in government."[29]

Since then, from time to time interest in regional development has flared in the Federal arena but there has been no attempt to develop a comprehensive national settlement policy. The establishment of Regional Australia in 2010 as a separate Federal Government Department has signalled the continuation of government interest in development of regional areas. The continuity of this interest is reflected in the Australian Government responses to the United Nations' triennial surveys on national population strategies. While the official position on other aspects of population (population size and growth, immigration, emigration etc.) has consistently been satisfaction with the existing situation, this has not been the case for the spatial distribution of population.[30] Table 4 shows that in the 1970s and 1980s it was indicated that a major change was desired although more recently this has been modified to a "minor change". Nevertheless, government concern to change the national population distribution has been a consistent element in all post-war federal governments regardless of the party in power but that concern has not been translated into any significant action. Four decades ago, Day pointed out:

> *"Since around the turn of the century decentralisation has been a commendable but unexciting part of the conventional wisdom. No one has ever been opposed to it. A great deal of lip service has been paid to it."*[31]

This assessment remains essentially valid.

Population dynamics influencing population distribution

The dynamics of population change at the regional level are the result of the combined impact of three demographic processes:

- Natural increase – the excess of births over deaths (although fertility and mortality rates differ between areas);
- Net internal migration – the difference between the number of people moving into an area from elsewhere in Australia and the number of residents moving to other parts of Australia; and
- Net international migration – the difference between the numbers settling in an area from overseas and the number of residents moving overseas.

Hence, attempts to exert an influence on future population distribution would require policies and programs which intervene to change fertility, mortality, internal or international migration at a regional level.

While there are some differences between states and territories in fertility and mortality, most of the differences in population growth are a function of variations in internal and international migration. With respect to different rates of population growth between the states and territories, Table 5 indicates that there have been quite distinctive mixes of natural increase, with net internal and net interstate migration shaping the population growth in the states and territories since 1996. For New South Wales there has been a consistent pattern of net internal interstate migration loss. Over the period 1996–2009, 316,185 more people left NSW for other states than moved into it. However, this was more than counterbalanced by the fact that 792,586 more people moved into the state from overseas than left to live in another country. Net international migration to the state is now a greater component of growth than natural increase. After NSW, which is overwhelmingly the major net migration loser in terms of interstate migration, South Australia has the second largest net loss (56,999). In South Australia the net gain by overseas net migration in 1996–2001 was not enough to counterbalance the net interstate migration loss. However, since 2001 there has been a recovery of international migration to that state, with a net gain of 99,387 compared with a net interstate loss of 31,049 over that time. Hence in that state until recently, natural increase has been the major component in population growth (which was slow).

The pattern in Victoria is different again. After experiencing a small net interstate migration gain in 1996–2001, a small loss was recorded in 2001–06. However, international migration has increased substantially and has become larger than natural increase. In Queensland over the 1996–2006 period, net interstate migration gain was the largest contributor to population growth. However, more recently international migration has had increasing significance in Queensland's population growth, accounting for half of growth in the 2006–10 period. It is interesting that since 2001 Queensland has not only been the fastest growing state but for the first time the numerical increase in the state's population has been greater than that in NSW. Western Australia has been second only to Queensland in net interstate migration gains but international migration has been an important contributor to population growth throughout the entire post-war period in that state.[32]

Turning to the capital cities, which house almost two thirds of the Australian population, Table 6 shows the estimated components of growth in the two most recent intercensal periods for the five largest cities. During the first two post-war decades, net migration gains from elsewhere in Australia were only minor elements in the massive growth

TABLE 5
AUSTRALIAN STATES AND TERRITORIES: NATURAL INCREASE, NET OVERSEAS MIGRATION, NET INTERSTATE MIGRATION AND TOTAL POPULATION GROWTH, FINANCIAL YEARS, 1996–2001, 2001–06 AND 2007–11

STATE/TERRITORY	NATURAL INCREASE		NET OVERSEAS MIGRATION		NET INTERSTATE MIGRATION		TOTAL POPULATION GROWTH
	NUMBER	PER CENT OF GROWTH	NUMBER	PER CENT OF GROWTH	NUMBER	PER CENT OF GROWTH	
1996–2001							
New South Wales	244,414	60.9	243,869	60.8	–86,925	–21.7	401,358
Victoria	166,298	53.6	141,572	45.6	2332	0.8	310,202
Queensland	149,510	41	88,129	24.2	126,659	34.8	364,298
South Australia	39,745	118	19,621	58.7	–25,950	–77.7	33,416
Western Australia	84,107	47.6	79,144	44.8	13,361	7.6	176,612
Tasmania	14,184	385.1	1550	42.1	–19,417	–527.2	–3683
Northern Territory	16,662	87.4	4172	21.9	–1773	–9.3	19,061
Australian Capital Territory	17,510	199.7	–453	–5.2	–8287	–94.5	8770
Australia*	732,649	56	576,221	44			1,308,870
2001–2006							
New South Wales	191,089	79	192,582	79.6	–139,330	–56.3	241,965
Victoria	143,880	44.5	142,892	44.2	–2.197	–0.7	323,584
Queensland	132,050	28.5	129,944	28.1	164,362	35.5	462,600
South Australia	28,179	49.9	27,522	48.7	–12,639	–22.4	56,476
Western Australia	68,668	43.5	82,832	52.5	–1.399	–0.9	157,886
Tasmania	10,026	58.5	3758	21.9	3105	18.1	17,137
Northern Territory	13,862	107.4	3475	26.9	–8474	–65.7	12,906
Australian Capital Territory	13,531	90.8	2412	16.2	–6428	–43.1	14,908
Australia*	601,389	46.7	585,421	45.4			1,288,248
2007–11							
New South Wales	224,345	46	356,188	73	–92,930	–19.1	487,603
Victoria	173,942	35	321,750	64.7	1858	0.4	497,550
Queensland	177,203	36.2	227,368	46.4	85,246	17.4	489,817
South Australia	35,658	40	71,865	80.6	–18,410	–20.7	89,113
Western Australia	90,368	31.5	173,715	60.5	22,946	8	287,029
Tasmania	12,071	58.6	8173	39.7	365	1.8	20,609
Northern Territory	14,251	72.9	6489	33.2	–1195	–6.1	19,545
Australian Capital Territory	16,140	51.6	13,042	41.7	2120	6.8	31,302
Australia*	744,060	38.7	1,178,614	61.3	–	–	1,922,674

* Includes other Territories
Source: ABS, 2002, 2007, 2011b

TABLE 6
SYDNEY, MELBOURNE, BRISBANE, PERTH AND ADELAIDE: ESTIMATED COMPONENTS OF POPULATION CHANGE, 1996–2001 AND 2001–06

		NATURAL INCREASE	NET INTERNATIONAL MIGRATION	NET INTERNAL MIGRATION	TOTAL MIGRATION	TOTAL POPULATION INCREASE
1996–2001						
Sydney	000s	149	168	–61	107	256
	Per cent	58.2	65.6	–23.8	41.8	100
Melbourne	000s	109	108	11	119	228
	Per cent	47.8	47.4	4.8	52.2	100
Brisbane	000s	58	31	50	81	139
	Per cent	41.7	22.3	36	58.3	100
Perth	'000s	47	40	9	49	96
	Per cent	49	41.7	9.4	51	100
Adelaide	'000s	22	9	–4	5	27
	Per cent	81.5	33.3	–14.8	18.5	100
2001–2006						
Sydney	000s	159	84	–121	–37	122
	Per cent	130.3	68.9	–99.2	–30.3	100
Melbourne	000s	121	124	–19	105	226
	Per cent	53.5	54.9	–8.4	46.5	100
Brisbane	000s	66	27	43	70	136
	Per cent	48.5	19.9	31.6	51.5	100
Perth	'000s	49	53	3	56	105
	Per cent	46.7	50.5	2.9	53.3	100
Adelaide	'000s	21	22	–10	12	33
	Per cent	63.6	66.7	–30.3	36.4	100

Source: ABS unpublished data

experienced by the nation's two largest cities, dwarfed by the net gain of immigrants from overseas, which accounted for more than half of this expansion. However, during the 1976–96 period, a quite different pattern was evident, with a substantial net internal migration loss being recorded in both large cities, although international migration remained an important source of growth, especially in Sydney.

Some differences are evident in the most recent decade. In 1996–2001 there was a reduced net loss in Sydney, perhaps associated with the growth created by the 2000 Olympic Games. However, since then the massive net interstate migration losses have resumed. In Melbourne there were small net interstate migration gains in 1996–2001 but a net out-migration of 18,000 in 2001–06. Hence Sydney, and to a much lesser extent Melbourne, have been important *sources* of internal migrants to the rest of Australia while the fact that international migrants have disproportionately settled in Australia's two largest cities has been the major migration driver of their growth.

A number of hypotheses have been put forward relating to this relationship between substantial net international migration gains and large net internal migration losses in Sydney.[33] These include a "white flight" explanation which sees internal out-migrants being "forced out" but there is little evidence supporting such an explanation. An alternative explanation relates it to the structural changes occurring in the Sydney labour market.

Unlike Sydney and Melbourne, the three other mainland state capitals recorded significant net internal migration gains in the first two post-war decades, especially in the case of Brisbane. International migration gains were substantially larger than internal gains in Adelaide and Perth but equivalent in size in Brisbane. However, in the 1976–86 period, the impact of structural change in the economy on manufacturing saw Adelaide's rate of growth fall from being much higher than that in Brisbane and Perth in 1947–66 to being less than half of the rate in the other two cities. However, during the 1986–91intercensal period, Brisbane was the most rapidly growing city and the major element in this growth was net internal migration gains. Perth, on the other hand, grew less quickly and recorded a small net loss of migrants to other parts of Australia, but had a major net gain of overseas-born migrants – a gain two and a half times larger than that of Brisbane. As a result, there was a distinctive difference in the net migration gains being recorded by Australia's fastest growing capitals, with internal migrants being prominent in Brisbane and overseas-born being overwhelmingly dominant in Perth. In Adelaide there was a small internal migration gain between 1986 and 1991 and a more substantial net gain of overseas migrants which accounted for a quarter of the modest growth recorded by the southern capital.

In the most recent intercensal period Perth and Brisbane have continued to experience growth from internal migration, especially Brisbane, which is a major *sink* of internal migration in Australia. However, Adelaide, like all of South Australia, has had a significant net loss due to internal migration. International migration has increased in significance in Brisbane and retained its importance in Perth.

The role of international migration in regional population growth is shown in Table 7, for 2006. With few exceptions, recent migrants are a higher proportion of the population in large metropolitan areas than in non-metropolitan areas. Nevertheless, an interesting development of increasing immigrant settlement outside of major "gateway cities" has occurred in recent years, not only in Australia but also in North America,[34] Europe,[35] and New Zealand[36]. While in Australia, much of this change has occurred in the last five years, the beginnings of change were apparent at the 2006 population census. In absolute numbers, the overseas-born population grew more outside the capitals than within the capitals during the 2001–06 intercensal period, so that there was a fall in the metropolitan share of the overseas born (Table 8). While this is a small difference, it represents a reversal of the trends of the previous half century which were characterised by consistent increases in the proportion of immigrants settling in capital cities. The change is a function of several factors:

- The introduction of the State Specific and Regional Migration scheme that has a points assessment, with bonus points for skilled migrants settling outside of the main gateways;
- The DIAC scheme for encouraging refugee-humanitarian settlers to move initially to regional areas;[37]
- A trend throughout OECD countries for migrants to settle outside major cities; and
- Shortages in particular labour markets in regional Australia.

In three of the four largest states the recent migrant population increased faster in non-metropolitan areas than in the capitals. It is of particular note that Sydney experienced

TABLE 7
AUSTRALIA: OVERSEAS-BORN ARRIVED 2002–2006 BY STATISTICAL DIVISION, 2006

STATISTICAL DIVISION	TOTAL POPULATION 2006	NO. OVERSEAS–BORN ARRIVED 2002–2006	PER CENT OF TOTAL POPULATION
Sydney	4,119,191	196,212	4.8
Hunter	589240	5651	1
Illawarra	394211	5423	1.4
Richmond–Tweed	219329	2445	1.1
Mid–North Coast	284674	1907	0.7
Northern NSW	172396	1224	0.7
North Western	111231	563	0.5
Central West – NSW	170897	910	0.5
South Eastern – NSW	197942	1477	0.7
Murrumbidgee	147292	1705	1.2
Murray	110523	662	0.6
Far West	22030	117	0.5
Melbourne	3,592,593	157,194	4.4
Barwon	259012	3285	1.3
Western District	98855	825	0.8
Central Highlands	142219	1324	0.9
Wimmera	48441	338	0.7
Mallee	88601	961	1.1
Loddon	168843	1010	0.6
Goulburn	195239	2067	1.1
Ovens–Murray	92587	565	0.6
East Gippsland	80117	572	0.7
Gippsland	159483	1178	0.7
Brisbane	1,763,133	69,580	3.9
Gold Coast	482318	21104	4.4
Sunshine Coast	276263	7762	2.8
West Moreton	68630	805	1.2
Wide Bay–Burnett	254658	2474	1
Darling Downs	213756	3444	1.6
South West – QLD	24778	184	0.7
Fitzroy	188406	2639	1.4
Central West – QLD	10851	70	0.6
Mackay	150171	2686	1.8
Northern – QLD	196672	3312	1.7
Far North	231049	4663	2
North West	30938	565	1.8
Adelaide	1,105,839	34369	3.1
Outer Adelaide	123700	1030	0.8
Yorke and Lower North	43878	157	0.4
Murray Lands	66805	698	1
South East	62219	587	0.9
Eyre	33343	179	0.5
Northern SA	75927	677	0.9
Perth	1,445,077	71339	4.9
South West– WA	207343	4152	2
Lower Great Southern	52592	872	1.7
Upper Great Southern	17714	177	1
Midlands	50411	701	1.4
South Eastern – WA	51894	1808	3.5
Central	57428	743	1.3
Pilbara	41004	1376	3.4
Kimberley	29297	346	1.2
Greater Hobart	200523	3379	1.7
Southern	34927	195	0.6
Northern –TAS	133930	1682	1.3
Mersey–Lyell	106131	735	0.7
Darwin	105992	2719	2.6
Northern Territory – Bal	84910	1474	1.7
Canberra	323056	9504	2.9
Australian Capital Territory – Bal	272	23	8.5
Total – Australia	**19,810,781**	**645,825**	**3.3**

Source: ABS 2006 Census

TABLE 8
AUSTRALIA: DISTRIBUTION OF OVERSEAS-BORN BETWEEN CAPITAL CITIES AND REST OF STATE, 2001 AND 2006

	2001		2006		GROWTH RATE 2001–2006
	NUMBER	PER CENT	NUMBER	PER CENT	
Major capital cities	3,307,577	81.1	3,557,486	80.6	1.47
Rest of states	771,574	18.9	857,873	19.4	2.14
Total	4,079,151	100	4,415,359	100	1.6

Source: ABS Censuses

TABLE 9
NET INTERSTATE AND INTRASTATE MIGRATION, CAPITAL CITY STATISTICAL DIVISIONS AND NON-METROPOLITAN AREAS, SIX STATES, AUSTRALIA, 2001–06

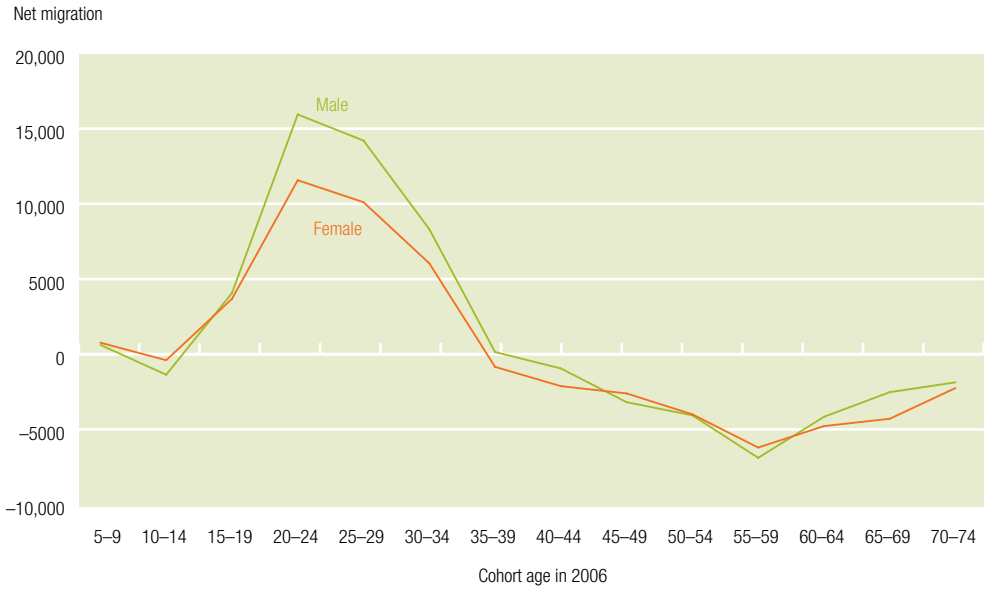
STATE	METROPOLITAN			NON-METROPOLITAN			METROPOLITAN
	INTRASTATE	INTERSTATE	TOTAL	INTRASTATE	INTERSTATE	TOTAL	SHARE OF INTERSTATE GAIN OR LOSS (PERCENT)
New South Wales	–54,504	–66,508	–121,012	54,504	–37,078	17,426	64.2
Victoria	–15,996	–2713	–18,709	15,996	–5005	10,991	35.2
Queensland	–1633	44,383	42,750	1663	76,575	78,208	36.7
South Australia	–3359	–6252	–9611	3359	–1477	1882	80.9
Western Australia	1693	1569	3262	–1693	–1199	–2892	424.1
Tasmania	2527	–162	2365	–2527	4835	2308	–3.5

Source: Bell and Hugo, 2000, 96; ABS 2001 Census (unpublished data), 2006 ABS TableBuilder

only a relatively small increase in its most recent migrant population (13.4 per cent), compared with an increase of 26.8 per cent between the 1996 and 2001 censuses. Although Sydney remains the pre eminent destination of newly arrived migrants, with 30.4 per cent of the total, in 2001 it secured 36.8 per cent and in 1996 38.3 per cent. Moreover, the proportion going to NSW fell from 41.6 per cent in 1996 to 33.8 per cent in 2006. By far the largest non-metropolitan numbers of recent migrants are in Queensland which attracted 7.5 per cent of the total intake in 2001 and 7.7 per cent in 2006. It is interesting that Adelaide had the fastest rate of growth in the number of recent migrants of all capitals, reflecting how the state's population policy imperative to increase international migration was assisted by the regional bonus point system.[38]

Table 9 presents data on the contribution of intrastate and interstate migration to the population growth in the metropolitan and non-metropolitan sectors of the Australian states. The data have to be interpreted carefully because of some boundary changes to metropolitan areas over the 35 year period depicted[39], but some interesting patterns are shown. The table sheds useful light on the commonly held perception that there is a 'drift' to the capital cities of Australia from non-metropolitan areas. It will be noted that for all capital cities, with the exceptions of Perth and Hobart, more people moved from the capital to non-metropolitan parts of the state during the 2001–06 period, than

FIGURE 5
SYDNEY STATISTICAL DIVISION: NET MIGRATION PROFILE, 2001–2006



Source: ABS 2006 Census

vice versa. Sydney has lost population to intrastate locations during every intercensal period from 1966, while for Melbourne, there has been a "drift" to rural areas from the capital since 1971. Brisbane has oscillated between situations of rural-urban and urban-rural drift, while South Australia experienced urban-rural drift for the first time during the 2001–06 period. In WA and Tasmania, the typical situation has been rural to urban movement, although at levels substantially lower than the losses experienced by Sydney, in particular, and Melbourne. The losses to other parts of the state are particularly significant in Sydney, and to a lesser extent, Melbourne. It is notable in Sydney and Melbourne too that these patterns are consistent over much of the post war period, although they were especially marked in 2001–06.The metropolitan to non-metropolitan flow in internal migration has significant implications for discussions of changing Australian settlement systems.

Sydney also had a substantial net migration loss to other states as well as to other parts of NSW. Melbourne, Adelaide and Hobart had smaller net losses to other states while Brisbane, and to a lesser extent Perth, had a net gain of interstate migrants.

It is important to note that the net migration levels in capital cities have a distinctive age structure. Figure 5 shows the pattern for Sydney and it will be noted that there are net gains in the young adult years predominantly due to the influx of international migration. However, from the 40s onward there are net losses. The profiles in other state capitals are similar in shape although the positioning of the profile may differ.

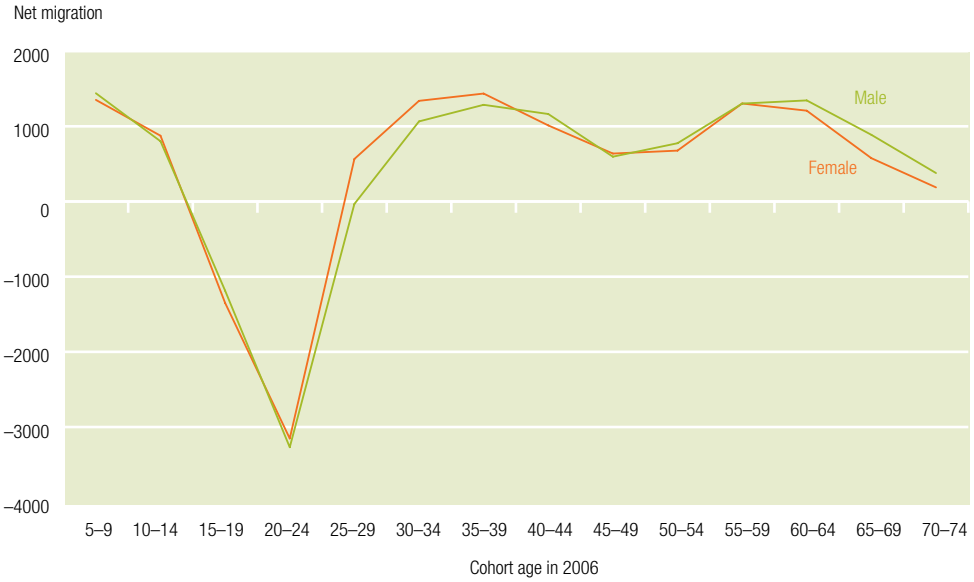
Turning to non-metropolitan areas, Table 10 shows the areas that experienced the most significant net internal migration gains during the 1996–09 and 2001–06 periods. Clearly there is a dominance of coastal areas and those areas adjoining metropolitan areas. Such locations in Queensland, NSW and Victoria are especially important magnets for internal migrants. Again, it is relevant to examine the age-sex composition of net migration in regional areas. Figure 6 shows the profile of net migration for the mid North Coast statistical division in NSW, one of the major "sinks" of internal migration. Even in this area of rapid growth, there was a substantial net loss of young adults aged in their late teens and 20s but substantial net gains in all other age groups. Hence the "sinks" for internal migrants are especially attracting young working adults and early retirees.

TABLE 10
NON-METROPOLITAN STATISTICAL DIVISIONS EXPERIENCING NET MIGRATION GAINS IN 1996–2001 AND 2001–2006

STATE/ STATISTICAL DIVISION	IN	OUT	NET	STATISTICAL DIVISION	IN	OUT	NET	DESCRIPTION
	1996–2001				2001–2006			
New South Wales								
Hunter	59527	51190	8337	Hunter	56227	46571	9656	Coastal/Metropolitan Periphery
Illawarra	46897	36055	10842	Illawarra	38907	38018	889	Coastal/Metropolitan Periphery
Richmond-Tweed	36057	30810	5247	Richmond-Tweed	33463	27320	6143	Coastal
Mid-North Coast	46728	40119	6609	Mid-North Coast	44656	34402	10254	Coastal
South Eastern	33487	31071	2416	South East - NSW	34138	27637	6501	Coastal
Central West	22627	19427	3167					Adjoining coastal/inland
				Murray	17419	17211	208	Adjoining coastal/inland
Victoria								
Barwon	27425	21975	5450	Barwon	25594	20929	4665	Metropolitan Periphery
Central Highlands	19971	17898	2073	Central Highlands	18792	19384	2408	Metropolitan Periphery
Loddon	23904	21537	2367	Loddon	23066	19457	3609	Metropolitan Periphery
				Goulburn	26683	25207	1476	Metropolitan Periphery
				Ovens-Murray	13378	12913	465	Inland
				East Gippsland	10724	9923	801	Coastal
				Gippsland	18564	16992	1572	Coastal
Queensland								
Moreton	138831	84634	54197	West Moreton	15916	13811	2105	Coastal/Metropolitan Periphery
Wide Bay-Burnett	40282	39286	996	Wide Bay-Burnett	49735	33937	15798	Coastal
Darling Downs	33348	32412	936	Darling Downs	33136	29960	3176	Adjoining Coastal
Northern	33188	31410	1778					Coastal
				Gold Coast	80925	51613	29312	Coastal
				Sunshine Coast	54049	33488	20561	Coastal
				Fitzroy	28229	26347	1882	Coastal
				Mackay	25784	30638	5146	Coastal
				Northern - QLD	32276	27372	4904	Coastal
				Far North	29403	26932	2471	Coastal
South Australia								
Outer Adelaide	23593	18556	5037	Outer Adelaide	24584	17109	7475	Coastal/Metropolitan Periphery
				Yorke and Lower North	7435	6858	577	Coastal
Tasmania								
				Southern	6821	6290	531	Coastal/Metropolitan Periphery
				Northern – Tas	13325	11789	1536	Coastal
				Mersey-Lyell	10267	10026	241	Coastal
Northern Territory								
Darwin	23900	20746	3154					Coastal North

Source: Unpublished data from 2001 and 2006 Censuses

FIGURE 6
MID NORTH COAST STATISTICAL DIVISION: NET MIGRATION PROFILE, 2001–2006



Source: Calculated from 2001 and 2006 Population Censuses

TABLE 11
NEW SOUTH WALES: REGIONS, INTERNAL MIGRATION 1996–2006 AND IMMIGRANTS WHO ARRIVED IN AUSTRALIA BETWEEN 1996 AND 2006

REGION	INTERNAL MIGRATION 1996–2001			INTERNAL MIGRATION 2001– 2006			IMMIGRANTS ARRIVED	
	IN	OUT	NET	IN	OUT	NET	1997–2001	2001–2006
Sydney	175,732	233,685	–57,953	122,179	243,191	–121,012	173,083	196,212
Coastal NSW	189,277	158,174	31,103	207,391	173,948	33,443	12,066	16,897
Central NSW	91,899	95,028	–3129	71,833	86,971	–15,138	3088	4409
Western NSW	40,489	66,292	–25,803	19,733	20,612	–879	643	771

Source: Unpublished data from 2001 Australian Census, TableBuilder 2006

The New South Wales pattern of net migration has a quite distinctive spatial pattern which is also present in the other states. It is apparent that net international migration gain plays a much lesser role in the growth of population in non-metropolitan areas, even in those that are experiencing significant expansion. This is evident in Table 11, which shows for the state of New South Wales the in, out and net migration for 1996–2006 in Sydney and three non-metropolitan zones parallel to the coast together with the number of immigrants who arrived between 1996 and 2001 and 2001 and 2006. In the growing coastal non-metropolitan areas there were 35,745 recent immigrants but 396,668 immigrants had moved in from elsewhere in Australia and there was a net internal migration gain of 64,546. The pattern of net internal migration loss increases with distance from the coast and the number of recent immigrants decreases. This mix of interstate and international migration contribution to growth is indicative of patterns across Australia.

Policy issues

The configuration of the Australian settlement system and the distribution of population must be an important part of the discourse on population policy. Moreover, for a number of reasons it is opportune to examine whether or not the contemporary Australian settlement system is the most appropriate one to achieve national goals. The economic and environmental imperatives of the next four decades will present a very different set of challenges and opportunities to those that prevailed in the three decades following World War II, when decentralisation and regional development policies were last seriously put forward. Is the settlement structure in part an artefact of earlier political economies and not optimal given climate and other potential changes in the economy? Where people live is important to their wellbeing. Under any realistic scenario of the next four decades, most Australians will continue to live in major urban areas, especially the capital cities. However, in light of emerging environmental, economic and social trends, the question must be asked as to whether, in a climate change context, the current settlement system will deliver the most sustainable, efficient and liveable outcomes for Australians over coming decades. Two issues are of particular relevance:

- How can we reshape our large cities so that they deliver more of these outcomes, while adapting to the realities of climate change?
- Can a shift in the regional balance of development between metropolitan and non-metropolitan Australia deliver for Australians, more of these outcomes of liveability, equity, efficiency and sustainability?

Retrofitting Australia's cities and changing the behaviour of the residents of those cities in light of climate change, to achieve more sustainable outcomes, is clearly an important national priority as most of us will continue to live in large cities. However, we also need to ask whether some shift in the balance of population between different parts of Australia is desirable.

Why should we revisit the issue of regional development and decentralisation? Some would argue that the decentralisation policies that were tried in the 1950s and early 1970s had limited, if any, success. There are at least five reasons why the issue needs to be revisited:

- Firstly, environment has been a major influence shaping Australia's settlement system since initial European settlement but climate change will add a new dimension to this with liveability and economic potential of some areas being considerably modified.
- Secondly, the 21st century economic context is totally different to that which prevailed a half century ago when manufacturing was a key driver of economic and employment growth in Australia. Mining, tourism and other sectors which have a strong non-metropolitan presence have become increasingly important.
- Thirdly, earlier initiatives often attempted to attract people "artificially" to areas by creating job opportunities where there was no existing economic potential. Today, in contrast, there is evidence that some specific non-metropolitan areas have the resource base necessary, but not sufficient, to support sustainable economic growth.
- Fourthly, as has been shown earlier, the dynamics of internal migration and international migrant settlement in Australia have changed significantly in the last decade as settlement outside of the capitals has become more significant.
- Fifthly, in other OECD countries there are many examples where regions are more economically dynamic than the major cities.

- A sixth issue relates to the potential for rapid growth in the populations of many non-metropolitan coastal communities. The impending retirement of Australian baby boomers (who make up 27 per cent of the national population) raises a number of issues. The Department of Treasury's Intergenerational Reports[40] have indicated several of the challenges that ageing of the population will present for the national economy. One issue which has been given little consideration, however, is where will baby boomers live during their retirement? Historically, older Australians have been the least mobile group in the population with *ageing in place* being dominant, as older people have mostly remained in the family home during retirement. There are some indications, however, that in the pre-retirement and early post-retirement stages of the life cycle, baby boomers will move house more frequently than did earlier generations. Moreover, there are some indications that many of these movers will shift to a seaside non-metropolitan location.

One factor pointing to a substantial move of baby boomers to non-metropolitan coastal communities upon retirement is the second home phenomenon. A key fact about most coastal communities is that a significant proportion of their housing stock is made up of holiday homes that are occupied only on weekends or holidays and are owned by absentee rate payers. There is no data collected in the Census of Population and Housing on second homes, but Table 12 shows for South Australia the significance of such homes in one coastal area. Baby boomers make up the majority of the owners of second homes; if a substantial proportion retire to them, then significant population growth will result and significant multipliers will see the growth of working as well as retired populations.[41]

TABLE 12
SPENCER GULF LGAS, 2006: PERCENTAGE OF DWELLINGS UNOCCUPIED, 2006

LOCAL GOVERNMENT AREA	PRIVATE DWELLINGS			
	OCCUPIED	UNOCCUPIED	PER CENT UNOCCUPIED	PER CENT OF ASSESSMENT NOTICES SENT OUTSIDE LGA
Barunga West	1077	674	38.5	
Copper Coast	4837	1979	29.0	35.7
Cleve	853	153	15.2	
Franklin Harbour	571	198	25.7	26.5
Lower Eyre Peninsula	1651	493	23.0	
Mount Remarkable	1195	313	20.8	25.5
Port Augusta	5431	785	12.6	
Port Lincoln	5454	690	11.2	
Port Pirie City and Districts	7020	697	9.0	8.0
Tumby Bay	1098	387	26.1	32.9
Whyalla	9010	1086	10.8	11.9
Yorke Peninsula	4866	3966	44.9	48.1
Total	**43,063**	**11,421**	**21.0**	

Source: ABS 2006 Census

Climate change is likely to influence where future growth will occur. Water is a key environmental issue with an all-important population dimension, and so the development of water and population policy needs to be an integrated process. Climate change will result in changes in the availability of water in different areas. While the mismatch between water and population in Australia does *not* call for a wholesale redistribution of population, nonetheless there are a number of important population dimensions as we face a drier future for south eastern and south western Australia: Agriculture uses 50 per cent of water in Australia[42], hence regional reduction in rainfall and run-off will have consequences for agriculture. The implications for agriculture need to be fully worked through. Do we need to consider some water-intensive agriculture being phased out in south eastern Australia and more developed in northern Australia and Tasmania where there are assured sustainable water supplies? A study by Holz[43] has suggested that the Australian dairying industry will increasingly relocate to Tasmania as the effects of climate change become more apparent. If the science means that a redistribution will become necessary, there are a number of population elements which need to be considered:

- The agricultural workforce in Australia is the oldest of any sector.[44] To what extent can water-intensive agriculturalists be bought out so they can retire with dignity into local communities and hence maintain the local economies and social networks?
- To what extent can the skills built up in agriculture in areas like the Murray-Darling Basin be utilised to develop new specialised agriculture elsewhere? This was the way the agriculture frontier progressed in Australia in the 19th and 20th centuries, with the new frontiers being settled by farmers with experience in settled areas earlier. How can this process be carried out in the 21st century to compensate fully those displaced and facilitate the migration and settlement elsewhere of younger agriculturalists, so as to encourage the growth of new agricultural industries in other, wetter parts of Australia?

In some areas, climate change will make the current patterns of agriculture unsustainable. These include:

- Some irrigated agriculture activities where river or groundwater sources will not be available to the same extent as currently (e.g. in parts of the Murray-Darling Basin).
- Wheat growing areas which are currently marginal, being near the limits of the rainfall necessary for sustainable production (e.g. beyond Goyder's Line in South Australia and in parts of south western Western Australia). Shifts in the amount, seasonality and reliability of rainfall may make sustainable wheat growing no longer possible.
- There has been a discussion in the wine industry of the implications of climate change for the existing grape growing regions which indicates there may be a need for some relocation of the industry, as well as a change in the types of grapes grown.

In major urban areas, Troy[45] has argued that Australia needs to move away from traditional responses to expanding populations of seeking new sources of water, and achieve behavioural changes in the use of water, develop new technologies of water storage, capturing run-off and water re-use. The role of desalination plants is a factor which may change this.

Four decades ago Holmes[46] produced a map of Australian water potential, reproduced here as Figure 7. This shows the number of people that could be supported in Australian regions if there were no other limiting factors other than water. Of course, there are many other limiting factors such as soil fertility, rainfall variability and climatic factors. Nevertheless, the figure does indicate where water is most abundant. It is interesting that the greatest densities of population that could be supported when water is the only limiting factor are in Tasmania. The southeast and northeast coasts are also capable

FIGURE 7
DENSITIES OF MAXIMUM PERMISSIBLE POPULATION AND DRAINAGE DIVISIONS OF AUSTRALIA

Source: Holmes, 1973

of supporting large populations. However, it does also show that South Australia and Western Australia have very low capacity.

A report by the Grattan Institute[47], has demonstrated conclusively that any attempt artificially to stimulate the economies of regions or centres, where there is no potential for developing self-sustaining growth, is doomed to failure (see also chapter 4.4 of the current volume). “Equity” approaches to investing in regional development are ineffective. There is no doubt that all people living in non-metropolitan Australia have important, limited claims for service provision in areas such as health, education, aged care, transport and police, which need to be met on equity grounds and at a greater cost per head than for metropolitan areas. However, any targeting of investment to facilitate regional development must be focused where sustainable growth is occurring and where more is likely. Daley and Lancey argue that there is a need to support long-term growth drivers, but only where this can accelerate economic growth that is already underway. These regions are generally within 150 km of large population centres, or are centres such as coastal towns or mining centres, with particular natural advantages. The report is strongly and justifiably critical of approaches to regional development which fly in the face of economic reality.

Conclusion

Any realistic scenario of the Australian population over the next two decades will see the majority of the population continue to live in the nation's major cities. Agglomeration economies that flow from concentrations of investment, human capital, infrastructure, facilities and services will ensure that. However, in a context of changing economic structure, climate change and ageing of the population, it is important to ask whether future spatial patterns of population growth will simply replicate those of the last two decades. As Daley and Lancy (2011) have pointed out, governments have tended to divide recurrent and infrastructure funding between regions on the basis of the number of existing residents. As a result, areas of current or impending rapid growth frequently experience a lag in obtaining such funding.

Population issues – of size, growth, composition and distribution – are going to be crucially important to the Australian economy. Australia's future population will involve growth in the immediate and medium term, and so where that growth occurs is an important matter for the nation's economy, society and environment. Careful consideration, not only of contemporary economic and environmental processes and imperatives but also of the likely changes over the next two decades, must be central to planning where the growth would be best accommodated. Australia does need a coherent population strategy, but it cannot be seen purely as a part of economic policy. Rather, it is crucial that environmental sustainability, social inclusion and liveability considerations are also included in the deliberations to develop population based initiatives. These initiatives must involve considerations of not only "how many Australians" but "where they will live".

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2.4
Climate change in Australia: Implications for population

Don Gunasekera

Dr Don Gunasekera is currently a Senior Economist at CSIRO (Commonwealth Scientific and Industrial Research Organisation) in Canberra. Until recently he was the Chief Economist at the Australian Bureau of Agricultural and Resource Economics (ABARE). In 2008, Don led ABARE's climate change modelling work for the Garnaut Climate Change Review. In 2007, he was a member of an independent working group for the Prime Minister's Science, Engineering and Innovation Council (PMSEIC) which prepared a report on *Climate change in Australia: Regional impacts and adaptation*. Don has had wide experience in the Australian Public Service working in a range of organisations including the Productivity Commission, National Competition Council, Department of Environment and Heritage and the Australian Bureau of Meteorology. He has a PhD in Economics from the Australian National University and has completed the Senior Managers in Government Program at Harvard University.

Introduction

The Australian society and the economy are likely to be in structural transition in response to several long-term forces including population ageing and climate change.[1] It is important to recognise that a certain degree of climate change and the resulting impacts are unavoidable. This is due to the greenhouse gases that are already in the atmosphere and inevitable future emissions caused by the current slow mitigation action.[2] The interactions between changes in climate and population are complex and diverse. One way to explore these interactions is to assess how potential changes in Australia's climate could impact:

1. Key factors of production such as land, water and energy; and
2. Major sectors such as agriculture, human health, infrastructure and ecosystems, and hence economic and societal activity and human settlement.

It is important to recognise that there are some uncertainties associated with the scientific aspects of certain climate change related impacts. However, the uncertainty in the science is generally associated with the rate and magnitude rather than the direction, of the conclusions.[3] It is noteworthy that many other non-climatic factors also affect the risks that some of the major sectors face. For example, human health outcomes are influenced by the vulnerability of specific individuals and communities. This highlights the need to consider multiple and interacting impacts and stresses and not climate change in isolation.[4]

This chapter focuses on the implications for Australia's population of future climate change. The next section summarises the key aspects of projected climate change in Australia based on the analysis published recently by the CSIRO.[5] Section three will canvass the potential effects of climate change on Australia's key natural resources and economic output. The impacts of climate change on human settlement in Australia are discussed in section four. Section five will discuss the overall implications for a sustainable Australian population of future climate change. The final section will include some concluding remarks.

Projected climate change in Australia

The most recent climate projections by CSIRO indicate that annual average temperature in Australia will increase by around 1.0˚ C across the continent by 2030 (above 1990 levels). By 2030, the increase in annual temperature in the coastal regions is projected to be 0.7–0.9˚ C and in inland areas one to 1.2˚ C relative to 1990 levels. By 2050, the projected average increase in temperature across Australia ranges from 0.8 to 1.8˚ C (under low greenhouse gas emissions) and 1.5 to 2.8˚ C (under high emissions). Increase in average temperature by 2070 is expected to be between 2.2˚C (under low greenhouse gas emissions) and 5˚ C (under high emissions).[6]

Rainfall is one of the most difficult climate variables to predict. According to CSIRO, less rainfall is likely in southern parts of Australia over the coming decades particularly during winter, and in southern and eastern regions during spring. The nature of summer tropical rainfall in northern Australia in the future remains highly uncertain. It is also predicted that the most intense rainfall events in most locations across Australia will become more extreme.[7]

The projected extreme weather events in Australia associated with the changes in climate over the coming decades could have important implications for the economy and society. It is projected that fire-weather risks are likely to increase in many parts of Australia with warmer temperatures and lower humidity. For example, the number of days with very high fire danger ratings is projected to increase by two per cent to 30 per cent by 2030, and by five per cent to 100 per cent by 2050. Furthermore, the number of days with extreme fire danger ratings is expected to rise between five per cent and 65 per cent by 2020, and between 10 per cent and 300 per cent by 2050. Significant increases in flooding and the proportion of tropical cyclone activity are projected over the coming decades.[8]

The overall general projections summarised above are likely to manifest at regional levels influencing different parts of the Australian society, economy and the environment. An understanding of these regional climate impacts could help assess the implications of a changing climate on resource availability, economic activity and societal vulnerability at regional and national level.

Effects on resources and production

Australia has a climate sensitive economy. The impacts of projected climate change are likely to be experienced across many sectors of the economy and in a range of ecosystems.[9] Key natural resources such as water, land and ecosystems are highly vulnerable to climate variability and change in many parts of Australia. Sectors such as agriculture and forestry, coastal development and infrastructure are particularly sensitive to extreme weather events as more gradual changes in key climate variables occur. It is important to recognise that not all climate changes will be adverse, particularly in the next few decades. Moderate warming in the absence of declines in rainfall may actually benefit some agricultural industries in certain regions. Hence, the distribution of climate change impacts across different regions is noteworthy.[10]

Several recent studies in Australia have identified a number of key areas where the potential adverse impacts of climate change could be substantial. [11] [12] [13] These areas relate to the availability and quality of water, risks to coastal settlements and development, loss of biodiversity and ecosystem services, risks to essential infrastructure, adverse impacts on agriculture and forestry, and harmful effects on human health. The vulnerability of these areas to climate change can potentially have a direct and/or indirect bearing on the sustainability of future population levels in Australia.

The nexus between water, food production and sustainable population highlights the significance of climate change impacts on water and food security. It is projected that water supply reliability in southern and eastern Australia is likely to decline. This is mainly a result of reduced rainfall due to climate change (though climate change also affects the water balance through warming and increasing CO_2, in ways that are still being understood). It is expected to affect irrigation, domestic and industrial water use and environmental flows. Crop and livestock production over much of southern Australia is projected to decline by 2030 due to increased drought. Drought and heat are also expected to adversely affect the quality of grain, grapes, vegetables, fruits and other crops.[14] A southward shift of agricultural pests and diseases due to warming in southern parts of the continent is likely to further exacerbate the adverse impacts on agricultural production.[15]

At present there is a high level of competition for limited water resources among alternative users including urban settlements, irrigated agriculture, industry and the environment. This competition is intensified by declining surface and ground water resources, particularly in southern Australia, increasing population and growing community awareness of the environmental impacts of over-extraction of water in Australia.[16]

Impacts on human settlement

Around 85 per cent of the Australian population currently resides in coastal regions.[17] The present rate of increase, about two per cent or 400,000 people per year, amounts to adding the population of a city larger than Canberra to Australia each year. A continuation of population growth combined with the potential climate change impacts can raise several significant issues for public policy over the coming decades. For example, where will the additional number of people live – in the current major cities and regional centres or in cities that haven't yet been envisaged or planned? How can we provide public infrastructure including water and energy in a sustainable manner to these potentially large cities and regional centres in the medium to long term?[18] These are key public policy questions that will require the attention of policy makers over the coming years.

Climate change could have potentially adverse impacts if future development and expansion in population centres continues to be confined to coastal regions. These adverse impacts would include risks from rising sea-levels and increase in the likelihood of severity and frequency of coastal flooding projected to be caused by climate change, particularly in low lying areas exposed to cyclones and storm surges. Existing infrastructure is particularly sensitive to extreme weather events. The potential climate change risks to infrastructure include the failure of urban drainage and sewerage systems, more power blackouts due to heat waves, rail transport disruptions due to high temperature and increased building damage under excessive wind loads. It is also important to recognise the indirect effects such as urban heat island (UHI) effect that is associated with a rise in temperature caused by heat-retaining materials. For example, it is observed that the mean temperature for Melbourne city increased by 0.23° C per decade from 1950 to 2006. Of this increase in temperature, 0.12° C is estimated to be attributable to UHI effect.[19] UHI effect in the urban environments could increase demand for energy for air-conditioning.[20]

Climate change is also projected to have a range of direct and indirect effects on the wellbeing of the Australian population. The direct effects are likely to manifest through phenomena such as heat waves, bush fires, storms and floods. For example, potential heat-related deaths among those who are over 65 years old in six of Australia's largest cities are projected to increase from about 1100 per year at present to around 2300–2500 by 2030 and 4300–6300 by 2050 (after adjusting for demographic changes). The indirect effects of climate change on the wellbeing of the Australian population are likely to manifest through biological processes such as vector-borne and other infectious diseases (including dengue, Ross river fever and malaria) and physical processes such as air pollution.[21]

It could be argued that Australia's natural environment including the natural landscapes, national parks, wetlands, and the Great Barrier Reef contributes to the overall wellbeing of the population as important destinations for tourism. A recent assessment of a wide range of tourism regions for prospective risk of climate change in Australia has

identified at least three key areas as the most threatened.[22] These include key tourist destinations in tropical north Queensland, south west Western Australia and the top end of the Northern Territory. The adverse impacts of climate change on Australia's natural landscape and hence on some of the popular tourist attractions could manifest in several forms including loss of attractions, loss of quality of attractions, costs of adaptation, increased cost for repair, maintenance and replacement of tourism infrastructure, and increased costs for developing alternative attractions. [23] [24]

Implications for sustainable population

Irrespective of Australia's future population level, it is becoming clear that attention needs to be focussed on coping with the climate changes that are already occurring and appear unavoidable over the coming decades based on the best available scientific evidence at present. Recent analysis of current warming trends combined with updated scenarios of global greenhouse gas emission growth and climate sensitivity, indicates only a quite small band of climate change uncertainty to about 2050.[25] This highlights the need for major adaptation efforts across key vulnerable sectors over the next few decades. Hence, in the context of sustaining future levels of population in Australia, some of the potential changes required may be quite significant. It could be argued that coping with future climate changes may require far reaching changes which cut across key vulnerable areas that have implications for sustainable population.

In the context of energy, water and agricultural systems, there have been several suggestions put forward to cope with the expanding demand for the output of these systems, particularly in relation to a growing population in a potentially low carbon economy. These include the development and application of smart network technologies for electricity, gas and water supply and distribution in the urban domain and the uptake of smart network technology in irrigation.[26] The aim of the "smart network technologies" concept is to improve supply, allocation, distribution and overall productivity of basic necessities for the sustainability of expanding human settlements. For example, it is projected that smart network technologies relating to basic infrastructure such as electricity in urban domains will allow for/enable better integration of intermittent and distributed renewable energy sources (such as solar and wind) into existing grid networks. Furthermore, smart network technologies are also expected to facilitate behavioural changes among users through the provision of consumer information on usage rates and cost of water, energy and greenhouse gas emissions.[27] Transparent and less regulated markets for energy and water are required to fully harness the potential benefits of smart network technologies. In the context of agricultural systems, it has been proposed that adapting to future climate changes in Australia may require the consideration of progressive relocation of agricultural industries to more favourable climatic regions.[28]

As indicted earlier, there are competing demands for water use and ensuring water security for alternative water uses is crucial for a sustainable existence of a population. Several basic measures can help achieve this. They include, lowering demand via education, behavioural change and efficiency programs; expanding supply via alternative sources such as recycling and desalination; and making better use of current water resources via efficient pricing and ensuring adequate environmental flows.[29]

In the coming decades, Australian population centres, current major cities, regional towns and those cities that haven't yet been envisaged or planned will face the combined challenge of resource constraints, in a potentially low carbon operating environment. The sustainability of such population centres will require technological

innovation initiatives which foster the design of resilient energy, water, transport and related urban systems that meet human needs and ensure acceptable quality of life with low environmental impacts. Such initiatives are transformational, long term in nature, require demonstration projects and staged implementation over a number of years.[30] It is also important to recognise the climate change vulnerability (for example, to weather and climate related natural disasters) of certain locations of current and future human settlements. In this context, the imposition of planning controls in coastal regions to prevent people building in areas at risk of flooding, storm surges and shoreline erosion has been canvassed as a potentially important adaptive measure.[31]

In order to address the potential risks to future populations from heat waves, several measures have been proposed including: reorganisation of health care services and enhancement of early warning systems to reach at-risk groups and the general population; encouragement of behavioural changes by the general public to reduce exposure to heat stress; and development of emergency response plans for heat waves in all regions.[32]

As the frequency and intensity of severe weather events increase with climate change in the future, the commercial insurance markets have an important role to play in helping manage such risks. This is particularly relevant with respect to human settlements (for example residential and business property and infrastructure). However, conventional property insurance is of limited value at present when the uncertainty mainly involves the timing rather than the extent of a severe weather event triggered by climate change.[33] For example, there could be uncertainty about the timing of coastal property loss as a result of rising sea-levels, due to the melting of the Greenland icesheet. Insuring against risks with such uncertainty would require the development of innovative property and infrastructure insurance products that share features with traditional life insurance.[34] The commercial viability of the development and operation of such innovative insurance products will be influenced by at least three key factors:

- The expansion and dissemination of information and knowledge from applied climate science that is relevant to the development of new insurance products for circumstances relating to severe weather events;
- Imposition of appropriate land use planning and zoning by state and local government authorities based on sound knowledge from the climate science; and
- Reforms to any distortions associated with insurance transaction taxes that tend to increase the cost of premiums.[35]

Concluding remarks

As indicated earlier, coping with the climate change impacts that are inevitable over the coming decades requires a certain level of forward looking or planned adaptation. Some of the adaptation measures required for ensuring a sustainable future population have been canvassed in the previous section. The implementation of such adaptation measures requires addressing information and communication barriers, institutional limitations and resource constraints. In both urban and rural locations, access to information relating to the vulnerability of down-scaled regions to climate change impacts has been reportedly sparse. When specific information is available, a more robust case can be made for adaptation via proper planning. There is an increasing demand for so called “hard” information such as identifying tangible climate and weather related hazards and particularly vulnerable locations. For example, in the case of sea level rises and storm surge implications for planning, the information requirements are quite specific.[36]

Planned adaptation can be improved by enhancing the quantity and quality of relevant information through ongoing research and applications in at least two ways:

- By providing more reliable information about climate change and its regional impacts; and
- By developing and testing improved adaptation options and technologies.

Providing better or enhanced insights into climate change on a decadal scale and into long-term regional weather patterns (including down-scaling) is essential for efficient and effective adaptation. This is effective, provided that the information reaches the relevant audience in a timely, user friendly, understandable and reliable manner.[37] Communication and information dissemination about climate change impacts and adaptive solutions and their implications are essential for the adaptation process.

The government has an important role in providing a conducive environment including the appropriate legal, regulatory and socio-economic environment to support planned adaptation. Adaptation requires changes in behaviour of individuals. Changing behaviour may be constrained by various distortions in the operating environment. Governments can stimulate incentives to adapt promptly and rationally to climate change, for example, by removing the legal and economic distortions that individuals, firms and farms face.

It is important to recognise climate change adaptation as a cross-sectoral issue. Climate change adaptation measures are often difficult to separate from other issues in different sectors, including agriculture and water, particularly with respect to natural hazards and climate variability. There are inter-linkages between climate change and other environmental and socio-economic policy issues that need to be recognised and acted upon within a broader public policy framework. This involves mainstreaming public policy relating to climate change adaptation. Integration of climate change adaptation policies into broader sectoral and socio-economic policy making frameworks requires fundamental shifts in institutions, polices and incentives. This is likely to be an ongoing and adaptive process.

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2.5
Climate change implications of a large Australian population

Barry Brook

Barry Brook, a leading environmental scientist and modeller, is a Research Professor in ecology and conservation biology at the University of Adelaide's Environment Institute. He holds the *Sir Hubert Wilkins Chair of Climate Change*, and has published three books, over 200 refereed scientific papers, is a highly-cited researcher, and regularly writes articles for the media. He has received many awards for his research and outreach, including the 2006 Australian Academy of Science *Fenner Medal* and the 2010 *Community Science Educator of the Year*. His interests include global change, species extinctions, simulation modelling, energy systems analysis (modelling future nuclear and renewable energy scenarios), and synergistic human impacts on the biosphere.

Introduction

Australia is an economically developed country with a high standard of living, a gross domestic product in 2010 of $890 billion (GDP adjusted for purchasing power parity, ranked 18 in the world), and a per capita income of $41,300. For electricity, oil and gas consumption Australia's global ranking is 16, 19 and 29 respectively.[1] In terms of human-caused greenhouse gas emissions, Australia produces 1.3 per cent of the world's total[2], and is the largest global coal exporter. Thus, despite a relatively modest population size of 22.7 million people in 2011 (just 0.32 per cent of the global population of 7 billion)[3], Australians are heavy economic and environmental hitters.

Given this context, what would be the implications for global climate change of a "large Australia"? To address this question, I will use two underpinning assumptions (based on forecasts provided by the Australian Treasury in their 2010 Intergenerational Report):[4]

1. Net population growth rate is 1.2 per cent per annum, reaching 35.9 million people by 2050; and
2. Per capita real GDP grows at 1.5 per cent per year over the same timeframe.

The world in 2050

There is an old Arab proverb, *"Those who foretell the future lies, even if he tells the truth"*[5]. Even when armed with all the relevant current data and well-supported empirical models, much will change over the next 40 years that we cannot reasonably anticipate. Yet this truism does not preclude us from developing scenarios against which the plausibility and sustainability of "alternative futures" can be assessed objectively. Below I outline some "business-as-usual" (BAU) forecasts by authoritative international reports on the likely state of the world in 2050. This will aid in putting the Australia 2050 situation into a global context, which is essential when discussing an issue like climate change, a challenge blind to socio-political borders and national jurisdictions.

The most recent United Nations projections[6] put world population at between 8.1 and 10.6 billion people by 2050, with a median estimate of 9.3 billion. These same forecasts project Australia at between 27.9 and 35.1 million in 2050, with a median of 31.3 – similar to the Treasury scenario. Taking the mid-range scenario, Australia would comprise 0.34 per cent of global population, almost identical to the situation today.

In 2010 global greenhouse gas emissions from burning fossil fuels were 9.14 billion tonnes of carbon (which is 33.5 billion tonnes of carbon dioxide gas).[7] Of this total, Australia's direct CO_2 emissions were 365 million tonnes (this figure excludes non-CO_2gases).[7] In the reference scenario of the Australian Treasury for 2050[8], world emissions of all greenhouse gases (which includes not only fossil fuel combustion and cement production, but also wastes, fugitive emissions, methane, nitrous oxide and other trace gases) will reach 102 billion tonnes of carbon dioxide equivalents (CO_2e), constituting a 2.6-fold increase over the 2005 baseline. Under this BAU scenario, Australian emissions will rise 1.8-fold, from 579 million tonnes in 2005 to 1.4 billion tonnes in 2050. These forecasts are tied strongly to the assumptions of population and economic growth for Australia outlined in the introduction to this chapter, as well as an on-going heavy dependence on coal and gas for stationary electricity, and oil and gas for transport and other energy-intensive sectors.

This substantial growth in carbon-based energy, if sustained, will mean that over the next 25 years, humans will emit into the atmosphere more carbon dioxide than the total amount emitted during the 250-year industrial period of 1750 to 2000.[9] Of particular concern is that long-lived greenhouse gases, such as CO_2, will continue to amplify global warming for centuries to come. For every five tonnes added during a year in which we dither about reducing emissions, one tonne will still be trapping heat in 1000 years.[10] It is a bleak endowment to future generations.

This BAU scenario aligns to the most emissions-intensive pathway studied by the Intergovernmental Panel on Climate Change's 2007 Fourth Assessment Report, known as the A1FI storyline[11]. The results from global climate models[12] suggest that such a future will be 2.4 to 6.4°C hotter in the decade 2090–2099 compared to the reference period 1980–1999, with a mid-range estimate of 2°C by 2050 and 4.5°C by 2100. A 2011 review of the latest science and modelling is available in the paper *When could global warming reach 4°C?* [13]

An alternative global scenario, predicated on aggressive cuts in emissions over the coming decades and described in detail in the 2011 paper *Emission pathways consistent with a 2°C global temperature limit*[14], would require global production to fall from the 2010 figure of 48 billion tonnes CO_2e in 2010 to 21 billion tonnes by 2050. Under these bold assumptions, which will require a 2.5 per cent cut in global emissions annually after 2020, there would be a roughly 50:50 chance of global temperatures not exceeding 2°C. Still not great odds, but preferable to BAU.

Australian emissions and targets in 2050

When it comes to energy and carbon-emissions reduction, the devil is always in the detail. So too with the Australian Government's plans to cut its emissions by five per cent below year 2000 levels by 2020, with on-going large-scale cuts after that date to reach 80 per cent by 2050.

The reasons for such commitments are, from a scientific basis, quite clear. The longer we, the present generation, delay on the move away from fossil fuel energy sources, the more we will "lock in" the build-up of long-lived greenhouse gases like carbon dioxide and the global climate change that results. Greenhouse gas emissions are a tragedy of the commons, and Australia has a proportional part to play. If most nations "wait and see", the commons – our atmosphere and biosphere – will be degraded, to the detriment of all people. Should the nations of the world generally choose to take no effective action, we can expect increasingly severe consequences, both in Australia and most other inhabited regions on Earth. For instance, beyond about 2°C of further warming, the Great Barrier Reef will be devastated. Extreme events will become more frequent and severe, such as storm surges adding to rising sea levels by many metres, threatening coastal cities.[15] Although large uncertainties on the future behaviour of some events remain (such as cyclones and extended drought in some regions), others, like increased heat waves, are already securely understood.[16] There is the possibility that a semi-persistent or more intense El Niño will set in, leading to frequent failures of tropical monsoonal rains which provide the water required to feed billions of people.[17] Above 3°C, up to half of all species may be consigned to extinction because of their inability to cope with such rapid and extreme changes.[18]

Yet without a broad international commitment to reduce and eventually eliminate CO_2 emissions, the logical pathway for a nation like Australia is to keep burning coal for its electricity. With an abundant and cheap supply, there is little reason to do anything

else. Even with a broad international commitment about CO_2 emissions, it is tempting for a nation like Australia to "free ride" and keep burning coal for its electricity, unless international sanctions and Australians' moral sense of fair play, dictate otherwise. To decide not to do this, there must be a social and environmental justification, tied to rigorous energy, economic and population policy. We can anticipate many of the impacts of future global warming, and we have the ability to make the key economic and technological choices required to substantially mitigate emissions. But will we act in time, and will it be with sufficient effort, to avoid dangerous climate change?

Focusing first on the short-term 2020 goal, the Australian Government's expectation is that total national emissions will actually rise from the 2011 figure of 578 Mt of CO_2e to 621 Mt by 2020 – a net growth of 7.5 per cent over the next nine years.[19] Yet the goal is five per cent below 2000 levels of 558 Mt, so the target number the government is seeking to reach is 530 Mt. The BAU expectation is 680 Mt, so the newly legislated carbon tax and other emissions reduction incentives (such as energy efficiency and renewable energy certificates) are expected to save about 60 Mt compared with the no policy approach. To fill the 91 Mt gap, Treasury modelling suggests that 15 per cent of the 2020 emissions reductions will come from international carbon pollution permits from developing countries, including clean energy projects, avoided deforestation, and so on.[20] These are of course difficult to verify, but that is the concept.

The heavy reliance on foreign abatement credits to supplement domestic efforts will continue through to 2050. In July 2011 the Treasury released new modelling which looked at a range of energy scenarios (assuming a mix of energy efficiency and conservation, renewable energy and fossil fuels, but excluding nuclear) and design features of a carbon pricing scheme.[21] The core policy scenario assumes global action to stabilise CO_2e at 550 ppm by the year 2100, which aligns with Australia's current emissions reduction target of 80 per cent by 2050. The energy mix in 40 years is assumed to continue with a majority reliance on fossil fuels (black coal, oil and natural gas, about half of which makes use of carbon capture and storage technology), but with between 35 and 47 per cent coming from renewables, up from an 11 per cent share today.[22]

Alternatives: steady or declining Australian population?

Standard policy analyses on emissions abatement involve the modelling of energy and economic growth pathways, and a conjecture about future population size. The default assumption is that population will continue to grow in the coming decades, with the mid-range estimate, as described above, being an increase from 22.7 million people in 2011 to 31.3 million in 2050. Australia's total fertility rate is currently 1.78[23], which is the average number of children born to a woman if she were to survive through to the end of her reproductive life. This is below the replacement fertility rate, which for Australia (with a low mortality rate) is a little less than 2.1[24]. Yet Australia's population continues to grow at a rate of 1.15 per cent per year, due to our substantial net migration rate, recently six migrants per 1000 population. That is, without migration, Australia's population would now be contracting, not growing, as is already the case for many OECD nations with lower immigration rates, such as Germany, Italy, France, Sweden, Japan and Korea.[26]

Because Australia's population growth is now determined by migration policy, our future population trajectory is, in theory, "tuneable", via adjustment of net migration rates, without any need for recourse to other forms of population control such as incentives for fertility reductions. This situation allows us to pose an interesting hypothetical

question: can population policy be used to effectively mitigate Australia's future greenhouse gas emissions?

To put this question in a more exact form, assume that future government policy restricts net migration rates over the next few decades such that our population peaks at a little higher than today, and then declines thereafter, reaching a stable population size in 2050 of 20 million people (ie, lower than the current size, and only 56 per cent of the forecast upper value of 35.9 million). Under this scenario, if projected rates of per capita productivity were to hold, despite the changed demographic assumptions, then, under BAU, Australia's emissions would still rise to 780 Mt CO_2e by 2050, an increase of 40 per cent over 2000 levels. As a result, a transformation of energy generation systems towards a predominance of low-carbon technologies, improved energy efficiency and conservation, and/or lower economic growth, are still required for emissions cuts.

Clearly then, an ambitious population policy, operating in isolation, would prove to be insufficient to curb our greenhouse gas emissions. Demographic impetus means that human population size is slow to change, and therefore not a particularly effective "lever" for mitigating emissions. One reason for this sluggish momentum is that in Australia today, life expectancy is over 80 years, and almost 55 per cent of today's population – 12.4 million people – are not yet 40 years old[27]. Thus, in 2050, most of these people will still be alive. No fertility or migration policy will alter this fact.

What matters most: technology transformation

The challenges to achieving a modern Australian society that is able to protect its natural environments and mitigate the worst effects of climate change are massive. These problems encompass substantive social, political, and economic issues. How can Australia – with 22.7 million people today and a likely larger population in the future – adapt to this changing landscape?

One idea, proposed in the early 1970s, is to adopt a "small is beautiful" philosophy and deploy appropriate technologies that are relatively simple and work on only local scales, but might eventually achieve a large bottom-up shift towards sustainability.[28] A related approach is to advocate for fundamental behavioural change in society. Yet this has patently not happened to date, and it remains difficult to envisage how any collective society would initiate such change, and then pursue it at sufficient pace and on a grand enough scale to make a difference, while at the same time upholding the democratic and liberal freedoms that Australians cherish.

The alternative is to seek shortcuts that can drive a more rapid transformation, based on major policy interventions on infrastructure, investment, and promotion of technological advances that result in broad-scale benefits to both human society and the environment.[29] The concept of the "techno-fix" – the idea that social problems are more quickly and efficiently solved via application of technology rather than relying on a multitude of people to act rationally – is alien or anathema to most environmentalists, perhaps because it involves engagement with the neo-classical economic ideas of controversial environmental commentators like Simon[30] and Lomborg[31].

Yet in a way, the recent analysis of Australia's future carbon emissions abatement pathways by the Treasury[32] can be seen as an endorsement of the pursuit of techno-fixes. In this case, a pathway for energy transformation was defined, and various technologies for low-carbon electricity generation were evaluated on the basis of their fit-for-service maturity, economic competitiveness and scalability. Indeed, most of the technologies that are postulated to be providing energy to a "large Australia" in 2050 are not yet

commercially viable – this includes large-scale implementation of carbon capture and storage for fossil fuel sources, engineered "hot dry rock" geothermal, and solar thermal power. This is surely a case of seeking novel technology to solve entrenched problems with old infrastructure.

Australia needs a bolder approach. For instance, we need to be seriously considering deploying advanced nuclear fission technologies alongside new renewables for stationary electricity and eventual decarbonisation of our transportation and industrial sectors. A recent analysis has shown, based on a meta-review of the authoritative international energy literature[33], that inclusion of a tranche of 25 GWe of nuclear power within the Treasury modelling scenarios could totally obviate the need to source foreign carbon offsets, save up to $185 billion net in abatement costs by 2050, and result in Australia exceeding its emissions reduction goals.[34]

Modern nuclear reactor designs are efficient, with operational capacity exceeding 90 per cent, and an extremely high degree of safety based on the inherent principles of physics (rather than being too reliant on over-engineered systems). In terms of costs and build times, standardised, modular, passive-safety designs may be key: these are relatively small (10 to 300 MWe), can be factory built, shipped to site, and built underground for security and protection from extremes. The Integral Fast Reactor (IFR) technology developed by the US Argonne National Laboratory[35] burns over 99 per cent of the nuclear fuel, leaves only a small amount of waste which decays to below background levels of radiation within 300 years, shuts itself down if the control systems fail or the operators walk away, and cannot be used to generate weapons-grade material. The IFR, and other new small modular reactor designs[36], seem ideally suited as a first entry point to nuclear for a technologically sophisticated nation like Australia. These offer enormous opportunities for innovation, thinking outside of the box, and building on our natural capital.

For instance, with an abundance of cheap, reliable and low-carbon electricity generation technologies, our future vision might include land sparing and repatriation to natural ecosystems, as a result of deployment of new forms of energy-intensive, tightly controlled and environmentally benign food production (eg, vertical farming and building-integrated agriculture)[37]. Similarly, the use of nuclear and solar-thermal industrial heat to run multi-stage flash distillation for desalination could supply ample fresh water to our cities[38], without placing undue strain on river systems like the Murray-Darling, nor requiring further large water storages around our major capital cities. Science must play a crucial role in allowing decision makers to achieve a balance of the various priorities within each society, if sustainability of the Australian population is to be achieved.

Conclusion

The human population has grown enormously in recent centuries, from 650 million in the year 1700 AD[39] to almost seven billion today. When coupled to our increasing economic expansion and concomitant rising demand for natural resources, this rapid expansion of the human enterprise has put a huge burden on the environment, fuelled by an accelerating depletion of fossil fuels and various high-grade ores and increasing environmental damage (now termed the "Anthropocene Epoch"[40]). Obviously, to avoid exhaustion of accessible natural resources, the wholesale degradation of ecosystems, and to counter the need to seek increasingly low-grade mineral resources, large-scale recycling of key materials like metals, and sustainable use of biotic systems, will need to be widely adopted. Of this axiom there can be little room for doubt.

FIGURE 1.
IMPACTS OF CLIMATE CHANGE IN AUSTRALIA BY 2100 UNDER THE NO-MITIGATION CASE.[46]

The large size of the present-day human population is clearly a major reason why we face mounting environmental problems and are now pushing hard against planetary boundaries like climate change, alteration of atmospheric chemistry, nitrogen and phosphorous cycles, chemical pollution, ocean acidification, biodiversity loss, and habitat degradation.[41] But does it also follow that population control is the answer – the best solution – to solving these national and global problems? The conclusion that emerges from this essay is that while sound population policy is required, it will be too slow and ineffective to realise our climate and other environmental goals. We need to have major solutions well under way by 2050 and essentially concluded by 2100.

A vast country like Australia, where population pressures are lower than places like Europe and Asia (even at 35.9 million people, Australia's density will only be 4.7 people per km^2), has more leeway than many nations in terms of population growth. Yet Australia is also the driest inhabited continent on Earth with the least fertile soils[42], and is forecast to be heavily impacted by climate change. For instance, the Garnaut Climate Change Review states:

> *"By mid-century, there would be major declines in agricultural production across much of the country. Irrigated agriculture in the Murray-Darling Basin would be likely to lose half of its annual output. This would lead to changes in our capacity to export food and a growing reliance on food imports, with associated shifts from export parity to import parity pricing."*[43]

Figure 1, also taken from the Garnaut review, summarises some of the major projected impacts of unmitigated global warming on Australia by 2100. Clearly, as we face a combination of a larger human population and severe climate change impacts, challenging times lie ahead.

A large but sustainable Australian population will need to rely heavily on a mix of innovation, efficiency, and techno-fixes. As discussed above, this should include adoption of advanced nuclear power systems (based on the full recycling of spent nuclear fuel), plasma-arch torches to treat municipal garbage (providing a syngas fuel and recovering metals from the waste stream)[44], and efficient desalination techniques based on clean energy, to alleviate water stress. Obviously we must proceed with caution, but as Alvin Weinberg pointed out:

> *"Technological fixes have unforeseen and deleterious side effects – but so do social fixes, especially revolutions".*[45]

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Section 3.0
Society and the individual

3.1
Immigration and public opinion

Andrew Markus

Andrew Markus holds the Pratt Foundation Research Chair of Jewish Civilisation at Monash University and is a Fellow of the Academy of the Social Sciences in Australia. He has published extensively on Australian immigration and race relations. His recent publications include the co-authored *Australia's Immigration Revolution* (2009) and *Immigration and Nation Building: Australia and Israel Compared* (2010). Andrew heads the Scanlon Foundation *Mapping Social Cohesion* national research program, which will be conducting its fifth national survey in 2012, and is the principal researcher on the Australian Jewish population and Yiddish Melbourne research projects. He maintains the Mapping Australia's Population internet site (http://arts.monash.edu/mapping-population/), sponsored by the Scanlon Foundation, to further inform understanding of population change in Australia.

Extent of public opinion research in Australia

In Australia there has been considerable commercial polling – primarily for the print media – of issues related to immigration and population growth. However, there are problems with reliance on commercial polling. Such polls typically include three questions or fewer on immigration in the context of an omnibus survey exploring a range of other issues, do not utilise a consistent form of wording from one commercial agency to another, and the frequency is determined solely by the level of public interest. In some years there is no polling on immigration.[1]

Academic and government surveys can provide greater depth. However, Australia lacks the tradition of sustained survey research that characterises work in Europe and North America.[2] Professor Ian McAllister, past Director of the Research School of Social Sciences at the Australian National University, commented in 2005 that:

> *"More than at any time in the past, the design of effective public policy requires the assistance of accurate, informed social surveys. What aspects of social policy concern people most? How do people view the reform of the health services? What level of immigration do most people regard as appropriate for Australian society? These and a host of other questions can only be properly addressed if we know* what *people feel about these issues and* how *their views are formed and have changed over time …Yet Australia, despite a long history of innovative policy-making, has lagged behind other advanced societies in developing these critical empirical tools."*[3]

Leading overseas work includes the British Social Attitudes survey,[4] the primary social research survey in Britain. It has been administered annually since 1983 to monitor and interpret the British public's changing attitudes towards social, economic, political and moral issues. It uses a comprehensive questionnaire, is administered by trained interviewers and is completed by a sample of 3000 respondents. It has included a broad range of questions on immigration and race relations and made possible major research publications. In addition, wide-ranging citizenship surveys were conducted biennially in England and Wales between 2001 and 2006 and on a quarterly basis between 2007 and 2011, until halted by government economy measures. The first three citizenship surveys were each administered to some 15,000 respondents (including a minority ethnic boost of 5000) in face-to-face interviews, taking approximately 60 minutes to complete.

The Canadian Department of Citizenship and Immigration has commissioned quarterly tracking surveys between 1996–2005 and annual surveys in 2006, 2007, 2009, and 2010[5]. An Ethnic Diversity Survey,[6] conducted in 2002 by Statistics Canada in conjunction with other departments, set a standard of excellence involving personal interviewing of 42,500 respondents, utilising a rigorous sample based on the 2001 census. Within the EU, major surveys include the annual Eurobarometer,[7] established in 1973, with a minimum of 1000 respondents in each member state, and the biennial European Social Survey,[8] which reaches over 30,000 respondents.

In Australia, while some surveying is conducted by government, the main source of long run or time series data is the relatively underfunded work of researchers at the Australian National University (ANU).

ANU researchers conduct the Australian Survey of Social Attitudes (AuSSA),[9] which is presented as "Australia's major academic social survey". It has been conducted every two years since 2003 and contributes to the International Social Survey Program (ISSP)[10] and the World Values Survey.[11] It is a mailed, self-administered survey and

achieves some 4000 completions. Its value for the present study is limited as it includes few questions on immigration.

The Australian Election Study (AES)[12] is conducted by ANU researchers immediately following a federal election. The AES utilises a mailed, self-administered questionnaire and draws its sample from the computerised rolls of the Australian Electoral Commission. Completed responses are typically in the range of 1800–2000. The AES is of particular value in providing insight into the relative importance of political issues and for its questions on attitudes to the current level of immigration.

The ANU Poll[13] was started in 2008 and is planned to run on a quarterly basis, with the eleventh survey completed in September 2011. It is telephone based and reaches 1000–1200 respondents. In addition to common questions across surveys (notably a question on the ranking of political issues), each survey focuses on a specific topic. The seventh poll, published in October 2010, covered population, immigration and ageing.

A major recent development is the establishment of the Scanlon Foundation Social Cohesion Research program.[14] To the present the program has yielded four national (2007, 2009, 2010, 2011) and two local surveys (2007, 2009). These surveys utilise random telephone sampling, reach a minimum of 2000 respondents, and employ a comprehensive range of questions on immigration issues.

The following discussion presents analysis using a broad range of survey data to explore the nature and determinants of Australian opinion on immigration and population issues. It is distinctive in placing Australian survey findings in an international perspective.

Attitudes to immigration, nations compared

There is substantial evidence to indicate that Australia and Canada rank as the developed nations most receptive to immigration.

Comparing survey findings is an exercise beset with difficulty. The wording of questions differs between surveys; the context of the question within a questionnaire will almost always differ (raising the problem of the impact of question order); and where response to questions in different countries is considered, as in the following analysis, there is the problem of differences of meaning across cultures. A question may be identically worded, as in the World Values Surveys, but the meaning of words and phrases will differ from one country to another. Nonetheless, such an exercise can prove to be of value, as evidenced in the following discussion, which yields a large measure of consistency utilising three data sources. The objective is to consider the pattern of response to immigration issues within different countries.

A key source for cross-national comparison is a survey conducted for the International Social Survey Program in 2003 (Table 1), which included a question on attitude to the level of immigration. Of 17 countries selected for analysis, Canada and Australia ranked at the top level, with over 60 per cent of respondents in support of the existing immigration intake or its increase. The next level of support was below 50 per cent, with the low points recorded in the United Kingdom (22 per cent) and Russia (18 per cent).

A second comparative perspective is provided by the fourth wave of the World Values Survey, with attention to countries surveyed in 2005 and 2006. Respondents were presented with a list specifying characteristics of potential neighbours and were asked to “sort out any that you would not like to have as neighbours”. The list included the

TABLE 1
ATTITUDE TO IMMIGRATION INTAKE, SELECTED COUNTRIES, 2003

	NUMBER OF IMMIGRANTS COMING TO COUNTRY			
	INCREASE	REMAIN THE SAME	COMBINED 'INCREASE' AND 'REMAIN THE SAME'	DECREASE
Canada	29%	39%	**68%**	32%
Australia	23%	38%	**61%**	39%
Spain	10%	39%	**49%**	52%
Denmark	10%	39%	**49%**	51%
United States	11%	32%	**44%**	56%
Portugal	3%	41%	**44%**	56%
New Zealand	16%	28%	**43%**	57%
Sweden	12%	30%	**42%**	58%
Ireland	9%	32%	**41%**	59%
Austria	7%	32%	**39%**	61%
France	8%	26%	**34%**	66%
Hungary	2%	29%	**31%**	69%
Germany – West	5%	24%	**30%**	70%
Netherlands	4%	26%	**30%**	70%
Norway	7%	22%	**29%**	71%
United Kingdom	6%	16%	**22%**	78%
Russia	4%	13%	**18%**	83%

Source: ISSP 2003. The Australian survey was completed by 2183 respondents and was in the field from 27 August to 24 December, 2003. The question employed a five point response frame: Do you think the number of immigrants to [COUNTRY] nowadays should be increased a lot; increased a little; remain the same; reduced a little; reduced a lot. Sub-totals may vary +/– one per cent due to rounding (ZA 2005).

TABLE 2
SURVEY RESULTS – WOULD NOT LIKE TO HAVE AN IMMIGRANT/ FOREIGN WORKER AS A NEIGHBOUR, 2005–2006

	WOULD NOT LIKE TO HAVE IMMIGRANT/ FOREIGN WORKER AS A NEIGHBOUR
Sweden	2.3%
Canada	2.5%
Australia	4.8%
Norway	7.8%
New Zealand	7.9%
Spain	8.3%
Netherlands	9.8%
United States	13.2%
Germany	15.7%
Great Britain	15.9%
Russia	32.6%
France	43.2%

Source: World Values Survey, online analysis

category immigrant/foreign worker. When responses from 12 countries were considered, only three per cent of Canadian respondents selected immigrant/foreign worker and only five per cent of Australian respondents, ranking the countries second and third. This compares with 33 per cent of Russian and 43 per cent of French respondents indicating a negative view (Table 2).

A third international survey with relevance to immigration was conducted by the Ipsos global market research company in June 2011. It employed an online panel and was completed by 17,600 respondents in 23 European, North and South American, Asian, and the Middle Eastern countries[15]. Questions were asked with three options – positive, neither positive nor negative and negative – which produced a relatively high proportion indicating the middle position. As in the preceding discussion, it is the ranking of countries that is of interest.

In response to the proposition that: "Immigration has generally had a positive impact on [the respondent's country]", Canada ranked two and Australia five. The rank order of those indicating positive impact in the 23 countries was: India (43 per cent); Canada (39 per cent); Saudi Arabia (38 per cent); Sweden (37 per cent); and Australia (31 per cent).

In response to the proposition that: "Immigration is good for the economy of the [country]", Canada ranked three and Australia five: Brazil (47 per cent); India (45 per cent); Canada (43 per cent); Saudi Arabia (41 per cent); and Australia (36 per cent).

In response to the proposition that: "Priority should be given to immigrants with higher education and qualifications who can fill shortages among certain professions", Canada ranked one and Australia two: Canada (62 per cent); Australia (61 per cent); Great Britain (58 per cent); Saudi Arabia (58 per cent); and Russia (57 per cent).

A fourth question posed the proposition that: "Immigrants make [country] a more interesting place to live". Canada ranked two and Australia equal third: Brazil (49 per cent); Canada (48 per cent); Australia (46 per cent); India (46 per cent); and Sweden (44 per cent).

There are two important findings from these three surveys: the consistently high ranking of Canada and Australia, and the consistently higher ranking of Canada.[16]

Canada and Australia compared

The depth of the Canadian survey data enables further exploration of attitudes to provide comparative insight into the trend of opinion in Australia.

Canada maintained an annual permanent immigration intake in the range 220,000–250,000 between 2000–2004, close to 250,000 between 2005–2009 and with a peak of 280,000 in 2010.[17] This intake represented an annual contribution to population growth of between 0.7 per cent and 0.8 per cent and was maintained while unemployment peaked above 8.5 per cent in 2009 and remained above eight per cent in 2010. Despite this level of unemployment, there is continuing public support for immigration.

A major trans-Atlantic survey provides additional comparative evidence of the strength of Canadian opinion. The Transatlantic Trends survey was conducted in eight countries in 2009 and 2010.[18] It asked respondents if immigration was more of a problem or more of an opportunity for their country. Over the two surveys, an average of only 26 per cent of Canadians responded that immigration was more of a problem, compared with an average of 50 per cent for the other seven countries (Table 3).

TABLE 3
SURVEY RESULTS – IMMIGRATION IS MORE OF A PROBLEM THAN AN OPPORTUNITY

COUNTRY	2009	2010
Canada	25%	27%
France	43%	42%
Germany	44%	44%
Netherlands	45%	39%
Italy	49%	45%
United States	54%	52%
Spain	58%	53%
United Kingdom	66%	65%

Source: Transatlantic Trends 2010

TABLE 4
ATTITUDES TO THE LEVEL OF IMMIGRATION, AUSTRALIA, 1996–2011. SELECTED SURVEYS

YEAR	TOO HIGH	ABOUT RIGHT/ TOO FEW	DON'T KNOW/ REFUSED	NUMBER OF SURVEYS
1996	65%	31%	4%	5
1997	64%	28%	8%	1
1999	47%	51%	2%	1
2001	41%	54%	4%	1
2002	38%	59%	3%	2
2003	38%	57%	5%	1
2005	39%	56%	5%	1
2006	34%	63%	3%	1
2007	33%	60%	7%	2
2008	46%	53%	1%	1
2009	40%	54%	6%	2
2010	46%	50%	4%	6
2011	39%	55%	6%	1

Source: Phone and mail-out surveys, as cited by Goot 2011; Scanlon Foundation survey, 2011 (Markus 2011); AES data is derived from McAllister and Pietsch 2011. Where there was more than one poll in the year, results have been averaged.

Immigration tracking surveys indicate a steady decline in the proportion who consider that there are too many immigrants coming to Canada: an average of 45 per cent in 1996, 37 per cent in 2001, 30 per cent in 2005, 27 per cent in 2009 and 23 per cent in 2010.[19 20]

Other time series data is provided by Gallup Canada and the Environics Research Group. Of 19 Gallup surveys conducted in Canada between 1975 and 2005, those who favoured a reduction in the intake was only above 50 per cent on one occasion, and on no occasion did it reach 60 per cent. The most recent Gallup poll, conducted in 2005, found support for a reduction at 20 per cent.[21]

The Environics Research Group polling between 1977–2010 tested opinion in response to a negative proposition: "Overall there is too much immigration to Canada." Asked in this form, the question attracts a high negative response, but the changing pattern evident in the tracking and Gallup polls was replicated. From the late 1970s to the early 1990s, there was majority agreement that immigration was too high; opinion was close to evenly divided in the 1990s; since 2000, majority opinion disagrees that there is too much immigration. The latest survey, conducted in 2010, registered a small increase in those of the view that there is too much immigration, up from 33 per cent to 40 per cent, compared with 56 per cent in disagreement.[22]

Australian polling, like Canada, has established increasing support for immigration, although there was a marginal decline after 2007. While opposition to immigration has decreased, the low numbers recorded in Canada are not matched: at the low point, 33–34 per cent considered the intake to be too high, compared to 23–26 per cent in Canada. Further, there is greater volatility in Australian opinion. The high point of negative sentiment towards immigration was reached in five polls conducted between 1991–1993, which registered an average of 73 per cent who considered the intake to be too high.[23] In contrast, the average low point of 33 per cent was registered by two polls in 2007.

Opinion since 2007

There is evidence of an increase in negative sentiment towards immigration between 2007–2010. While movement is within a narrow range, and does not approximate the negative levels of the early 1990s, there is a common pattern evident in commercial polling and three time series: the Australian Electoral Study, AustraliaSCAN and the Scanlon Foundation surveys.

The Australian Electoral Study recorded an increase in the proportion favouring a reduction in 2007–08 and 2010, from 35 per cent (in 2004) to 46 per cent to 52 per cent.

TABLE 5
SURVEY RESULTS – DO YOU THINK THE NUMBER OF IMMIGRANTS ALLOWED IN AUSTRALIA NOWADAYS SHOULD BE REDUCED OR INCREASED? 1996–2010

	1996	1999	2001	2004	2007–08	2010
Increase a lot/increase a little and keep levels the same	36%	52%	63%	65%	54%	48%
Reduce a little/reduce a lot	63%	48%	37%	35%	46%	52%

Source: McAllister, Ian and Juliet Pietsch 2011, *Trends in Australian political opinion. Results for the Australian election study, 1987–2010*, The Australian National University.

AustraliaSCAN, conducted annually since 1996 by Quantum Market Research, includes several questions on immigration. In response to the proposition that "our population is large enough and we should stop all further immigration", the level of strong agreement declined from just under 40 per cent in 1996 to close to 26 per cent in 2004. Since 2004 there has been an increase and in 2010 the level of strong agreement was 36 per cent, the highest since 1996.[24]

The Scanlon Foundation surveys, conducted in 2007, 2009, 2010 and 2011, recorded statistically significant increases in the proportion indicating that the immigration intake was too high in 2010 (from 37 per cent to 47 per cent), and a statistically significant decrease between 2010 and 2011.

TABLE 6
SURVEY RESULTS – WHAT DO YOU THINK OF THE NUMBER OF IMMIGRANTS ACCEPTED INTO AUSTRALIA? 2007–2011

	TOO HIGH	ABOUT RIGHT	TOO LOW	REFUSED/ DON'T KNOW
2007	36%	41%	12%	11%
2009	37%	46%*	10%	7%*
2010	47%*	36%	10%	7%
2011	39%*	40%	14%*	6%

*Change statistically significant at p<.05
Source: Scanlon Foundation (Markus 2007–2011).

Views on the value of a diverse intake, immigration categories and national groups

The Scanlon Foundation surveys make possible further exploration of Australian attitudes. The surveys conducted between 2007–2011 asked respondents if "accepting immigrants from many different countries makes Australia stronger". A large measure of consistency is indicated. Those who agree that immigrants from many different countries make Australia stronger, outnumber those who disagree by a ratio of more than 2:1, in 2011, 64 per cent agreed, 27 per cent disagreed.

The 2010 and 2011 Scanlon Foundation surveys undertook detailed exploration of attitudes to immigrant categories and national groups. The results obtained by the two surveys are consistent.

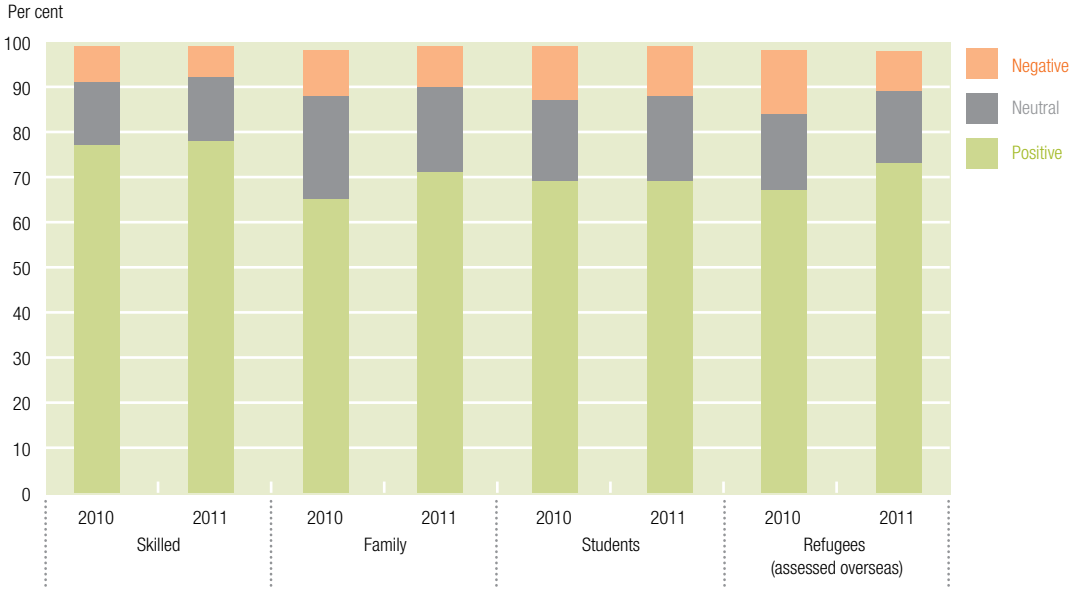
Respondents were asked for their views on the main categories of permanent and long-stay immigrants (that is, those admitted under the Skill and Family Streams of the

TABLE 7
SURVEY RESULTS – ACCEPTING IMMIGRANTS FROM MANY DIFFERENT COUNTRIES MAKES AUSTRALIA STRONGER, 2007–2011

RESPONSE	2007	2009	2010	2011
Strongly agree	21.9%	24.7%	19.1%	24.2%
Agree	45.1%	43.2%	43.3%	40.1%
Sub-total agree	**67.0%**	**67.9%**	**62.4%**	**64.3%**
Neither agree or disagree	3.3%	3.1%	5.9%	6.4%
Disagree	18.1%	17.9%	18.6%	16.2%
Strongly disagree	7.8%	8.9%	10.9%	10.6%
Sub-total disagree	**25.9%**	**26.8%**	**29.4%**	**26.8%**
Refused	0.2%	0.3%	0.2%	0.2%
None of the above/ don't know	3.6%	1.9%	2.0%	2.4%
Total	**100%**	**100%**	**100%**	**100%**
N (unweighted)	2012	2019	2021	2001

Source: Scanlon Foundation (Markus 2007–2011).

FIGURE 1
SURVEY RESULTS – DO YOU FEEL POSITIVE, NEGATIVE OR NEUTRAL ABOUT (CATEGORY) COMING TO LIVE IN AUSTRALIA AS A PERMANENT OR LONG-TERM RESIDENT? 2010–2011



Source: Scanlon Foundation (Markus 2010–2011)

Migration Program and overseas students), as well as their views on refugees admitted after selection overseas.

The most positive attitudes are towards immigrants admitted on the basis of skill, with 78 per cent in support, 14 per cent neutral and eight per cent opposed. However, the views towards the other three categories were almost as favourable. In 2011, positive attitudes outnumber negative by a ratio close to 8:1 for refugees and family and 6:1 for students. More positive attitudes were indicated in 2011 towards refugees (73 per cent positive) and those who enter under the family stream (71 per cent).

Respondents were also asked to indicate attitudes towards specific national groups.

In all countries of immigration there is a hierarchy of ethnic preference, which informs attitudes to newcomers, at times determining categories of admission and exclusion. For much of the twentieth century, there was a large degree of consistency in the status hierarchy within Australian society, with immigrants from the United Kingdom and other English-speaking countries ranked at the top, northern Europeans next, followed by other Europeans. Non-Europeans were denied entry for permanent residence until reform between 1966 and the late 1970s brought the White Australia policy to an end.

There has been little attention in Australian opinion polling to status hierarchies since the 1980s, and even in the 1970s and 1980s, polls asked imprecise and ambiguous questions.

The 2010 and 2011 Scanlon Foundation surveys asked respondents if their feelings were positive, negative or neutral towards immigrants from 12 national groups, comprising English-speaking, European, Asian and Middle East countries.

The results indicate low levels of negative feeling and consistency between the 2010 and 2011 surveys. When questioned with regard to feelings towards immigrants from specific Middle Eastern countries, negative sentiment reached 24 per cent for immigrants from Iraq (26 per cent in 2010), 24 per cent (23 per cent) for Lebanon, and a considerably lower 14 per cent (11 per cent) for Egypt. The high reading of 24 per cent

FIGURE 2
SURVEY RESULTS – WOULD YOU SAY YOUR FEELINGS ARE POSITIVE, NEGATIVE OR NEUTRAL TOWARDS IMMIGRANTS FROM [COUNTRY]? 2010–2011

Source: Scanlon Foundation (Markus 2010–2011)

is close to the indication of negative sentiment obtained in the survey towards those of the Muslim faith, indicating that attitudes towards Muslims in all likelihood inform attitudes to immigrants from Iraq and Lebanon.

In contrast, the level of negative sentiment towards immigrants from English-speaking countries (England, New Zealand and the United States) and European countries (Italy, Greece and Germany) averaged less than three per cent. Negative sentiment towards immigrants from Asian countries averaged 11 per cent.

It is notable that in both the 2010 and 2011 surveys more than 95 per cent of respondents are positive or neutral towards immigrants from Italy and Greece, more than 90 per cent towards Vietnamese and more than 85 per cent towards Chinese.

These findings point to a substantial change in Australian attitudes in a relatively short period of time. Continental Europeans, who were the target of hostility in the 1950s and 1960s, and immigrants from Asia whose entry to Australia was much questioned in the 1980s, are now seen in a positive or neutral light by a large majority of Australians. While one in four admit to negative feelings towards immigrants from Lebanon and Iraq, those with positive and neutral attitudes are the clear majority.

Future population targets

A number of polls in 2010 asked questions with regard to future population. There are indications that such questions are too abstract to obtain reliable readings of public opinion.

The Third Intergenerational Report was released by the Treasury in February 2010. It projected a population of 35.9 million by 2050. This projection sparked extensive and polarised public debate, which was waged between what came to be termed advocates for a “Big Australia” and “Small Australia”, with little understanding that the Intergenerational Report’s projection was relatively conservative and based on the continuation of trends of the last 40 years.

A number of surveys sought to establish attitudes to the projected population of 35.9 million. One approach provided a set of numbers (25, 30, 35, 40 million) and asked which represented the best population target.

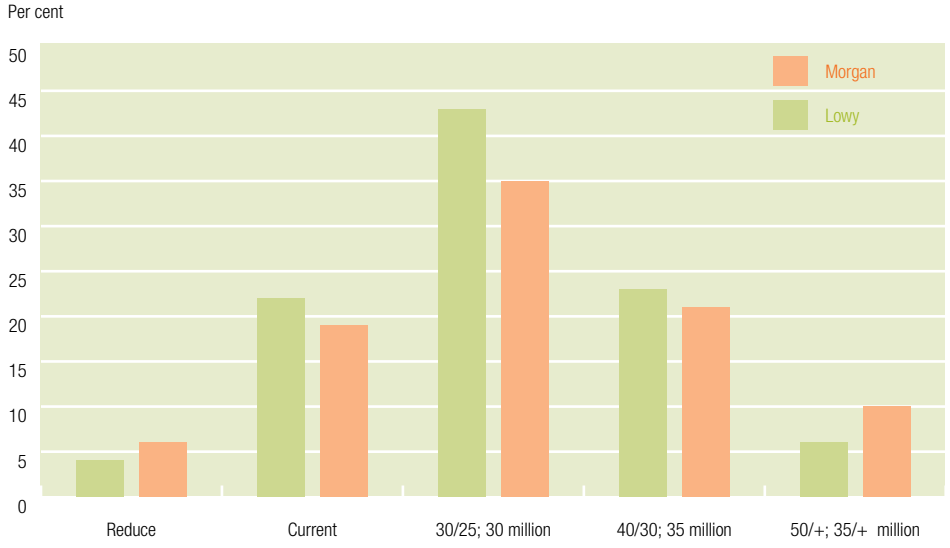
Such questions make little sense to those polled. Respondents lack the knowledge to make an informed judgment and, as to be expected in such a context, responses are ranged along a normal curve – that is, the most common response is at the mid-point of the range of options presented to respondents, then either side of the mid-point, with a small proportion selecting the extreme or outer positions. The results obtained by Lowy and Morgan polls conducted in March 2010 are presented in Figure 3.[25 26]

This pattern of response and its meaning seemingly escaped the media, which chose to interpret the findings as indicating lack of support for a "Big Australia". Thus the findings of the Lowy survey were presented by ABC News under the headline: "Australians wary of 36m population target" and by *The Australian* as: "Two-thirds of population are opposed to Big Australia".

The 2010 Scanlon Foundation survey took a different approach. Respondents were asked for views on the much discussed 36 million projection, not a range of possible numerical targets. The question employed a five-point scale, ranging from much too large to much too small. Fifty-one per cent of respondents indicated that 36 million was too large, 37 per cent that it was about right and five per cent that it was too small.

This result is only marginally different from the view on the current level of immigration and points to the likelihood that questions on future population are linked in the minds of respondents to the current level of immigration: that is, those respondents who consider the current intake to be too high are likely to view targets indicating substantial population growth as too high, with a similar distribution pattern in response to the about right and too low options. The correlated pattern of response is indicated in Figure 4. On the basis of this finding, it is argued that questions concerning the current immigration intake provide the best indicator of receptivity to future population growth.

FIGURE 3
BEST TARGET POPULATION FOR AUSTRALIA IN THE NEXT 40 YEARS (LOWY)/ IN 2040 (MORGAN) 2010



Source: Hanson 2010: 18; Roy Morgan Research, Finding number 4482, March 2010.

FIGURE 4
CORRELATION OF ATTITUDES TO PROJECTED POPULATION IN 2050 AND TO THE CURRENT IMMIGRATION INTAKE, 2010

Source: Scanlon Foundation (Markus 2010).

The relative importance of immigration issues

Most surveys simply establish levels of positive and negative response. Contrary to such an approach, it is argued that it is also necessary to establish the importance of a specific issue. We need to know, for example, not only that a certain proportion of respondents are of a specific view, but also the importance of the issue and the way that it changes over time. Three sets of time series data are utilised in the following discussion.

The best long-run data is provided by Newspoll surveys conducted for *The Australian*. Newspoll presents respondents with a number of specified issues (typically 15 in number) and asks for an indication of the importance of each issue.

From 2000 to 2006, immigration was included as one of the specified issues; the finding obtained ranked immigration near the bottom in most surveys. In the context of the 2010 election, Newspoll included the asylum issue, but not immigration. Asylum ranked sixth of 10 specified issues. While it was well below the top ranked issue, it was above interest rates, inflation, climate change, and industrial relations.

A second time-series is provided by the Australian Election Study. The AES survey typically specifies 13–14 issues and asks "which of these issues has been most important to you" (1993), or "most important to you during the election campaign" (1998–2010). Immigration was specified in five surveys between 1996 and 2007–08, with the highest registration of 4.5 per cent in 2001. Refugees/asylum seekers was specified in three surveys, 2001, 2004 and 2010. During the so-called "Tampa election" of 2001, in which asylum and border control was much discussed, 13 per cent of respondents indicated that the issue was "most important" to them, markedly higher than the ranking of immigration, but still in fourth place (Table 9).

The ANU Poll provides the most frequent soundings for the years 2008–2011 (Table 10). It employs an open-ended question and codes responses within generic categories

TABLE 8
PERCENTAGE WHO ANSWERED VERY IMPORTANT OR FAIRLY IMPORTANT IN RESPONSE TO THE QUESTION: WOULD YOU SAY EACH OF THE FOLLOWING ISSUES IS VERY IMPORTANT, FAIRLY IMPORTANT OR NOT IMPORTANT ON HOW YOU PERSONALLY WOULD VOTE IN A FEDERAL ELECTION? 2000–2010

ISSUES	2000 SEPT	2001 SEPT	2002 FEB	2002 JUNE	2004 JUNE	2006 JUNE	2008 JULY	2010 FEB	2010 JULY
Health & Medicare	74%	77%	74%	77%	82%	83%	79%	82%	79%
Education	78%	79%	79%	77%	80%	79%	78%	77%	72%
Economy						67%	72%	74%	70%
Water planning							74%	66%	
Welfare and social issues	60%	61%	58%	60%	59%	59%	61%	59%	
Family issues	63%	61%	63%	59%	61%	59%			
National security					66%	60%	49%	57%	54%
Environment	64%	61%	63%	60%	60%	60%	63%	57%	
Leadership	61%	62%	59%	57%	65%	55%	57%	56%	62%
Climate change							55%	40%	43%
Defence		44%	50%	46%	54%	51%			
Industrial relations	38%	37%	35%	32%	31%	53%	38%	35%	42%
Unemployment	65%	63%	61%	60%	55%				
Taxation	57%	58%	56%	51%	57%	54%			
Interest rates	53%	43%	46%	44%	50%	51%			45%
Inflation	52%	40%	41%	41%	40%	45%			43%
Women's issues	38%	41%	37%	43%	46%	41%			
Immigration	36%	50%	49%	43%	35%	43%			
Asylum									50%
Aboriginal issues	34%	28%	25%	27%	26%	27%			

Source: Newspoll for the Australian

for the question: "What do you think is the most important problem facing Australia?" Immigration, population and asylum issues are all coded within the category immigration. The poll charts the growing significance of immigration and asylum. The proportion nominating immigration as the first ranked issue averaged under five per cent in 2008, in the range of five per cent – 10 per cent in 2009 and in the range 10 per cent – 15 per cent in 2010. In April–May 2011 immigration was ranked as the top issue, selected by 20 per cent of respondents. This finding was interpreted as possibly reflecting media attention to unrest in the Villawood Detention Centre during the period of survey administration. Immigration declined to third place in September 2011, nominated by 16 per cent of respondents.

The broad pattern that holds across the surveys, irrespective of the different methodologies, is that in most years immigration and asylum are ranked low in significance; in times when major attention is accorded by politicians and the media, the rank position

TABLE 9
SURVEY RESULTS – WHICH OF THESE ISSUES HAS BEEN MOST IMPORTANT TO YOU (1993), OR MOST IMPORTANT TO YOU DURING THE ELECTION CAMPAIGN (1998–2010)

	1993	1996	1998	2001	2004	2007–08	2010
Unemployment	27.2%	13.4%	8.8%	3.8%	1.9%	2.2%	3.3%
Interest rates	6.0%	9.8%	1.5%		9.4%	7.0%	7.2%
Education	6.5%	11.2%	5.8%	17.0%	15.0%	10.5%	12.6%
Environment	4.0%	5.1%	2.9%	3.7%	5.5%	7.7%	4.6%
Taxation		18.3%	23.2%	16.3%	16.4%	11.0%	7.3%
GST	22.6%		42.0%	12.8%			
Health and Medicare	6.4%	25.5%	9.9%	16.1%	30.2%	20.5%	23.0%
Immigration		4.0%	2.8%	4.5%	1.8%	2.9%	
Refugees, asylum seekers				13.0%	2.7%		5.6%
Population policy							1.0%

Source: McAllister and Pietsch 2011

TABLE 10
SURVEY RESULTS – WHAT DO YOU THINK IS THE MOST IMPORTANT PROBLEM FACING AUSTRALIA TODAY? SELECTED ISSUES, 2008–2011

	2008 MARCH	2008 MAY	2008 SEPT	2009 MARCH	2009 JULY	2009 OCT	2010 MARCH – APRIL, JUNE	2010 JUNE – JULY	2010 DEC	2011 APRIL – MAY	2011 SEPT
Economy/ jobs	17.6%	26.3%	21.6%	52.6%	41.7%	32.4%	16.7%	16.9%	18.5%	18.2%	22.1%
Interest rates	6.7%	4.3%	2.0%	0.1%		0.2%		0.5%	1.0%		
Housing affordability	6.9%	3.6%	3.0%	0.2%	0.6%	1.3%		1.6%	1.5%		1.0%
Environment/ global warming	19.1%	22.7%	17.9%	12.0%	10.1%	13.6%	12.2%	15.3%	12.4%	10.8%	9.8%
Water management	8.4%	5.2%	5.7%	2.4%	3.7%	3.5%		2.9%	2.5%		0.6%
Better government		3.2%	3.8%	3.2%	3.8%	3.3%	4.7%		9.9%	9.0%	17.6%
Immigration	5.8%	3.0%	3.2%	6.0%	9.3%	6.6%	12.8%	13.8%	11.6%	20.1%	15.8%
Increasing/ ageing population				0.2%	1.0%	0.7%	3.6%	2.6%	3.2%		1.8%
Health care	4.5%	5.4%	7.1%	2.6%	4.8%	6.8%	13.1%	6.3%	6.9%	4.2%	2.7%
Law and order/ crime/ justice system			1.5%	2.6%	2.5%	2.1%	3.6%	5.4%	2.5%	2.9%	1.6%

Source: ANU Poll

is raised to the mid-level. But even at such times, a large proportion of respondents do not select immigration/asylum as their top issue. Its peak in the ANU Poll is 20 per cent, compared to a peak in the same poll of 53 per cent for the economy in March 2009. Similarly, the Australian Electoral Study recorded a peak of 42 per cent for the GST issue in 1998 and 30 per cent for health issues in 2004, but a peak of only 13 per cent for asylum and five per cent for immigration.

A more precise indication of relative significance of issues is provided by the 2010 and 2011 Scanlon Foundation surveys (Table 11). Respondents were asked in an open-ended question: "What do you think are the most important problems facing Australia today?" There was a large measure of consistency with the ANU Poll findings. The economy ranked first (22 per cent in 2010, 26 per cent in 2011), followed by the environment (15 per cent, 18 per cent) and quality of government/politicians (11 per cent, 13 per cent); immigration and population issues ranked close to fourth (seven per cent, seven per cent) and a similar proportion (six per cent, seven per cent) of respondents selected asylum issues. If immigration and asylum issues are combined (as in the ANU Poll), the issue is ranked third, but at a relatively low level – selected by little more than one in eight respondents as the "most important problem".

The Scanlon Foundation surveys add a dimension not available in other polling: they record whether respondents are indicating positive or negative sentiment. Without such detail, it may wrongly be assumed that those selecting immigration are concerned that the level of intake is too high, and that those selecting asylum have negative views. Attention to direction of response indicates that with immigration and asylum combined 9.2 per cent of respondents are negative and 4.3 per cent sympathetic, with a sharper division on the asylum issue – four per cent of respondents are negative but close to three per cent are concerned by poor treatment and indicate sympathy.

Explaining public opinion

When sections of the population more and less likely to support immigration are considered, there is a large degree of commonality in results obtained in Canada, Australia, and the United Kingdom.[27]

Reitz's Canadian research yields the conclusion that "education is the most important personal characteristic related to support for current levels of immigration". Other sectors of the population more likely to support immigration are younger age groups, those in full-time employment and men.[28]

Australian statistical modelling undertaken by Goot and Watson indicates that:

- Men are more likely to support immigration than women;
- Immigrants of non-English speaking background more than immigrants of English speaking background, and both more than Australian-born;
- University educated more than those with a trade qualification or no post-school qualification;
- High income earners more than those on low and middle incomes;
- Residents of metropolitan areas more than residents in country towns; and
- Supporters of the Greens more than Labor, and both more than Liberal and National.

In one respect their analysis differs from other analyses, in that they found age not to be a significant variable.[29]

Statistical analysis of the 2009 Scanlon Foundation survey indicates that positive views are most likely to be held by those under the age of 34, and the linked demographics of those who have never married and are students; those of non-English-speaking background; those who indicate that their financial circumstances are "prosperous" or that they are "living very comfortably"; those who hold a university level qualification and the linked demographic of those who are employed in a professional capacity; those who

TABLE 11
SURVEY RESULTS – WHAT DO YOU THINK ARE THE MOST IMPORTANT PROBLEMS FACING AUSTRALIA TODAY? 2010, 2011

RANK	ISSUE	2010 FIRST MENTION	2011 FIRST MENTION	
1	Economy/ unemployment/ poverty	22.2%	25.5%	
2	Environment – climate change/ water shortages (concern)	15.1%	11.4%	17.7%
	Environment – overreaction to climate change/ carbon tax (sceptical)		6.3%	
3	Quality of government/ politicians	11.2%	12.7%	
4	Immigration/ population growth (concern)	6.8%	5.2%	6.9%
	Immigration/population – too low/ need more people (supportive)		1.7%	
5	Asylum seekers – too many/ refugees/ boat people/ illegal immigrants (negative comment)	6.4%	4.0%	6.6%
	Asylum seekers – poor treatment, sympathy towards refugees/ boat people/ illegal immigrants		2.6%	
6	Social issues – (family, child care, drug use, family breakdown, lack of personal direction, etc)	6.4%	6.0%	
7	Health/ medical/ hospitals	5.6%	4.2%	
8	Housing shortage/ affordability/ interest rates	2.1%	3.1%	
9	Crime/ law and order	3.8%	1.7%	
10	Racism	1.1%	1.6%	
10	Education/ schools	2.2%	1.4%	
12	Indigenous issues	0.1%	0.8%	
13	Industrial relations/ trade unions	na	0.6%	
14	Defence/ national security/ terrorism	na	0.5%	
15	Other/ nothing/ don't know	16.1%	10.8%	
	Total	100%	100%	
	N (unweighted)	2021	2001	

Source: Scanlon Foundation (Markus 2010–2011)

participate in a religious service at least once a month; and those who indicate that they are likely to vote Greens).[30]

Explaining change over time in national opinion is a more challenging undertaking than considering demographic variables.

The strongest predictor of change is the economic environment. Negative views of immigration peak at times of increasing and high unemployment. In the early 1990s, for example, as the level of unemployment in Australia increased from 5.8 per cent to 10.7 per cent, those who considered that immigration was too high formed a large majority, as has been discussed.

An important secondary factor is the extent to which immigration becomes a controversial issue in national politics. Negative sentiment increases when a political party criticises government handling of immigration and campaigns for a change in policy, evident, for example, during debates over Asian immigration (1980s) and the period of prominence of Pauline Hanson (1998).

The increasing support for the immigration policies of the Howard Government was linked to its success in establishing its border control credentials, conveying the surety that its policies on immigration and asylum were serving the national interest, not sectional groups. The perception of subservience to sectional interests bedevilled the Hawke and Keating Governments. Also of major importance for the success of the Howard Government was the decline in unemployment and sustained economic growth.[31]

What, then, happened to explain the moderate fall in support for immigration between 2007–2010?

Economic concerns seem not to have been a key factor. The Global Financial Crisis had unexpected limited impact on the Australian labour market, with unemployment increasing from 4.2 per cent in July 2008 to a peak of 5.8 per cent in December 2009. Scanlon Foundation surveying of the sense of economic security indicated no significant change between 2007 and 2010.

Three factors seem to have been the key contributors to the limited shift in opinion.

First, the issue of asylum seekers arriving by boat gained increasing attention from 2008 onwards. Boat arrivals brought the issue of immigration to national prominence. Factor analysis of the 2011 Scanlon Foundation survey establishes a strong association between views on asylum and immigration. Negative views of boat arrivals are correlated with negative views on the value of a diverse immigrant intake, government handling of the asylum issue, Muslims, the current immigration intake and government support to ethnic minorities to maintain their customs and traditions.

Second, consideration of future population levels sparked by government planning, following the release of the Third Intergenerational Report, also brought discussion of immigration into the public realm. In the 2010 election campaign the Opposition under the leadership of Tony Abbott campaigned for a reduction in immigration, with government ministers on the defensive as they sought to explain that changes already implemented would result in a reduction.

Third, the asylum and "Big Australia" controversies developed in the context of the government's weakening electoral legitimacy, and contributed to that process. A key issue for acceptance or opposition to immigration policy is the extent to which government is seen to be in control of the program. Between June 2009 and June 2010 confidence in the Federal Government fell sharply; those of the view that government would "do the right thing for the Australian people" "almost always" or "most of the time" fell from 48 per cent to 31 per cent.

Conclusion

We have an understanding of the extent to which support for immigration may be eroded. Surveys in the United Kingdom in 2003 and 2009–11 indicate a level of support for current levels of immigration in the range 22–25 per cent.

TABLE 12
SURVEY RESULTS – ATTITUDES TO THE LEVEL OF IMMIGRATION, UNITED KINGDOM

	INCREASE	REMAIN THE SAME	(INCREASE & REMAIN THE SAME)	DECREASE
2003	6%	16%	22%	78%
2009–10	3%	19%	22%	78%
2011	6%	20%	25%	73%

Source: World Values survey 2003; Citizenship Survey 2009–10; Migration Observatory/ Ipsos MORI 2011

This low level of support occurred in a context in which the perception of race relations/ immigration as the "most important issue today" increased 13-fold between 1997 and 2006, from three per cent to 40 per cent.[32]

The pattern of international polling considered above indicates that of first world countries, public support for immigration was highest in Canada and Australia, rivalled at times only by Sweden. Where the level of support for immigration in the United Kingdom is in the range 22–25 per cent, in Canada and Australia it has been supported by majority opinion over the last decade.

Australian surveys indicate that the significance of the immigration issue increased in the period 2008–2010, but even at its peak (registered in one survey) it was selected as the top ranked issue by only 20 per cent of respondents. The Scanlon Foundation surveys in 2010 and 2011 found that it was ranked first by 14 per cent, of whom one-third were concerned not by the level of immigration, but by harsh government policies.

Opinion on immigration has been shown to be volatile in Australia. But the high level of support for a non-discriminatory immigration program has been maintained, along with positive valuation of immigration. In the 2011 Scanlon Foundation survey over 65 per cent agreed or strongly agreed that: "Accepting immigrants from different countries makes Australia stronger".

The major challenges in 2012 concern policy to be adopted towards asylum seekers arriving by boat and an issue linked in the minds of many Australians, the integration of Muslim immigrants in Australian society.

Endnotes

1. There is also a problem raised by the mode of surveying, an issue not pursued in this analysis. Where possible, the discussion draws on findings utilising random probability samples. In Australia the most frequent surveying is undertaken by Essential Media Communication, which has conducted weekly polling since November 2007 utilising non probability online panels. This mode of surveying is currently perceived to be less reliable than random telephone administered probability sampling. See Baker 2010: 714; Baker, R. et al. 2010 , 'AAPOR report on online panels', *Public Opinion Quarterly*, 74 (4), 2010.
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15. Ipsos 2011, 'Nearly half of world citizens believe immigration has had a negative impact on their country', 4 August, available at http://www.ipsos-na.com/news-polls/pressrelease.aspx?id=5298, accessed 16 December 2011
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3.2

Social inclusion and multiculturalism: The impact of international migration

Graeme Hugo, Patricia Njuki and Sanjugta Vas Dev

Professor Graeme Hugo is an ARC Australian Professorial Fellow, Professor of the Discipline of Geography, Environment and Population and Director of the Australian Population and Migration Research Centre at the University of Adelaide. Graeme has published over three hundred books, scholarly journal articles, chapters, conference papers and reports. In 2002 he secured an ARC Federation Fellowship over five years, and in 2009 he was awarded an ARC Australian Professorial Fellowship. He is chair of the Demographic Change and Liveability Panel of the Ministry of Sustainability, Environment, Water, Population and Communities and was appointed to the National Housing Supply Council in 2011.

Patricia Njuki is a PhD candidate at Adelaide University. Her research is on Settlement of Sub-Saharan African women in Australia with a focus on Work, Remittances and Gender Roles. She attained her Masters degree in Population and Human Resources with an interest in Global International Migration from Adelaide University and has a Bachelors degree in Community Development and Communication. Patricia has worked with the International Organisation for Migration (IOM) as a Cultural Orientation Trainer offering pre-departure orientation to refugees and migrants from Africa and Asia for migration and resettlement to Australia, Canada and the United States. One of her notable achievements with her work in IOM was contributing to IOM's Migrant Training Handbook, the blueprint widely used internationally in designing migrant resettlement training programs.

Dr Sanjugta Vas Dev is a Principal Policy Advisor for the Government of South Australia. She has worked in government since 2010 with a focus on social inclusion. Dr Vas Dev also has over 14 years of research experience in the university sector. In 2008, she completed her PhD in Political Science at Flinders University in the area of asylum policy in Australia and Malaysia. In 2010 she worked with Professor Hugo on a national study focusing on the social, civil and economic contribution of refugees to Australia. Her broader research interests include the role of host governments in promoting refugee rights and security and the factors contributing to successful multiculturalism. Dr Vas Dev has also conducted a range of consultancies in a number of Asian and Pacific countries including Indonesia, Cambodia, Samoa and the Republic of the Marshall Islands specialising in gender sensitive public expenditure.

Introduction

Population initiatives should be integrated with, and facilitate, economic, social and environmental policies which seek to achieve important national goals. One such national goal is to achieve a socially inclusive society "in which all Australians feel valued and have the opportunity to participate fully in the life of society".[1] Since migrants, permanent and temporary, and their Australia-born children make up almost half of the national population they must loom large in any consideration of disadvantage in Australia. While migrants vary greatly in their human and material capital they have been identified as one of the groups most at risk of social exclusion.[2]

In the 1970s, Australia adopted a policy of multiculturalism following the recommendations of the Galbally (1978) Report.[3] The report enunciated a set of principles which have formed the basis of that policy over the subsequent period in which multiculturalism has survived a number of challenges.[4] These included:

- All members of our society must have equal opportunity to realise their full potential and must have equal access to programs and services;
- Every person should be able to maintain his or her culture without prejudice or disadvantage and should be encouraged to understand and embrace other cultures;
- Needs of migrants should, in general, be met by programs and services available to the whole community but special services and programs are necessary at present to ensure equality of access and provision; and
- Services and programs should be designed and operated in full consultation with clients, and self-help should be encouraged as much as possible with a view to helping migrants to become self-reliant quickly.

These principles have a strong social inclusion basis and have been important in facilitating most migrants settling successfully in Australia. The most recent enunciation of Australia's Multicultural Policy[5] continues this focus. Nevertheless despite what has in many respects been a successful policy, not all migrants have fared well in Australia. This is especially so for recent groups of humanitarian migrants who have been struggling to find employment and have been identified at great risk of poverty and social exclusion[6] Some migrants experience multiple barriers to inclusion in Australian society and this paper seeks to adopt a social inclusion approach to examining disadvantage among migrant communities. One advantage of such an approach is that it comprises

a broader definition of disadvantage than focusing only on poverty.[7] Silver (2010) suggests this framework is especially appropriate in considering migrant settlement because it accommodates social, cultural, or national "differences" in plural or multicultural societies like Australia more readily than one-dimensional redistributive frameworks as it acknowledges and accommodates specific needs and rights of groups.

This paper examines social inclusion in four areas of migrant settlement in Australia:

- Improving employment outcomes for migrants especially recent humanitarian migrants;
- Interventions for migrant children and youth who are at risk;
- Dealing with racism and discrimination; and
- Locational disadvantage and regional migrant settlement.

It also identifies some other key critical areas that need more attention in the area of international migrant settlement in Australia.

What is social inclusion?

A socially inclusive society is defined as one where all people feel valued, their differences are respected, and their basic needs are met so they can live in dignity. At the core of the social inclusion philosophy is the understanding that, although ultimately citizens are responsible for their own lives and everyone has a duty to work hard and make a go of it; not everyone starts with the same advantages and some people face setbacks or crises in their lives that can result in them being left behind. The concept of social inclusion is the process of being included in social, economic, political and cultural systems which contribute to the integration of a person in the community.[8]

An important dimension of social inclusion is that it includes dimensions of disadvantage beyond poverty and lack of financial capital.[9] Also central to social inclusion is the recognition that social problems are interrelated and any response to ameliorate these social problems also must be interrelated.[10] For example, close to five per cent of the Australian population experiences multiple disadvantage which includes low income and assets, low skills, difficulties keeping a job, housing stress, poor health, lack of access to services, substance abuse, mental illness, disability, family violence or a combination of these problems.[11] In Australia, members of the Aboriginal community, the homeless, people with disability or those struck by family breakdowns and the long term unemployed have all be identified at risk of disadvantage. Humanitarian migrants have also been identified as persons at risk of disadvantage.[12]

The development of social inclusion as a policy framework in Australia

Social inclusion as a policy framework has its origins in France in the 1970s where there was recognition that some social groups were excluded from employment and therefore social support. The proponents of the policy advocated for vulnerable social groups, through social inclusion, to gain assistance in employment, volunteering, study and family reunification, so that they could be productive members of the society. Social inclusion as a policy framework was later adopted by the European Union as a policy that promotes the involvement of all people in the labour force, access to basic rights and improving policy efficiency.[13] In the United Kingdom, the social inclusion policy

framework has focussed on increased educational attainment and health, increased employment, reduction of poverty and the enhancement of services.[14]

In 2002, the Labor Government in South Australia drew upon the experience of the UK Government which had created a Social Exclusion Department that reported directly to the prime minister and was mandated to assist the disadvantaged but they were also pioneering work on a "joined up" government. "Joined up" government was a revolutionary new way of ensuring that government departments came together in a creative and innovative way to deliver results to social problems among the most vulnerable members of society. Whereas under traditional models of service delivery, access to services were fragmented, for example, a youth at risk would be catered for under different government departments such as educational services, child protection services, employment services, the juvenile court system, drug and alcohol services and housing services, many times without any real assistance. This "third way of government" differed from the traditional models of service delivery as the services all came under one umbrella to serve the individual as opposed to the individuals navigating through a maze of services and programs in order to get assistance. This model also eliminates the duplication of services and it offers a more targeted approach to assisting the vulnerable and was adopted by the South Australian Government.[15]

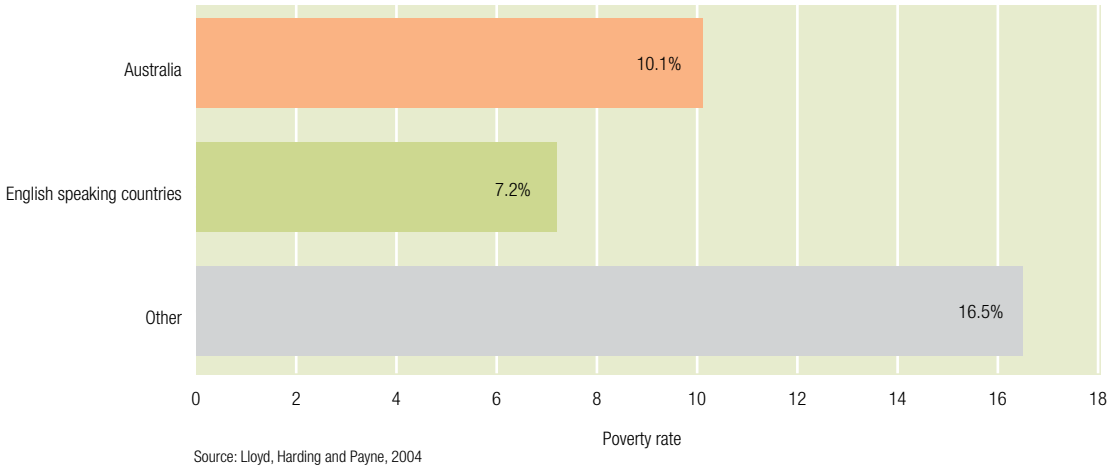
In 2008, social inclusion as a policy framework was adopted nationally and since then the Australian Government has had a vision to ensure that it creates a socially inclusive society. The core aims of the Australian Social Inclusion Agenda are to reduce disadvantage by ensuring that there is funding and service delivery that promotes equitable access to universal benefits and services for all Australians. This includes making sure that investments are made more intensively for those at risk of experiencing disadvantage. The Social Inclusion Agenda also aims to increase the social, civic and economic participation of all, by ensuring that everyone has the skills and support they need to participate actively in the labour market and their communities. A third aim of the Social Inclusion Agenda is to promote the active involvement of the entire community in identifying the needs and shaping services of the community.[16]

Migrants and poverty

More than three decades ago a landmark Commission of Inquiry into Poverty in Australia[17] identified recently arrived migrants from non-English-speaking countries as being one of the sub-groups with an above-average incidence of poverty. It found that in 1973, among non-English-speaking origin immigrants who had arrived in Australia after 1966, some 12.3 per cent were below the poverty line whereas this applied to 6.7 per cent of all income units in Australia. Subsequently, Johnson[18] estimated the extent of poverty among immigrants and found that the overall gap between Australian-born and immigrant income units below the poverty line was relatively small in 1982 but increased by 1986. An analysis in 2001[19] found that migrant households were over-represented in households living in poverty, especially those from Culturally and Linguistically Diverse (CALD) backgrounds. The work of Lloyd, Harding and Payne[20] was also based on the 2001 census and is shown in Figure 1. It indicates that CALD groups have a higher incidence of poverty than the Australia-born while those from English-speaking backgrounds have a lower incidence.

While we are lacking recent specific data on the proportions of recent immigrants living in poverty, we can make the following observations on immigrants and poverty in Australia:

FIGURE 1
ESTIMATED POVERTY RATES BY COUNTRY OF BIRTH OF HEAD OF FAMILY, 2001



Source: Lloyd, Harding and Payne, 2004

- There is evidence that throughout much of the post-war period in Australia, recent immigrants have had a greater incidence of poverty than the Australia-born and immigrants of longer standing;
- The incidence of poverty is greater among some immigrant policy categories (refugees, family migrants) than others (economic, skill migrants);
- With an increasing emphasis on skill in the immigration program the incidence of poverty among recently arrived migrants has decreased;
- The incidence of poverty among immigrant groups declines with their length of settlement in Australia;
- The incidence of poverty in Australia among both immigrant and non-immigrant populations is closely related to their ability to enter the labour market; and
- There is a significant spatial dimension with migrants living in poverty being concentrated in particular ecological niches.

Turning to the 2006 population census, Table 1 presents data on the income levels of the Australia-born population and compares them to several migrant groups.

- Those born in countries where the dominant language is English;
- Those born in culturally and linguistically diverse countries;
- Those born in countries which are the major sources of refugee-humanitarian settlers; and
- Those from countries other than those which are the main sources of refugee-humanitarian settlers.

A clear pattern is in evidence with immigrants from mainly English speaking countries having higher average incomes not only than migrants from other countries but also the Australia-born. The census does not include a question which differentiates the type of visa under which migrants enter Australia. However, it has been shown[21] that there is almost total separation of the countries of origin of refugee-humanitarian migrants and those who came under economic migration programs. Hence it is possible to designate a number of birthplace groups as being predominantly made up of Refugee-Humanitarian migrants. Accordingly, Table 1 shows that this group has a higher proportion in lower income categories than other migrant groups.

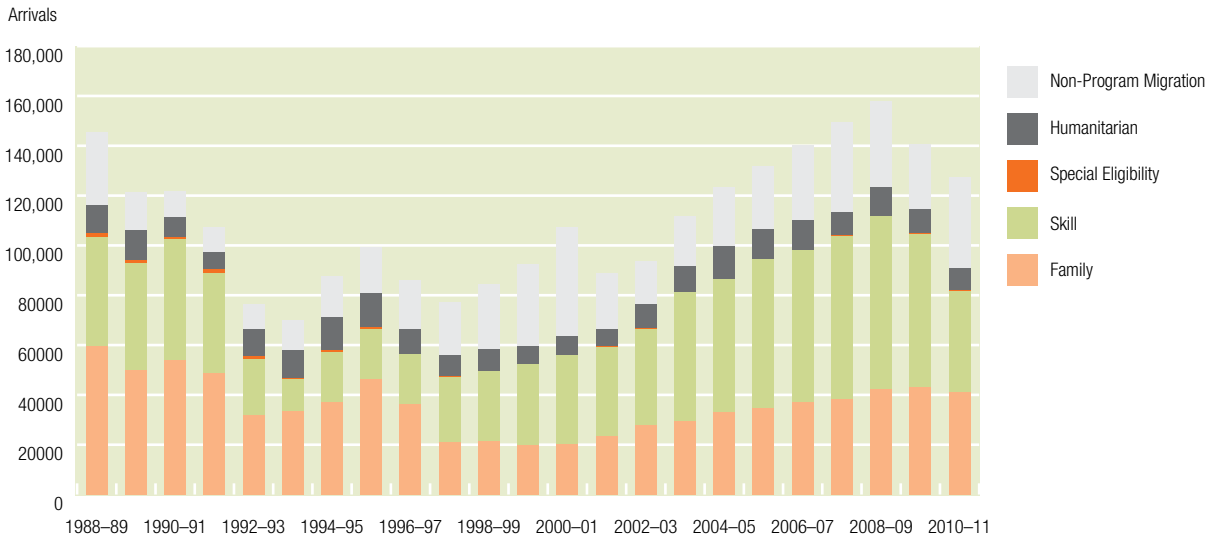
It is important to note that in Australia's intake of permanent settlers the balance between visa categories has changed substantially over the last two decades. This is evident in Figure 2 which shows the numbers of settlers each year who have arrived in Australia with skill, family and refugee-humanitarian visas. There is a clear pattern

TABLE 1
AUSTRALIA: BIRTHPLACE BY INDIVIDUAL INCOME, 2006 (PER CENT)

INDIVIDUAL WEEKLY INCOME	TOTAL	AUSTRALIA–BORN	MAINLY ENGLISH SPEAKING	CALD	REFUGEE	OTHER MIGRANTS
Negative/Nil	7.9	7.1	6.3	11.6	9.7	9.7
$1–$249	22.9	22.1	19.0	27.9	33.0	23.6
$250–$599	29.2	29.7	28.2	27.9	27.8	28.1
$600–$999	20.3	21.0	20.9	17.6	17.0	19.1
$1000–$1999	15.9	16.4	19.4	12.1	10.4	15.3
$2000+	3.8	3.7	6.2	2.8	2.1	4.3
Total	100	100	100	100	100	100
N	14,501,166	10,138,465	1,512,917	2,849,784	591,771	3,770,930

Source: ABS 2006 Census

FIGURE 2
AUSTRALIA: SETTLER ARRIVALS AND ONSHORE PERMANENT ADDITIONS BY ELIGIBILITY CATEGORY, 1988–89 TO 2010–11



Note: Excludes onshore prior to 2000–01
Source: DIAC Immigration Update, various issues

of both the numbers and proportion made up by skilled migrants is increasing. While most standard data sources don't differentiate the overseas born by the visa category under which they entered Australia, recent work linking census and DIAC data for immigrants arriving between 2001 and 2006 has provided important insights into the significance of the visa category in the settlement experience of recent immigrants. Table 2 shows the individual income of recently arrived migrants at the 2006 census.[22] It is notable that humanitarian settlers had the smallest percentage of all groups who had zero or negative incomes.

This was partly because, unlike other visa categories of settlers, they have immediate access to unemployment benefits. However, it is noticeable in Table 2 that almost half (49.7 per cent) of humanitarian settlers were earning less than $250 per week compared with 19 per cent of all recent arrivals. There can be no doubt, as Collins points out:

TABLE 2
VISA TYPE OF SETTLER ARRIVALS, 2001-06 BY INDIVIDUAL INCOME (WEEKLY) IN 2006: PROPORTION (PERCENT) OF ALL MIGRANTS AGED OVER 15 YEARS

	FAMILY	HUMANITARIAN	SKILLED	OTHER	TOTAL
Negative or nil income	22.8	8.4	19.3	11.9	19.9
$1–$149	9.6	16.5	7.8	11	9.2
$150–$249	10.7	33.2	5.4	16.4	9.8
$250–$399	9.5	12.9	7.4	14.2	8.8
$400–$599	14.8	15.4	11.9	26.5	13.5
$600–$799	11.4	7	12.7	11.9	11.7
$800–$999	7.5	2.8	9.7	8.2	8.3
$1000–$1,299	6.3	2.1	10.3	0	7.9
$1,300 or more	7.4	1.7	15.6	0	11
Total	100	100	100	100	100

Source: ABS/DIAC Data Linkage Project

"The greatest disadvantaged group of immigrants is those who arrive under the humanitarian program as refugees. They experience the highest rates of unemployment and earn the lowest incomes. They are more likely to be in poverty than other immigrants."[23]

Employment

Gaining access to the labour market is fundamental to social inclusion. The OECD[24] found that Australia's immigrants experience better labour market outcomes than immigrants to other countries, with the lowest unemployment rates and lowest relative to the native born population. However, Table 3 drawn from the 2006 census shows that recently arrived migrants and CALD groups have higher unemployment and lower participation rates than the Australia-born. DIAC (2010, 101) note three trends with respect to unemployment among immigrants:

- Migrant unemployment can be very high initially – up to 25 per cent early in the settlement process;
- It takes four to five years before migrant unemployment becomes comparable with that of the Australia-born; and
- Recent migrants are more affected by economic downturns than other groups.

Particular difficulty has been experienced by refugee-humanitarian settlers in entering the labour market. This has been strikingly evident in the Longitudinal Survey of Immigration to Australia, and other surveys.[25] The DIAC Settlement Outcomes of New Arrivals Study of 2009 found, as Table 3 shows, that only 24.1 per cent of humanitarian arrivals interviewed were employed compared with 43.5 per cent of family migrants and 77.2 per cent of skill migrants. Unemployment levels were also considerably higher.

Refugee-humanitarian settlers by virtue of the sudden, unplanned and often traumatic circumstances surrounding their migration face greater barriers than other migrants in

TABLE 3
DIAC SETTLEMENT OUTCOMES OF NEW ARRIVALS STUDY (SONA) WORK STATUS BY VISA CATEGORY, 2009

WORK STATUS	FAMILY (%)	HUMANITARIAN (%)	SKILLED (%)
Work for wage or salary	43.5	24.1	77.2
Run my own business	4.9	1.6	7.4
Study and work	6.3	10.1	5.3
Study full-time	3.9	20.4	1.9
Study and look after my family	6.6	16.2	1.8
Unemployed and looking for work	8.4	11.3	5.1
Unemployed and NOT looking for work	.6	3.3	.2
Setting up a business but not yet making money	1.2	.7	1.5
Look after my family	24.8	18.1	5.5
Retired, no longer working	5.4	4.4	.3
Voluntary or other unpaid work	1.5	1.9	.8
N	1889	5336	1309

Source: DIAC

TABLE 4
BARRIERS TO EMPLOYMENT FOR REFUGEES IDENTIFIED IN INTENSIVE INTERVIEWS

PRE-MIGRATION	AUSTRALIA
Exposure to violence, instability and persecution	Mental health issues due to pre- and post-migration experiences Physical disability/health problems
Lack of /limited education Disrupted education due to long periods in camps/exposure to violence and instability	Illiteracy/low levels of literacy Low English proficiency/communication and language barriers Limited qualifications/skills (particularly amongst older age groups)
Lack of knowledge about the Australian labour market	Lack of opportunities/finances to have skills recognised Lack of knowledge/awareness about skills recognition processes Lack of a driver's licence/difficulty accessing transport
No opportunity to scope/research the Australian labour market	Lack of established networks Limited capacity/capability of job network providers Lack of work experience in Australia Experiences of racism and discrimination
Lack of documentation prior to migration	Lack of/limited knowledge about Australian workplace culture Lack of documentation on arrival
Misinformation about employment opportunities	Difficulty accessing/sustaining employment and training opportunities Unrealistic expectations around employment opportunities

Source: DIAC, 2011b, p23

TABLE 5
FIRST GENERATION HUMANITARIAN ENTRANTS: PROFICIENCY IN SPOKEN ENGLISH BY LABOUR FORCE STATUS, 2006

PROFICIENCY IN ENGLISH	TOTAL	PERCENT UNEMPLOYED	PARTICIPATION RATE
Very Well	195,477	7.7	70.2
Well	181,384	10.8	57.0
Not Well	121,520	20.0	36.3
Not At All	26,229	31.5	12.1
Total	**524,610**	**11.0**	**54.9**
Australia-Born	**10,416,233**	**4.9**	**67.1**

Source: ABS 2006

entering and succeeding in the labour market. Table 4 indicates the nature of these barriers prior to migration and upon arrival in Australia as expressed in in-depth interviews carried out with settlers. Language barriers are especially important with 36.5 per cent of first generation refugee-humanitarian settlers rating themselves as not speaking English well or at all at the 2006 census. Table 5 shows the unemployment rate decreases and labour force participation increases as proficiency in English increases.

Recent cohorts of refugees to Australia have faced additional barriers. Many come from countries in Africa, the Middle East, as well as South East Asia, which are not only under developed but where there has been protracted war and infrastructure has failed for many decades, resulting in citizens being unable to access education or training. Unlike previous cohorts of refugees they have also been warehoused in refugee camps for protracted periods in many instances over 10 years, and this has an enormous effect on their settlement outcomes. Many refugees arrive in Australia with low human capital endowments that would make them competitive in an industrialised society.[26] Studies such as Njuki[27] show that poor education and language skills and illiteracy even in the refugees own native languages *makes it difficult for them to attain the basic language skills required for them either to enter* the labour market or to successfully participate in education or training. Accordingly some refugees are completely shut out of the job market. This applies even to the jobs such as cleaning or process work which were filled by earlier cohorts of refugees with little or no education but now require some level of literacy due to stringent occupational and health standards in Australia.

Youth issues

One of the key features of Australia's refugee-humanitarian immigrant stream is its youthfulness. Their average age is 21.8 compared with 27.3 for the total settler intake and 36.7 for the Australian population at the 2006 census. Some 40 per cent of refugees are aged less than 15 and over 30 per cent are aged 15–29 on arrival. They are strongly concentrated in the dependent child and early workforce years where they are vulnerable to exclusion. Research on educational outcomes of young humanitarian migrants in Australia[28] show that there are significant problems in how young refugee migrants are fareing in the Australian education system. Scholars such as Jupp[29] have shown that while earlier groups of young refugees migrated to Australia with limited education, they were able to find employment in the then booming manufacturing sector where literacy was not required. Refugee parents were then able to concentrate on making sure that their children received a quality education and results are clearly

manifested in the high achievement in education in second generation refugee cohorts in Australia.[30]

However, research carried out by Oliff[31] show multiple dimensions of disadvantage for today's refugee children. Many refugee children may have experienced war and have had to deal with the psychological burden of this past experience. In many cases they have received very little education if they got any at all prior to migration. This places them at a significant disadvantage when they enter the Australian education system. For example a refugee child who is 10 years old is placed in a year five classroom but their literacy ability could be that of a year one so they are unable to cope with the year five curriculum. Even in cases where the children receive language support for two years, this may not be sufficient to make up for the learning that the child has missed. Young refugee children are often left behind because they do not have any assistance in navigating the education system at home. The young refugee children are also juggling settlement problems and because they are visibly different they may have self esteem problems and are more likely than other children to be victims of bullying and racism. These students then find it extremely difficult to cope and compete in the classroom with other students and they become discouraged in the education system. As a result, some young refugee children have been involved in truancy and other anti-social behaviour, perpetuating the cycle of disadvantage. Their parents, battling with poverty due to lack of employment, cannot make the investments required for success in today's education system.

Racism and discrimination

A major factor contributing to migrant disadvantage for some immigrants, especially refugees, is their visible difference. While most of the immigrants to early post war Australia were predominantly from the UK and Europe, there have been significant changes in the composition of migrants to Australia, with a sharp increase in migrants coming from Asia, Oceania and Africa since the 1990s.[32] This dramatic change in composition of migrants has also brought some challenges in regards to the acceptance of new migrants by a very small minority of the Australian society. Studies on refugees in Australia show that migrants from Africa and the Middle East who are visibly different in race, religion and culture find it difficult to find employment even when they have the requisite educational and language attributes that would make them an asset to the Australian employers.[33] In recent years immigrants of Muslim background and African immigrants have been targeted in racial attacks.[34]

Discrimination is especially evident in the labour market. Table 6 shows the proportion of different migrant groups in lower skill, low status, low pay occupations in different post-school education categories. A striking pattern is evident with the proportion of the first generation refugee-humanitarian settlers with a bachelor degree in unskilled work being quadruple that for the Australia-born. Similar differences are evident in other education categories. The difference is not as great when compared with the total overseas-born population but is still significant. Intergenerational mobility is apparent with second generation refugee-humanitarian birthplace workers with post-school education having lower proportions in low skill occupations than not only their first generation but also the Australia-born population. It must however, be remembered that the second generation are overwhelmingly people of European or Indo Chinese background whose parents arrived in Australia before the mid 1990s. It remains to be seen if the children of more recent refugees from Africa and the Middle East will be as successful.

TABLE 6
AUSTRALIA: FIRST AND SECOND GENERATION REFUGEE-HUMANITARIAN BIRTHPLACE GROUPS, AUSTRALIA-BORN AND OVERSEAS-BORN PER CENT IN LABOURER AND MACHINERY OPERATOR OCCUPATIONS BY POST-SCHOOL EDUCATION, 2006

PROFICIENCY IN ENGLISH	POST-GRADUATE DEGREE LEVEL	GRADUATE DIPLOMA AND GRADUATE CERTIFICATE LEVEL	BACHELOR DEGREE LEVEL	ADVANCED DIPLOMA AND DIPLOMA LEVEL	CERTIFICATE LEVEL
Second generation refugee-humanitarian birthplace groups	3.4	4.9	7.4	16.5	23.4
First generation refugee-humanitarian birthplace groups	0.4	0.9	1.8	5.0	12.2
Australia born	0.5	1.0	1.7	4.8	14.7
Overseas born	3.7	2.9	6.1	9.5	16.9
Total population	**2.1**	**1.5**	**3.2**	**6.2**	**15.2**

Source: ABS 2006 Census unpublished tabulations

Social inclusion work in Australia has identified entrenched racist attitudes in service delivery as being responsible for failures in reducing poverty around the Aboriginal community who have experienced deep social exclusion in Australia.[35] It is imperative that racism is tackled at an individual level by stricter legislation but also on a societal and institutional level so as not to create further social exclusion among newly arriving migrant groups.

Socially disadvantaged localities and settlement of migrants

There is an increasing understanding that one of the key dimensions of disadvantage is locational. Disadvantage can be exacerbated by the situation in which some groups live.[36] Collins[37] has argued that immigrant unemployment rates especially those from refugee – humanitarian settler backgrounds have been sensitive to the place where the immigrants settle, citing examples of the Western suburbs of Sydney and Melbourne where there are high unemployment rates among immigrant neighbourhoods. Poor immigrants, especially refugees, are restricted in the types of areas where they can afford housing.

Understanding the localisation of disadvantage is important especially as Australia looks into settling of new migrant groups into regional Australia[38]. In order to be successful, the settlement of migrants to particular locations and regional areas must be met with equal investment in services that will allow for better settlement outcomes. There is also a need for strong community engagement around the settling of new communities in regional areas. Community engagement is crucial so that all people feel that they trust and feel safe in their communities, within their neighbourhood, family and friends, irrespective of people's cultural background.[39]

Key agenda items of the Australian National Social Inclusion Board which apply to recent immigrants are to ensure employment services for the most disadvantaged job

seekers, to improve the outcomes for vulnerable children with a focus on children from jobless families and addressing racism, discrimination and stigma barriers.[40] The Gillard Government has identified key principles to underpin Australia's social inclusion approach in Australia. They include:

- Taking a strength-based, rather than a deficit-based, approach which means respecting, supporting and building on the strengths of individuals, families, communities and cultures;
- Building effective partnerships to tackle shared priorities;
- Developing intensive interventions tailored at an individual, family or community level in order to support those experiencing deep and complex social exclusion;
- Building joined-up services and whole of government solutions so that there is "integration, transparency and collaboration between Commonwealth, State and Territory Governments"; and
- Lessening the "separate silos of funding, policy-making and service delivery" that characterise many areas of social policy design in Australia.[41]

The following sections showcase specific policies and programs already adopted by Social Inclusion Boards at Federal, State and Local Government level to illustrate social inclusion policy frameworks that to meet the needs of the disadvantaged in Australia. The use of specific program and policy examples in this paper are deliberate as they illustrate practically how social inclusion has been adopted and is working in Australia.

Improving employment outcomes

One of the key social inclusion priorities for Australia is matching marginalised groups with jobs. At a Federal level, the National Social Inclusion Board in 2011 made strong policy recommendations to the Office of Employment and Child Care on how Australia's National Job Services Australia and other employment services programs can be enhanced in order to reach those who are disadvantaged in the job market such as refugees. Some of the key recommendations included, rejuvenating the work experience and training culture within Job Services Australia to ensure that long term unemployed get adequate training for the work force. This would be achieved by improving the contracts of employment service providers coupled with stricter performance indicators to ensure that the employment services are working harder to ensure that their clients not only get employment but are getting jobs requisite to their skills. Other key recommendations include a joined up approach in which business are given incentives to employ the long-term unemployed, for example by using welfare payments as wage subsidies to incentivise employers to transition job seekers from the work experience phase to full-time employment, thus cushioning employers of the costs they incur in employing the long-term unemployed.[42]

At a state level, in 2009, the South Australia State Inclusion Board made policy recommendations that were implemented in the states major infrastructure projects to ensure that at least 10 per cent of all total hours worked on any state funded projects, were to be undertaken by the long-term unemployed.[43]

A pilot project – the Family Centred Employment Project – was initiated in three Australian suburbs to assist 59 families who were long-time unemployed, showcasing how social inclusion can be employed at a local government level. Under the project, providers developed service models that met all the needs of the family such as assistance in the areas of child care, housing, financial management, parenting support, domestic violence, conflict resolution, mental illness and education participation to ensure that these families were able to undertake work.[44]

Improving outcomes for vulnerable children

In regard to young people and children, a Social Inclusion Board report *Breaking the Cycle of Disadvantage through the Life Course* maps disadvantage of persons in Australia through their life course and has specific joined up recommendations and reforms to be implemented by the Council of Australian Governments (COAG).[45] The reforms which meet the needs of children and young people include various partnerships and charters which have been signed by the Federal and State Governments with specific budgetary allocations to ensure that national goals are met in protection of children and youth. One of their key goals is to ensure that Australia meets a 90 per cent attainment of secondary education for its youth by 2015. A specific policy measure that will directly affect migrant children is a $2.6 billion package to assist disadvantaged schools.[46]

At a state level: South Australia has a program for school retention under a project named Innovative Community Action Networks (ICAN). The ICAN targets at risk youth aged 12–19 years, their parents, schools, community networks, business and government agencies in areas such as education, health, justice and community services, who work together to reshape learning and employment pathways for young people at risk. Through the ICAN program, case by case innovative programs are designed and monitored by case managers to ensure that no young people are left behind. School retention has been one of the major successes within South Australia since the introduction of a social inclusion approach in 2002, the school retention rate has increased from a low of 67.2 per cent in 1999 to over 84.2 per cent in 2010.[47]

At a local government level: Specific ICAN initiatives have been undertaken, for example, the Gawler 15 initiative is a program in outer metropolitan South Australia to give locally based accredited hospitality training to young people who have disengaged from learning or earning. The initiative, which is in partnership with local businesses, ensures that the young students get hands-on hospitality training in an ICAN facility adjacent to a secondary school and part of their training counts for high school credit. Out of the 82 young people who have attended the program, 44 have gained employment, 30 returned to school, three went to apprenticeships and four to traineeships. The individual one to one case management has seen the tremendous success of this youth program.[48]

The future of social inclusion, immigrant settlement and public policy

The major justification for Australia's refugee intake should also be based on humanitarian concern and being caring and responsible global and regional citizens. Yet it must not be overlooked that refugee-humanitarian settlers can and do make a significant economic contribution. Table 7 shows the net impact of various visa categories on the Australian Government budget according to a period of settlement in Australia. This shows that skill stream migrants immediately have a positive impact but for humanitarian migrants this takes longer than 10 years. Elsewhere[49], however, it has been shown that for humanitarian migrants significant costs are incurred in the early years of settlement. The circumstances of their move mean that refugees will not be able to adjust economically and socially as readily as other migrants who have planned their move, been able to bring resources with them and have not been exposed to violence and trauma. Yet this study showed that over time refugee economic participation converges toward that of the non-migrant population and by the second generation exceeds it. Moreover, the contribution is in many ways a distinct one which means that the

TABLE 7
MIGRANTS' NET IMPACT ON THE AUSTRALIAN GOVERNMENT BUDGET BY VISA CATEGORY ($ MILLION 2009–10)

	PERIOD OF SETTLEMENT IN AUSTRALIA (YEARS)				
	1	2	3	10	20
Family Stream					
Partner and other	–$17.90	$81.90	$51.30	$259.80	$257.90
Parent	–$14.80	–$10.70	–$11.60	–$14.80	–$18.10
Contributing Parent	228.1	–$11	$0.80	–$34.30	–$83.40
Family Stream total	**$195.40**	**$60.10**	**$40.40**	**$210.80**	**$156.40**
Skill Stream					
Employer Sponsored	$417.40	$429	$435.20	$442	$475.70
Skilled Independent	$171.60	$235.10	$238.70	$404.50	$462.70
State/Territory Sponsored	$51.90	$60.90	$65.80	$79.50	$104.90
Skilled Family Sponsored	$5.50	$12.40	$13.20	$17.60	$21.40
Business Skills	$37.70	$37.20	$38.80	$27.90	$20.30
Skill Stream total	**$684.10**	**$774.60**	**$851.70**	**$971.60**	**$1085**
Humanitarian Stream	–$238.70	–$67	–$59.90	–$11.90	$46.80
Fiscal impact of permanent migration	$640.90	$767.70	$832.20	$1170.50	$1288.10
Temporary Business subclass 457	$670.90	$720.20	$289.10	$332.70	$442.10

Source: DIAC, 2011c, p. 146

refugee-humanitarian inflow into Australia brings a different and important economic element into the mix of skills, attributes, abilities and aptitudes that the immigration program brings to the Australian economy. Of course, there are important social and cultural capital contributions as well but it is too often overlooked that there is also a significant economic contribution as well. However, the existence of "brain waste" and the refugee gap have diluted this economic contribution. From the perspectives of both the migrants themselves and the Australian economy it is crucial to break down the influence of discrimination, structural disadvantage, lack of recognition of qualifications, language barriers and other impediments to refugee settlers being able to fulfil their potential.

In the last decade, there has been an unprecedented negative discourse around refugee and asylum seeker issues in Australia that do not reflect Australia's values of giving everyone a fair go as well as meeting its obligations as a global citizen. There is need for a change in the public debate especially in the political arena and the media, who drive public opinion in Australia, if social inclusion of refugees and migrants in Australian society is to be reduced. Leadership in the public debate around refugees and migrants is needed to reduce the racism and discrimination which has been identified as a key factor in exclusion of migrants in Australia.

More resources need to be invested in better community engagement to build bridges between incoming groups and the Australian community. More work still needs to be done to better engage the Australian community on the benefits of its migrants and the

increasing diversity of its people. There is also a need for resources to be used for the encouragement for all Australians irrespective of background or length of their settlement in Australia, to be more involved in neighbourhood and community life.[50]

Social inclusion ensures that Australia matches up to its values which include the freedoms and dignity of each individual, a spirit of egalitarianism, mutual respect, tolerance, fair play, compassion for those in need and equal opportunity for individuals regardless of their race, religion and ethnic background.

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3.3
Linkages between education and productivity

Dehne Taylor

Dehne Taylor was previously a (long-standing) policy adviser at the Federal Treasury. He has also been a Visiting Fellow at the ANU, at the Research School of Social Sciences and also at the Crawford School of Economics and Government. He has represented Australia at several international forums, including a number of times at the OECD. His economic interests have been focussed on workforce participation, particularly around the incentive structures created through the interaction of the family assistance, social welfare and taxation systems.

Introduction

Due to the size of the baby-boom generation, Australia will experience a significant ageing of the population over the next third of a century. Increases in Australian fertility rates and in migration cannot prevent this ageing of the Australian population profile.

During this period, maintaining the rate of past growth in living standards will be a formidable challenge. Living standards are conventionally measured as real Gross Domestic Product (GDP) per capita, which arithmetically is the product of three variables: the proportion of the population of working age (aged 15 or more); average hours worked by people of working age; and average output per hour worked. This means the three parameters that drive growth in GDP are working age population, workforce participation and productivity.

The Treasury[1] notes that over the past 40 years real GDP per capita averaged a 1.9 per cent annual growth rate, but estimates that over the next 40 years real GDP per capita will fall to an average annual growth rate of 1.5 per cent. At least half of this fall in living standards will be due to population ageing and its knock on effect upon workforce participation.

Consequently, if Australia wishes to continue to enjoy the rate of improvement in living standards that it has enjoyed since microeconomic reform started in the 1980s, increased productivity will need to be a major contributor to economic growth over the next 30 – 40 years.

Productivity

Productivity is a measure of how efficiently resources are being used to produce goods and services. At the economy wide level, productivity is typically measured in the form of GDP divided by inputs used in production. In this context, labour and capital are the most important inputs.

One common measure is labour productivity, calculated as real GDP per hour worked. However, this measure can be influenced not only by improvements in the way labour is used, but also by the employment of additional capital. The same applies when capital productivity is measured as GDP per unit of capital. These are both partial measures, based on one or other input.

A more comprehensive indicator, more widely used, is multifactor productivity (MFP), which measures the amount of real value added output obtained from a combined unit of capital and labour.

The term capital deepening is often used to describe an increase in capital investment; and the term human capital is often used to describe the stock of competencies, knowledge and personality attributes of those in the labour market. Both are important drivers of productivity.

Education and productivity

Economic studies confirm that in Australia higher levels of education are associated with higher wages. Some of these studies show that wages can be more than a third higher for people holding a degree or higher qualification compared to people with otherwise similar characteristics who did not complete Year 12.[2]

Economic studies also show that improving literacy and numeracy skills make getting a job more likely and that they are key components of human capital, which, in turn, is an important driver of economic growth.[3]

Economists have also found that a country's institutions matter for productivity. These include the openness of the economy to international trade, the security of property rights and the quality of regulation of credit, labour and business.[4]

Nonetheless, our understanding of the transmission mechanism from education to human capital formation and then to productivity is far from cut and dried. The former US Secretary of Defense, Donald Rumsfeld, was certainly not referring to the links between education and productivity when he said:

> *"There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know."*

However, it is a fitting description of the difficulties encountered when endeavouring to measure these complex relationships.

Human capital framework

Human capital is usually defined as the stock of competencies (skills and expertise developed from on-the-job training); knowledge (qualifications acquired through formal education); and personality attributes (ability and attitudes, whether acquired or innate) of those in the labour market.[5]

The human capital framework is based on the proposition that education and training directly increases an individual's productivity, therefore allowing them to command higher earnings. In obtaining further education and training, the individual often temporarily forgoes employment earnings in the expectation that he or she will be able to offer more skilled labour services in the future that, in turn, will deliver higher lifetime earnings. Human capital, like physical capital, involves an upfront cost (forgone earnings while undergoing education and training), but delivers future benefits.

There is, however, an important difference. Physical capital is owned by the firm and can be utilised in whatever manner delivers the highest profits – including on selling of those assets. Hence, well functioning markets allow reallocation of physical capital to maximise returns. In contrast, it is illegal to own, buy or sell people, or to force them to supply labour services.

Employers can invest in human capital through activities such as training, but the return on that investment is lost to the employer if the employee takes a job with another firm or withdraws from the workforce. Moreover, the employer may not have effective ownership of any useful ideas and knowledge generated by the employee. For example, an employee who develops a more efficient production technique can disseminate that technique by publishing on the Internet. The potential arbitrary loss of labour services and knowledge acts as a disincentive for employers to invest in training.

The counterpart is that, for the individual concerned, human capital is highly illiquid, and cannot be used as collateral for loans. In addition, an individual's investment in skills is risky, because skills can depreciate or be made redundant by technological change, or rendered unusable by illness.

Human capital and productivity

Acquisition of human capital commences in early childhood at home or at day-care and continues at primary and secondary school. Sound literacy and numeracy skills are the basis of a good education. It is therefore worrying that literacy and numeracy scores for Australian children appear to have been gradually declining over the past 30 years or so.[6]

One possible reason is that teachers themselves have declining literacy and numeracy skills: the share of teachers who scored in the top fifth of their class halved from the early-1980s to the early-2000s, while the share in the bottom half of their class approximately doubled.[7]

Another reason put forward for this decline is the removal of gender pay discrimination, so that female university graduates have a much greater career choice than just the teaching profession.

Currently, there are a number of reform processes around early childhood and primary and secondary schools designed to improve the efficacy and efficiency of existing processes, and, presumably enhance human capital. To no-one's surprise, some of the proposed reforms put forward by the Federal Government are being met with suspicion by State Governments and teachers' unions. Until these processes are finalised, little purpose is served canvassing additional reforms that may have no relevance to the final outcomes.[8] Consequently, further discussions focus on post secondary schooling education and training.

In addition, focussing on post secondary education and training is more likely to identify possible reforms that can deliver the skills appropriate to the structure and dynamics of the modern Australian economy.[9]

Post secondary education and training can also lift productivity indirectly, by increasing innovation and the take-up of new technology, processes and products. In turn, high levels of education and training are seen as facilitating the diffusion of new techniques and technology across the economy.

Nevertheless, empirical economic studies have not always fully supported the human capital framework.[10] For example, it was suggested that Australia's high productivity growth experienced over the 1990s was largely due to the rapid take-up of information and communication technology (ICT) by the (up-skilled) Australian workforce. However, while subsequent studies proved the existence of ICT spill-overs in Australia[11], they attributed a higher proportion of the growth in productivity to structural economic reforms.

As the Productivity Commission noted:

> *The 1990s productivity surge could not be attributed to international trends, normal recovery from domestic recession, improved labour force skills, or greater work intensity. There was rapid uptake of new technologies (including ICTs) in this period but their contribution to MFP growth was small. More fundamental and far reaching in influencing productivity were the microeconomic reforms of the late 1980s and 1990s.*[12]

In the past decade, productivity growth has been disappointing, despite steady increases in human capital per head. As the current Secretary to the Treasury stated:

> *"The time lags between action and results are often long and variable, meaning that the root causes of Australia's present productivity performance are embedded in the decisions of the last decade."*[13]

He went on to observe that without further economic reforms, including in new areas, these poor outcomes would continue.

The Chairman of the Productivity Commission has expressed concern over the use of the term economic reform noting that it is often applied to any government announcement rather than one that leads to productivity gain. He went on to note that labour market reform is crucial, and that measures to promote fairness should not detract unduly from productivity.[14]

In this respect, the present government's decision to re-regulate parts of the labour market has attracted criticisms from industry and employer groups (and some independent economists). The irony is that this legislation (*The Fair Work Act*) was ostensibly introduced to combat de-regulation of the labour market by the previous government (*WorkChoices*). In practice, most labour market de-regulation in Australia had occurred between 1992 and 1996. The only notable de-regulation of industrial relations under WorkChoices was to exempt businesses with 100 employees or less from unfair dismissal laws.[15]

Eslake[16] suggests that the increase in the terms of trade and, until recently, faster population growth have obscured Australia's poor productivity performance over the past decade. He nominates, as being ripe for economic reform, international aviation, agricultural marketing (other than grains), pharmacies, newsagents, private sector service professions (such as law, medicine, and architecture), and services sectors dominated by public sector agencies (such as health and aged care, education, public transport and law enforcement).

A potential reform agenda of this scope, means that, while education and training cannot be claimed to be the primary driver of productivity, the accumulated evidence from analyses of economic outcomes is that the quality of education – measured on an outcome basis of cognitive skills – has powerful economic effects. That is, economic growth is significantly affected by the skills of workers. What people know, matters.[17]

The major benefits from an individual's education accrue to the economy via externalities.

Productivity level and growth rates

Economists are also concerned about whether institutional and policy reforms that increase productivity affect the level of economic activity, or the rate of growth.[18] Where productivity growth rates are concerned, it is the rates of increase of capital and workforce quality that matter, rather than their current levels. That is, the level of productivity depends on supplies of human and physical capital and the state of technology. But the growth rate of productivity depends on the rates of increase of these three factors.

For example, prima facie, a significant increase to the number of tertiary graduates would be expected to cause the productivity growth rate to be lower, on the basis that the new addition to this cohort would, on average, be less adept than the existing

group. If the skills base of the economy was static this would be likely to be true. In practice, the economy is dynamic as institutional and policy reforms are ongoing processes; so it would be possible for the skills gained by the new cohort to more than offset the skills atrophy of existing graduates.

Such dynamism makes it very difficult to isolate and measure the impact on productivity of a single measure.

Externalities

An externality occurs when one person's actions impose uncompensated costs or unpaid-for benefits on another person. Externalities can be both negative and positive – education is usually regarded as a positive externality – for example, the spread of knowledge by an individual to other individuals. Without intervention, the existence of a positive externality may result in market output being lower than is socially optimal. In contrast, the existence of a negative externality (such as pollution from a factory) may result in a market producing more output than is socially optimal. It is generally accepted that government intervention is warranted in circumstances where market failure arises from externalities, and where the benefit of intervention is greater than the cost.

Because they are not mediated through markets, the measurement of externalities is problematic. Measuring the value of externalities arising from education further complicates the government intervention processes. Some benefits appear readily calculable, such as increased taxation revenue from higher productivity of university graduates. Under a simple theoretical human capital framework, increases in the stock of human capital arise from education and training, which, in turn, delivers higher productivity. Higher productivity leads to higher wages and thus to fiscal externalities generated from taxation revenue over the person's lifetime of earnings following completion of education qualifications. However, higher wages are not all attributable to higher productivity; and higher productivity not all attributable to additional education: there are differences in innate abilities to earn income; and, as is discussed below, education may act as a sorting mechanism, as well as an avenue for the acquisition of skills.[19]

Sorting and human capital frameworks

A rival to the human capital framework is the sorting framework: that education and training qualifications signal or screen the (possibly innate) productivity of individuals.

Put simply, the sorting hypothesis is that high levels of education and training are associated with higher earnings because they act as a signalling device to potential employers and not because they increase productivity. That is, people with higher levels of education have shown the ability and motivation to be successful at education and, therefore, are very likely to have the ability and motivation to be successful at work. Such people are less likely to be absent or resign from the workplace and are likely to lead more healthy lifestyles. For employers, these qualities are desirable but not readily observable so they screen employees by educational attainment; those with greater educational attainments are likely to have more of these desirable qualities. On the other side, potential employees observe this behaviour and may choose those educational and training courses favoured by employers in order to signal that they possess the sought after attributes; but those without these attributes will less likely

succeed in education or training. Through this screening and signalling, education and training is used to sort individuals for desired characteristics.

In the extreme case, the sorting hypothesis suggests that the stock of human capital in the economy could remain fixed but employers would still compete to employ those with the highest educational and training qualifications. More realistically, if education did not increase people's productivity then over time this would be apparent to employers who would therefore not be prepared to pay a wage premium to tertiary educated employees.

Numerous studies demonstrate that sorting does occur.[20] Therefore, the actual value of the financial benefits associated with education and training will be less than those calculated under a pure human capital framework.

Measuring externalities

Chapman and Lounkaew[21] recently estimated that, above and beyond the private benefits accruing to the graduates themselves, the discounted or present value to the Australian economy of an additional year of higher education in Australia for each individual was in the range $6000 and $10,000.

In undertaking this exercise, they noted that it was:

> *"A highly complicated area of economic analysis, in conceptual, theoretical and measurement terms. Estimating the value of the externalities associated with higher education is arguably the most complicated area in the economics of education literature, yet it is also a critical component for public policy in this area."*

Internationally, there have been a number of empirical studies of educational externalities, suggesting the present value of externalities (both financial and non-financial) from higher education is around 25 per cent of the private benefits[22] (which is somewhat higher than implied by Chapman and Lounkaew).

Due to the complexity of the linkages and current measurement limitations, the precise amounts of benefit accruing to society and the economy from education and training externalities are unlikely to be settled any time soon. However, the important point is that these externalities are positive and therefore unambiguously improve productivity.[23]

Increasing productivity through further education and training opportunities

The contribution to productivity from increasing human capital formation through education and training is not necessarily decided in isolation. An individual's decision making will be influenced by the role of governments in the provision of education and training services; the impact of other government policies, such as taxation and income support; and training policies available through industries and individual firms.

The role of government

There are some clear roles for government. In Australia, the taxpayer funds a significant amount of education and training. For example, governments offer primary and secondary schooling without monetary cost (and impose mandatory schooling).

In recognition of the significant private benefits, government charges university student fees. For almost all Australian students, these charges do not cover, nor are they designed to cover, the full cost to tertiary education institutions of providing the course. Governments provide funding to most of Australian universities, directly, and indirectly, through research grants.

The government also offers income contingent loans to students to assist in payment of higher education fees, to be repaid (through the personal income tax system) when income is above a certain income threshold. Importantly, a zero real interest rate is charged as the loan is indexed to the Consumer Price Index.[24]

Income contingent loans are superior to loans from a financial institution because they provide insurance to the borrower: no payment is required and no default action is taken, if the borrower's income falls below a threshold. Income contingent loans are not without challenges. Offering a loan whereby repayment is dependent on financial success can also attract applications from those expecting to do poorly. Debtors can also try to avoid repayment by falsely adjusting their income, through tax evasion for example. Scheme design can successfully address these issues.

The tax and income support systems are also used by government to provide incentives for individuals to undertake education and training.

Improving productivity by reforming government education and training arrangements

Education and training programs must necessarily compete for scarce budgetary funding. Hence to fund new and/or augment existing programs, governments either need to increase taxes or transfer funding from existing programs. The latter option has been more popular across governments in recent years.

There is no good reason why the income contingent loan system cannot be extended and adapted to promote a higher uptake of education and training opportunities with a view to delivering higher productivity outcomes. For example, to address current skills shortages, the scheme would need to be limited to fast-track courses (because demand for skills can change significantly over relatively short periods of time – often faster than the three years required to complete a degree course).

Income contingent loans could also be used as a form of income support for individuals who wish to undertake a fast track qualification to complement their existing skill base. For example, a qualified mathematician might undertake a fast track six-12 month course in order to attain formal engineering qualifications.

Income contingent loans could be made available to Australia's public vocational education and training (VET) system, where students now are largely required to pay up-front fees without access to loan assistance.[25]

Both these examples have already been modelled and found to be viable.[26]

It is relatively straightforward to limit these types of loans to specific skill areas and tailor access to the payment in order to match contemporary labour market conditions. Income contingent loans can also be designed to be revenue neutral if that is judged as appropriate.

Governments could also encourage universities to more flexible in offering intensive courses over short periods of time, thereby allowing individuals to enhance their skills without having to absent themselves from the workforce for long periods. Governments could achieve this by providing additional funds to universities or provide additional funds direct to academics prepared to take on an additional workload. In the latter

case, funding also could be offered to international experts in their fields thereby providing high quality teaching as well as offering knowledge exchange opportunities to Australian faculty members.

The current system of tax deductibility for self education expenses could benefit from reform. Currently it offers no assistance should an employed individual wish to develop skills in another industry or profession. Moreover, it is an open ended deduction so that attendance at an overseas venue can attract a greater deduction than that at an Australian venue, even though the learning experience could be identical: government should consider capping the benefit by providing it as a tax offset rather than a deduction.

A role for industry to promote productivity

At the industry level, contributions to increased productivity will arise from such things as the ability of a firm to adopt and adapt to new technology and achieve economies of scale and scope and offer training opportunities to its workforce.

For the reasons spelled out earlier – no slavery and insecure intellectual property rights,– firms may underinvest in on-the-job training; and employees underinvest in their own education and training. Therefore, there is a case for public assistance.

There is no obvious answer to the question of how much training a firm should provide; and how the cost burden should be shared among individuals, firms and government. However, firms could (particularly through their respective industry bodies) work with universities and other VET organisations and partially fund, or provide endowments to those institutions that are willing to offer courses relevant to that industry.

A note of caution

Economy wide reforms aimed at increasing productivity will inevitably have unintended consequences on particular sectors of the economy. For example, productivity growth is both positively and negatively correlated with unemployment in the long run. This is because gross job creation in the economy is comprised of a significant proportion of job destruction in any given period. As such, low substitutability across sectors may result in a reversal, within those sectors, of the creative destruction effect in the aggregate labour market.

Conclusion

Education and training play an important role in improving Australia's productivity performance. While that role is likely to be subservient to the role played by institutional and policy reform in improving productivity, the economic and fiscal consequences of Australia's ageing population strongly infer that governments in Australia should have a productivity focus with the provision of education and training. The available Australian estimate suggests that an additional year of higher education could increase productivity significantly.

Governments could benefit from adopting more flexible policies.

When the economy is growing at a sustainable rate and structural unemployment is low, then the cost of education, in terms of wages foregone, is high and therefore skills

upgrading will trend towards on-the-job training. An effective education and training structure is one that complements that demand by channelling additional resources to those areas before skills shortages act as a brake on economic growth.

When the economy is weak and unemployment high, the focus of education and training policies tend to be more obvious. As the opportunity cost of education is significantly less (because it does not necessarily result in wages foregone), funding for additional places for post-secondary education is a primary focus of policy. That is, policy flexibility and versatility are relatively unimportant when the economy is in a cyclical downturn. From the early 1970s to the early 1990s, cyclical downturns were common – and the current inertia within Australia's institutional arrangements in relation to education and training is likely to be a reflection of that time.

In contrast, when the economy is near, or at, full employment, policy flexibility and versatility has the potential to improve productivity.

Some programs to increase productivity that could be considered include:

- Extending availability of income contingent loans:
  – To the VET sector;
  – To mature age students to partially finance their living costs when they undertake fast track skills transfer courses; and
  – On a temporary basis, to address skill shortages.
- Providing additional funding to universities and VET organisations who are offering intensive, fast-track skilling courses;
- Introducing a tax offset to replace the current deduction for self education, and limit availability of the offset to a regular reviewed and prescribed set of skill attainments; and
- Taking a leadership role when negotiating with educational institutions and industry groups an appropriate mixture of public and private funding that could be provided to those institutions willing to rapidly shift resources in order to implement fast track qualifications.

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3.4

Healthcare delivery for our ageing population: What does Australia need to do?

Francesco Paolucci and Ian McRae

Dr Francesco Paolucci is an economist and Fellow at the Australian Centre for Economic Research on Health at the Australian National University. He held academic appointments as (visiting) researcher and lecturer at the Department of Economics at the University of Bologna, at the Institute of Health Economics and Management at the University of Oslo, and at iBMG at the Erasmus University of Rotterdam. Since 2005, he has been a member of the Scientific Committee of the International Health Economics Association. Over the last decade Dr Paolucci has published extensively on health economics, and health policy and reform nationally and internationally. This has included, one single authored book and two edited special issues in peer reviewed journals as well as over 25 academic peer-reviewed articles, book chapters and book reviews.

Dr Ian McRae is a research fellow at the Australian Primary Health Care Research Institute (APHCRI) at the ANU. Ian has a PhD in health economics studying supply of and demand for GP services in Australia, and prior to joining ANU was a policy advisor and manager in the Department of Health and Ageing overseeing the Medicare Benefits Schedule. His interests now lie in research on the economics of the primary health care system and the policy implications of this research.

1.Introduction

In the last few decades the proportion of GDP devoted to health care has increased in most OECD countries.[1] This trend is expected to continue in coming decades. In Australia it is predicted that outlays on health and aged care will increase from 9.3 per cent of GDP in 2003 to 12.4 per cent of GDP by 2033.[2]

The underlying drivers of this growth[3] include the rising cost of medical innovation[4], the ageing of the world population and, specifically, changes in the burden of disease, especially of chronic disease[5].

In Australia, over 70 per cent of the burden of disease is attributable to chronic conditions[6], and 87.5 per cent of total recurrent health expenditure can be attributed to the 12 major chronic disease groups.[7] On the other hand Australia's health care system, similarly to other OECD countries, is mainly organised around an acute, reactive and episodic model of care, inadequate to meet the needs and preferences of those who have, or are at risk of developing, chronic conditions and multiple pathologies.[8] Therefore, a redesign of health care systems towards integrated care models with a focus on chronic-disease management seems to be a promising direction to increase responsiveness to consumers' needs and preferences and thereby increase efficiency.[9]

This chapter is organised as follows. Section 2 describes the main features of the Australian National Healthcare System. Section 3 discusses the challenges of chronicity and multi-morbidity focusing on Australia, and also presents the main chronic care models reported in the literature. Section 4 presents a framework proposed by Ham (2010) that identifies and analyses 10 key pre-conditions for a population-based model healthcare system. In section 5 Ham's framework is applied to the current decentralised Australian healthcare system, to assess its stage of development, and pathways towards the implementation of chronic care-focused healthcare are proposed. Finally, conclusions are drawn in section 6.

2. Australian National Healthcare System

For many users, the Australian healthcare system is quite straightforward and often very low cost. For those with serious or multiple chronic conditions, it can be very complex and have high costs both in monetary terms and in terms of time to obtain necessary care.

The complexity of the Australian healthcare system is overlaid by funding arrangements with multiple funders (for example the Commonwealth and State Governments, private health insurers, individual patients and some third party payers such as accident insurers and workers' compensation funds). These funding arrangements are further overlaid with complex governance structures whereby Commonwealth/state and private arrangements interact.[10].

The Australian publicly funded healthcare system Medicare, which was implemented in 1984[11] incorporates the following:

- Public hospitals, which provide free services to all Australians on the basis of need are managed and funded by the states, with funding support from the Commonwealth;
- Public community health services, managed and funded by the states;

- Private medical services, which receive no direct government funding but all Australians are supported by the Commonwealth funded public insurer Medicare Australia, which refunds patients a defined amount for each medical service covered;
- Doctors who are not restricted in what they can charge, and patients pay out-of-pocket gap charges;
  - If doctors choose to bill at the level of the Medicare rebate, they can directly bill Medicare Australia;
  - Private insurers are forbidden to insure gap payments for out of hospital services, but can insure up to a prescribed limit for in hospital services;
- Private hospital services, which are funded privately, although Medicare and private health insurance payments at least partially cover doctors' costs, with private health insurers able to insure for hospital costs;
- Other health services – in particular allied health (most notably dental services) – these are privately funded with many of the services able to be covered by private health insurance; and
- The Pharmaceutical Benefits Scheme funded by the Commonwealth under which prescription drugs are available with a fixed co-payment (which depends on whether the patient is a concession card holder).

3. The challenges of chronicity and multi-morbidity, and chronic care models

3.1 Chronicity and multi-morbidity

Chronic conditions have a multiple impact on individuals, health systems and societies as a whole. They represent a restraint on the quality of life, functional status and productivity of people who suffer from them[12]. Further, they are the main burden of disease and mortality in most countries across the world and they compromise the sustainability of health systems.

It has been estimated that before 2030 chronic diseases will account for 70 per cent of the global disease burden and will be responsible for 80 per cent of deaths across the world.[13] [14]

The prevalence of a range of chronic conditions in the US from 1987 to 2002 including cancer, mental disorders, pulmonary disorders, as well as diabetes, will increase.[15] The number of individuals with multiple chronic conditions will increase dramatically in the coming years[16]. A similar evolution is observed in most common chronic conditions, such as diabetes mellitus and the recognised pandemic of obesity.[17] The World Health Organisation estimates that the number of patients with diabetes worldwide will double from 2005 to 2030, including in the US, Europe, Canada and Australia.

With an ageing population, Australia follows the international trend of an increase in patients with chronic conditions. Comparisons with other countries, 1987–2006, can be found in the Australian Institute of Health and Welfare's, Australia's Health 2010.[18] Around 75 per cent of Australians currently suffer chronic illnesses[19], representing 87.5 per cent[20] of healthcare expenditure. For example, the prevalence of diabetes in Australia by one estimate will have increased by 207 per cent by 2033[21]. Table 1 shows the prevalence of the main chronic conditions other than diabetes in Australia.

TABLE 1
PREVALENCE OF LONG TERM CONDITIONS IN AUSTRALIA

CONDITION	NUMBER OF PERSONS WITH THE CONDITION ('000)	NUMBER PER 1,000 OF POPULATION
Cancer	368.3	17
Total mental and behavioural problems	2309.8	108
Total heart, stroke and vascular diseases	1079.1	51
Hypertensive disease	1945.8	91
Bronchitis/Emphysema	490.0	23
Asthma	2049.7	96
Arthritis	3135.1	147

Source: ABS National Health Survey – Summary of Results, 4364.0 2007-08 (Selected conditions from the Table "Long Term Conditions")

As most of healthcare provision and expenditure is taken up by patients with chronic conditions and more specifically individuals with multiple chronic conditions, it is necessary to orientate and integrate health systems in such a way that provision for this type of patient is efficient.

Policy-makers on analysis are increasingly aware of these issues. [22]

3.2 The chronic care models

There are two outstanding international reference models for the care of patients with chronic conditions. The first one is the Chronic Care Model developed by Ed Wagner and associates at the MacColl Institute for Healthcare Innovation in Seattle, USA.[23] The second is Kaiser Permanente's Pyramid model, USA. They share a common objective: reducing the exponential increase in costs associated with chronic diseases by shifting health services towards coordinated and proactive interventions.[24]

The Chronic Care Model (CCM) aims to obtain high quality care, high levels of satisfaction and improved outcomes through productive interactions between active, informed patients and prepared, proactive practice teams. The CCM emphasises the importance of rethinking and redesigning clinical practice at the primary care level. One important feature of this model is the integration of care in contrast to the traditional fragmented care. It has a clear separation between primary and specialist care that characterise the current health systems. The second is the need to intervene with structured and simultaneous measures at the primary care level. In the transition to chronic care models often different essential elements are carried forward in an isolated manner.[25]

Subsequent extensions and adaptations of the CCM, include the WHO's Innovative Care for Chronic Conditions (ICCC) Framework[26] and the Expanded Chronic Care Model.[27] There is some evidence of the efficiency of the CCM in terms of reducing health expenditure and improving the quality of healthcare provision especially in the prevention of complex procedures.[28] However, its implementation is not free of difficulties.[29]

The population health management approach represented by Kaiser Permanente's Pyramid model makes it possible to understand the needs of different strata of a population and to target interventions from health promotion to end-of-life care across

the whole spectrum of interventions. The main goal is to identify patients with different types and levels of risk, classifying individuals into categories according to their level of complexity. At the lowest level of risk, the development of chronic conditions should be prevented in the general healthy population through individuals adopting healthy lifestyles and public policy actions. At the other extreme, the highest level of the pyramid, the fourth strata consists of highly complex patients with chronic conditions (about three to five per cent of all patients with chronic conditions), and these consume the highest share of resources. In between, there are various possible approaches to care management. Healthcare provision for these highly complex patients has to be carefully managed by formal health providers, to reduce unnecessary use of specialist resources and avoid hospital admissions.

4. Key pre-conditions for a chronic care-focused healthcare system

Ham (2009)[30] examined five years of reform in the English health system addressing chronic care, and concluded, "…it is the cumulative effect of different interventions that is likely to have the greatest impact." Looking more widely the following year, Ham (2010) provided an analysis of the key elements for a population-based model of care with primary care as the cornerstone of the provision of integrated chronic care. His analysis identifies the characteristics of high performing systems for dealing with chronic disease. He also provides a roadmap for transformation where National Health Insurance models (such as Medicare in Australia) provide a positive start point for such a transition given that some of the elements are already guaranteed.

Ham (2010) identifies the following as the 10 characteristics of high-performing chronic care systems:

1. There should be *universal coverage*, which is provided by equal access to basic healthcare services according to need. This is crucial as there is evidence of better health outcomes among populations who have health cover[31], to a positive change being noted in the health status of previously uninsured individuals once insured. The improvement in health status was found to be particularly significant for those patients with cardiovascular disease and diabetes.

2. The health system should provide care *free at the point of use*. If healthcare provision is costly at the point of use, sick patients may avoid seeking care, even when they need it, for financial reasons. Evidence of the impact of demand-side cost sharing is provided by Manning et al. (1986) through the RAND Experiment and data from various different countries which currently require some level of co-payment at the point of use. More recently Schoen et al (2010)[32] estimated that 22 per cent of Australians went without recommended care because of costs.

3. The health system has to be *focused on the prevention* of illnesses, and not only the treatment of sickness. In developed countries, the burden of chronic diseases is increasing at the same time as growing expectations in society of quality of life and longevity meaning preventive care is becoming even more important[33] and should target improving lifestyles. Various measures have been implemented in a range of countries; most address issues such as the use of tobacco in terms of consumption and of the places where smoking is permitted.

4. The health system should reinforce the role of *patients with chronic conditions to self-manage their conditions* with support from carers and families. This is related to the idea of prevention, given that the first step in the provision of healthcare is

patients themselves taking steps to look after their own health. Evidence of the importance of self-management support is provided by Sobel (1995)[34], who shows how a small reduction in the propensity of patients to self-manage their conditions results in a significant increase in the demand for formal healthcare.

5. The health system has to *give priority to primary healthcare*. The importance of this characteristic is based on the positive evidence of the contribution of primary care to the performance of health systems. In addition, most health care provision to patients with chronic conditions is delivered through primary care centres[35]. It has been argued by Willison et al. (2007) that healthcare systems have historically devoted more resources to hospital inpatient care, while investing more in primary care would reduce the demand for and pressure on hospital care.

6. *Population management should be emphasised* by the stratification of patients by risk and providing support accordingly. This is important due to the need to predict the type of health services that will be required by each type of patient. Kaiser Permanente's Risk Pyramid is an example of a risk stratification approach, already applied in European countries such as England with patients receiving support according to their need.

7. *Healthcare provision has to become integrated*, with interactions between primary care teams and specialists. This is especially important in the case of patients with multiple chronic conditions, who require advice from several different specialists and continue to be in contact with the primary care team. Kaiser Permanente, for example, has been considered to be one of the best integrated systems.[36]

8. *Improving information technology for chronic care* is fundamental for improving provision for patients with chronic conditions. In particular, this would ease the stratification process and the communication between patients and healthcare professionals, as well as the process of reviewing the performance of providers. In this regard, tele-health care provided remotely using information and communication technology (ICT), is seen as a useful support for patients with chronic conditions. This has started to be implemented in the UK NHS, but to date has only benefited individuals participating in pilot studies.

9. *Healthcare should be effectively coordinated*. This is closely related to the integration of health services as, especially in the case of patients with multiple chronic conditions, it is very important that primary care is coordinated with specialist care.[37] Given that patients with chronic conditions need to access a wide range of support services, this also underlines the role of public policy in favouring coordination between access to the health system and to social care.

10. *All of the earlier nine characteristics must be linked* to form a coherent whole. Hence, a strategy has to be designed to address all the characteristics listed earlier at the same time, involving health financing reforms (such as universal coverage), priority for prevention activities, self-management and primary healthcare, a commitment to achieving an integrated model of care and more effective care coordination, and the greater use of tools such as population management and IT devices.

5. Experiences, pathways and barriers to the transition in Australia

5.1 Current policy debate in managing chronic diseases in Australia

The most recent report by government on progress in health reform[38] identifies concerns similar to those outlined in this paper. Many of the recommendations of the National Health and Hospital Reform Commission (NHHRC) in the final report (2010)[39] are in a similar vein.

NHHRC recommended that, to better integrate and strengthen primary healthcare, the commonwealth should assume responsibility for all primary health care policy and funding. The Commonwealth accepted this view and obtained initial agreement from the states and territories, but on reflection the states were not inclined to relinquish control over these activities.

The NHHRC further recommended that the Commonwealth should encourage and actively foster the widespread establishment of Comprehensive Primary Health Care Centres and Services. This has been pursued in the context of the GP Super Clinics. While development of these clinics was started prior to these recommendations, and they do not fully meet the intention of the recommendation, they do move in the direction of facilitating better access to and coordination of care.[40]

NHHRC suggested that groups such as young families, Aboriginal and Torres Strait Islander people, and people with chronic and complex conditions should have the option of enrolling with a single primary healthcare service which would be their principal "health care home". This would be funded by grants to support multidisciplinary services and care coordination tied to levels of enrolment with a practice. It would also include pay-for-performance arrangements to reward good performance in terms of health outcomes. The Commonwealth response to this recommendation was to propose a similar program which targeted people with diabetes. Following negotiation with the medical profession[41] it was agreed to undertake a pilot program known as "Coordinated Care for Diabetes".[42] While the pilot has not yet started and details of its structure are not known, it is expected to have:

- Minimal fundholding by doctors (with most of the funds held by Medicare Locals for purchase of coordination of allied health services);
- Minimal impact on enrolment as, outside of diabetes treatment, patients will not be required to use the same practice for all their services; and
- The population stratified according to levels of clinical risk.

The NHHRC recommended creation of primary health care organisations, which have evolved into Medicare Locals which, when fully operational, have the potential to be close to the recommendations.

Medicare Locals (MLs) are intended to facilitate comprehensive primary healthcare service provision. MLs are expected to help arrange access to necessary allied healthcare services and other support services for chroni¬cally ill patients (Ham condition nine) and will be designed to ensure that services are integrated and patients can easily access the services needed (Ham conditions one and seven), and that face-to-face after hours services are available (Ham condition one). Also MLs are expected to identify groups of people missing primary healthcare, services in the local area and responding to those gaps by better targeting services (Ham condition one), and work with Local Hospital Networks to assist with patients' transition out of hospital (Ham

condition seven) and delivering health promotion and preventive health programs to communities with identified risk factors (Ham condition six).[43]

State Governments have implemented many programs to address issues of access and coordination. The HealthOne program in Mt Druitt in Western Sydney for example, operates the "hub and spoke" model to virtually integrate care providers and services to achieve better health outcomes for its clients.[44] The HARP program in Victoria[45] is based on the Kaiser Permanente model of care and the Wagner chronic disease model. It has a primary focus of reducing the demand of clients with chronic disease and complex needs on the acute hospital system. This is achieved by targeting high risk patients who are either already presenting frequently to hospital or at imminent risk of doing so, and require a holistic, integrated, person-centred approach. Many divisions of general practice (soon to be replaced by Medicare Locals) also run programs which can assist in coordinating care and provide relevant services to patients with chronic diseases (see for example McRae et al [2008]). [46]

5.2 Pathways towards the optimal model – how do we align with Ham's criteria

Following the 10 characteristics of a high-performing chronic care system identified by Ham (2010), it is possible to assess the readiness of the Australian health system to provide appropriate care for patients with chronic conditions.

Universal coverage is guaranteed in health systems for most developed economies including in Australia, aiming to provide equal access to basic healthcare services according to need. At the point of use, under the Australian system there is no co-payment for public hospital specialist care or public hospital inpatient care, but there are increasing co-payments for primary care and for private hospital care.

Australia has undertaken a range of reforms focusing on the prevention of illness, including the recent passage of legislation for plain packaging of cigarettes and restriction of social marketing targeted towards young children to prevent obesity. Further the Commonwealth and states have agreed to a National Partnership Agreement on Preventive Health (NPAPH)[47] which seeks to address the rising prevalence of lifestyle related chronic disease.

Ham (2010) suggests that the healthcare system must give priority to primary care. This is difficult to assess. In Australia, around half of all doctors are GPs which is higher than in many other countries, suggesting there is such a focus already. Recent reforms emphasise the role of practice nurses in general practice and under certain conditions permit patients of nurse practitioners to have access to Medicare rebates which will expand their role in provision of primary care. While these reforms and those discussed above are all intended to assist in the coordination and management of chronic disease, and to assist patients in the community rather than in hospital, it is not clear that they involve a "priority to primary care". It is worth noting that the reform funding applied to primary care is one third that applied to hospitals.

The role of primary care teams in the private sector is complex due to the fee for service arrangements under which they operate. Medicare Locals may provide the coordination and integration needed to assist patients with chronic conditions, but they are not yet mature organisations, and their actual roles in this domain are not clear. Further, it is far from clear how Medicare Locals will interact with the public sector primary care arrangements (for example in some areas a high proportion of diabetes educators are in the public system).

Stratification of patients by risk with appropriate design of interventions is a role played on an ongoing basis by GPs. The current reforms have not attempted such stratification on a broad basis (although it is done in the HARP program in Victoria, and no doubt in other specific programs). The degree to which a more generalised stratification can or should be implemented under current arrangements is not clear.

Along with the coordination of the care of individuals within the primary care sector, Ham (2010) argues it is necessary to have healthcare provision integrated with interactions between primary care teams and specialists. There have been numerous endeavours with varying degrees of success at the state and Commonwealth level to improve the use (and timeliness) of discharge summaries from patients leaving hospitals. However, the actual levels of communication between private GPs and specialists who do not have formal linkages can be less than desirable, and there is little that can be done outside ongoing efforts by professional bodies. This lack of communication is a potential reason for duplicate pathology and diagnostic imaging testing when practitioners do not communicate fully and in a timely manner.

Under the rubric of the National Health Reform, the Commonwealth is pursuing the implementation of a personally controlled electronic health record. International experience suggests that this will not be easy to achieve[48], and it will be optional for patients to choose to register for the record. The Commonwealth is also expanding the use of telehealth particularly for patients in rural areas, with video consultations now able to be claimed under the Medicare system, and an array of other measures to improve the use of telehealth technologies. The vast majority of clinicians in Australia are now computerised and can communicate electronically. Pathology and diagnostic imaging reports are routinely provided electronically. While there is of course more progress to be made in this field (particularly with respect to the electronic health record) movement is clearly in the direction suggested by Ham.

5.3 Our problems and solutions

With the exception of an explicit drive for more self management and the availability of services free at the point of care, the Australian system is “nudging” in the direction suggested by Ham and being tested in the United States. Nudging[49] is probably preferable to grand reform within the Australian framework. The experience of the Rudd reforms which were not really “grand” with many either dropped or watered down under pressure from the states, the medical profession or the political situation, suggest grand reform must wait for another day, or a more propitious political alignment. It should be remembered that the current leader of the opposition, when the Minister for Health, frequently discussed bringing the public hospital system under a single funder, but argued that it was constitutionally intractable[50].

The degree to which Medicare Locals will nudge the system to provide care for the chronically ill is unclear but is central to the success of this approach. Given the history of divisions of general practice it is likely some will be highly innovative and effective and will achieve a great deal, while others will be less successful. Alternatives to further enhance coordination and integration of care are therefore needed to support the Medicare Local approach.

The other matter noted in this discussion, but not by Ham, is the potential benefit of patient enrolment. While in Australia around 89 per cent of the population say that they always or usually go to the same GP[51] there is no formal linkage, nor obligation of either the patient to attend that practice to obtain continuity of care nor the practice to provide continuous care. The NHHRC recommendation of at least optional enrolment of patients with GP practices associated with capitation payments (in lieu of Medicare

Benefits Schedule payments) provides an opportunity for GPs to use funding to provide a range of care to patients with chronic illness in a more flexible way. Such payments would incorporate complexity as per the Ham notion of stratification. This approach is argued by APHCRI (2008)[52], and the published literature on the importance of continuity of care (see for example Heggarty et al [2003]).[53] The notion of enrolment is being tested in a very narrow field in the pilot tests of care coordination in diabetes. The scope for broadening this structural reform which would be purely within Medicare and the Commonwealth's ambit, and which would address chronic disease more broadly, is viable.

6. Conclusions

This discussion shows some of the difficulties in implementing reform strategies in the Australian healthcare system. Although many changes may be most appropriately undertaken nationally, the Commonwealth has difficulty in generating change outside those parts of the system under its control. Sometimes it can persuade the profession or the states to participate in reforms, sometimes it is appropriate to provide funding for reforms at a level which encourages participation by these players, but frequently reform is difficult.

This does not mean that progress cannot be made in improving the Australian healthcare system, nor that it is not being made. Australia has implemented programs in general practice to encourage care planning and case conferencing, to encourage implementation of the full cycle of care of patients with diabetes, to encourage appropriate levels of cervical smear testing and in other areas. Programs are in place to encourage use of the skills of the nursing workforce within general practices and these have led to large increases in the number of practice nurses. The recent addition to the Medicare Benefits Schedule of some of the services provided by nurse practitioners opens considerable opportunities in the longer term for increasing the availability of primary healthcare.

A strong case can be made that, to improve the care for those with chronic conditions who require care from a range of different providers, that the healthcare system should be rearranged to have a single funder model, or at least a model where each patient is covered by a single funder. There are numerous models internationally from the British NHS to the Medicare Select model proposed by the NHHRC which is similar to the managed competition arrangement in the Netherlands. However, the recent experience of attempting health reform suggests this is impractical and small scale reform is more likely to succeed. The main focus of targeted reform is that it should be directed to a long-term goal to prevent even further fragmentation in the system.

One long-term approach of improving care for the chronically ill is to follow the multifaceted structure outlined by Ham (2010). The questions for Australia are: Where are we failing on this approach? What should be done? What can be done in a world where politics and our constitution restrict activity to those things which a Commonwealth Government can control, and those "nudges" which can be implemented?

A first possible step would be to move towards voluntary patient enrolment for those with chronic conditions to improve continuity of care – this could be arranged through Medicare type payments as being trialled in the Coordinated Care for Diabetes pilot study, as this does not involve other funders and could be implemented by the Commonwealth. Continuity of care is essential to coordination, but also improves the scope for the clinician to assist the patient in their self management and to focus on preventive activities.

Other steps include improving information flows for people needing multiple clinical supports. The Commonwealth has applied large amounts of funding to the development of an electronic health record. However, the current planning which permits doctors and patients to choose to participate, and patients to choose to include/exclude segments of information in their electronic record, runs the risk of heading for the same problems as the £6.4 billion outlaid in the United Kingdom.[54]

The development of Medicare Locals as bodies with a responsibility to coordinate care across primary healthcare and to identify gaps and target care to meet those gaps, has the potential to address a number of the Ham characteristics of high performing systems. These bodies must be given sufficient resources and be monitored closely to ensure that they are high performing to ensure equity across the country. One related area to be addressed is the funding of the allied healthcare needed by people with chronic conditions – while some of this is presently covered by State Government publicly funded services, some by limited Medicare arrangements, and some may be covered by Medicare Local funding, a more complete and coherent coverage of these services is required.

While there are no doubt many other ways to nudge the health system towards better care for the chronically ill, the main issue remains that we need to coordinate the fragmented systems and move the existing systems towards a well defined endpoint.[55]

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Section 4.0
Impacts and implications

4.1

The economic effects of population growth and migration

Jonathan Pincus and Judith Sloan

Jonathan Pincus is a member of the Policy and Research Council of CEDA. Jonathan is Visiting Professor of Economics at the University of Adelaide, and an independent economic researcher and consultant. Previously, he was principal adviser, research at the Productivity Commission; Professor of Economics at Adelaide University; Professor of Economic History at Flinders University; and a researcher at the Centre for the Study of Public Choice (Virginia, USA). He is president of the SA Branch of the Economic Society of Australia, and Fellow of the Academy of Social Science in Australia.

Judith Sloan is a non-executive director of Westfield Holdings Limited and is a board member of the Lowy Institute. She is also an Honorary Professorial Fellow at the Melbourne Institute of Applied Economic and Social Research at the University of Melbourne. Judith holds a first class Honours degree in Economics from the University of Melbourne; a Master of Arts degree in Economics, specialising in Industrial Relations, also from the University of Melbourne; and a Master of Science degree in Economics from the London School of Economics.

Introduction

This chapter deals with the economic effects of population and the related issue of migration. The growth in population comprises natural increase and net overseas migration. While governments can affect the latter, and especially the immigration component, it is not clear that much can be done to alter the course of natural increase. Moreover, in recent times, migration has accounted for most of the increase in population. As noted by the Productivity Commission:

> *"The population debate is essentially a debate about the size and composition of migration flows, and about the best policies to manage these and the consequent domestic impact."*[1]

The two main questions considered here are as follows:

- What is the economic impact of changes to a country's population size? and
- What is the economic impact of the net flow of migrants to a country?

Before we seek to answer these questions, two further issues need to be made clear.

The first is that when considering the economic impact of population growth and migration, we must consider the effect on per capita output and income – both proxies for living standards. Simply to point out that higher population growth is associated with higher absolute output and income – the impact on "extensive" growth – is facile; our concern must be with the impact on per capita output and income – the impact on "intensive" growth.[2]

The second issue is related – on whom should we judge the economic impact? To the extent that immigration is the only real lever that the government has to control population growth, it is reasonable in assessing the economic impact of immigration to give a dominant weight to the effects on the existing residents at the time the policy is implemented. This is certainly the case when it comes to the economic categories of migrant entry, although it may be appropriate to de-emphasise it or set it aside for the family and humanitarian categories.[3]

The structure of this chapter is as follows. The next section deals with the impact of population growth and migration on per capita output and income. The link between migration and demography is also canvassed. Then follows a discussion of the labour market effects of migration, including the issue of whether or not resident workers benefit from the inflow of migrant workers. The next two sections sketch some new theories about the relationship between the economy and population growth and migration; in particular, the impetus for technological change and the benefits of cities in producing innovation. A conclusion completes the chapter.

The effect of population growth and migration on the economy

Economies with small populations and economies with large populations both enjoy high per capita incomes. Take the cases of Norway, with its small population, and the US, with its very large population: both enjoy high per capita incomes by international standards. By the same token, countries with small and with large populations record low per capita incomes.[4] It is clearly not size *per se* that determines economic wellbeing. By a similar logic, countries with slow population growth and countries with rapid

population growth can experience similar paths of economic performance, although the demographic influence of different rates of population growth can play some role.

None of this is to deny that the size of the population, its rate of increase or the composition of immigration can influence living standards. The relevant question, however, is whether the Australian experience in recent decades (or the experience of comparable countries) suggests that these influences are likely to be large or small.

In our judgment, the consensus of the Australian research on the economic impact of population growth and migration is that it is small, benign and long term. There are however, vigorous dissenters from this viewpoint, who point to the absence in the modelling, of mechanisms through which sheer size can be an economic advantage. This is via economies of scale or scope and via induced technological change.

Population growth, be it based on natural increase or through the intake of migrants, has both supply and demand effects. These effects have been summed up by the Productivity Commission in the following way:

> *"In broad terms, additional people of working age increase the supply of labour and some forms of capital, contribute to government fiscal balances, and may contribute some domestic, community or broader social services in the non-market sector. They and their dependants are also consumers of various goods and services, including those delivered outside of markets…Thus, population growth has implications for wages, capital returns, and the prices of and/or access to goods and services in the market and non-market sectors."*[5]

The Productivity Commission's 2006 Research Report modelled the case of population growth resulting from a 50 per cent increase in the annual intake of skilled migrants from 2004–05.[6] Over the long term (by 2024–25), income per capita was projected to rise modestly, in consequence; and the average number of hours worked per capita to rise slightly (migrants work longer hours on average than Australian-born workers). Because the growth of capital lags the growth of the labour force, there is a short-run reduction in the capital-labour ratio which, in turn, lowers productivity. However, after several years, income per capita would be higher than the base case. The report also found that the average incomes of the existing population fell slightly;[7] essentially, the gains were captured by the migrants.

Kirchner makes the point – and it applies to the Productivity Commission's work just cited – that many of the Australian studies on the economic impact of population growth and migration rely on neo-classical models and standard growth accounting.[8] They do not consider the possible impact of economies of scale nor do they treat technological change as potentially endogenous to population size or growth. These limitations should be borne in mind when interpreting the results of the studies; and the reservations would apply even more pointedly if the question concerned the likely effects of immigration inflows many times larger than those recently experienced in Australia.

For various reasons, quantitative estimates of the effects of population size on living standards, using multi-country data sets, have yielded results that are neither consistent nor especially convincing. Of more interest are the empirical estimates of the effects of immigration on the recipient labour markets.

Migration and demography

While the issue of demography is considered in more detail elsewhere in this volume, it is important here to mention the interaction between demography and economic outcomes. Over 10 million Australian residents were either born abroad or have at least one parent who was born abroad; in contrast, about one million Australians live abroad. So undoubtedly net migration since WWII has greatly increased the size of the Australian population; the economic effects of this presumably permanent increase in scale were considered earlier. Because the characteristics of immigrants and emigrants do not match those of the resident population, net migration also changes the composition of the Australian population. Although these compositional changes are more modest and more temporary, they can nonetheless have significant transitional effects.

It is clear that an ageing population will lead to a higher dependency ratio, which in turn has economic and fiscal consequences[9]. Some commentators attribute part of the post-World War II economic prosperity enjoyed by many developed economies to a golden period of demography associated with the Baby Boom. But whether the ageing of the population can be much affected by deliberate population policy, including changes to migration levels, is debatable.

The figures quoted in the Productivity Commission submission point to a very marginal impact[10]. Should the long-run fertility rate be raised from 1.85 to 2.10 births per woman, the proportion of the population aged over 65 years in 2015 would be a mere 1.1 percentage point lower. Moreover, doubling in the annual net migration from 150,000 to 300,000 per year would reduce the proportion of the population aged over 65 years by less than three percentage points by 2044–45.

So when considering the economic impact of population growth and migration, there seems to be little to be gained from consideration being given to the demographic consequences of different plausible scenarios of future population growth and net overseas migration. Having said this, McDonald and Temple, using a demographic rather than economic model, argue that the optimal Net Overseas Migration (NOM) is in the range of 160,000 to 200,000 per year, which can offset the impact of ageing to optimise the rate of growth of GDP per capita.[11] Their results hinge mainly on the higher average number of hours worked by migrant workers.

The labour market effects of migration

One robust conclusion in respect of the economic impact of migration relates to the effect of the entry category of the migrant. Those entering on skilled visas have higher participation rates than those in other categories. For migrants who entered Australia between 2000 and 2004, for example, the participation of skilled migrants was 82 per cent in 2004, 58 per cent for family migrants and 40 per cent for humanitarian visa holders.[12] As the migration program has become more slanted towards the holders of skilled visas, the proportion of migrants securing jobs within six months of arrival has increased significantly.[13]

A key question when considering the impact of migration on the labour market is the effect on the wages of incumbents.[14] There has been a great deal of research on this topic both overseas and in Australia. However, neither theoretical nor quantitative research gives definitive answers.

In theory, the answer partly turns on whether migrants are complements to or substitutes for local workers. At the micro level, it may seem obvious that the immigration of, say, fitters and turners must reduce the demand for Australian fitters and turners, and worsen their labour market outcomes (and benefit the users of their labour services). However, the reverse can occur. For example, a large project may not go ahead unless the supply of fitters and turners is augmented quickly, and immigration is the only source of those extra workers; in this instance, immigrant fitter and turner workers are complements to their Australian counterparts, and not substitutes for them. Moreover, even if immigrant and Australian fitters and turners are substitutes, and even if increased immigration results in lower wages for fitters and turners, the effect may be an increase in the demand for complementary Australian workers, say, truck drivers.

These may of course be short-run effects. For example, the lifetime wage prospects of Australian fitters and turners may weaken if immigration frequently fills short-run and potentially damaging labour shortages. The expectation is that wages for occupations in short supply would be bid up, which in turn would attract workers to apply for the vacant positions and/or train to meet the requirements of the occupations experiencing shortages. However, if migrants fill vacancies – particularly through temporary skilled visas such 457 Visas – then the price signal is blurred and the domestic supply response is blunted. By truncating the increase in the relative wages of occupations in short supply, the losses are borne by local workers who might otherwise be attracted to the jobs.

Richardson has outlined various types of skill shortages and the appropriate solutions to each.[15] She makes a distinction between occupations requiring training that take a short time and those that require lengthy training. In addition, she highlights the adequacy, or otherwise, of the pool of relevantly trained workers, some of whom may not be working in the occupations with skill shortages. The case of inferior quality workers is also described.

In terms of constraints on economic growth, the main concern is the case of occupations requiring lengthy training periods and where there are few local workers with those skills not currently employed in the occupations. By contrast, support for higher migration on the grounds of skill shortages is generally much more broadly-based, covering Richardson's other categories of skill shortages. The downside of a policy based on such broad advocacy, is that it potentially undermines the workings of the labour market that would otherwise self-correct many of these skill shortages.

Immigrants add to demand generally within the economy; and maybe add more to demand than to the supply of labour. So, even if some immigrants are close substitutes for specific types of Australian workers, it is possible that, at the macro or national levels, immigrant workers and their families will raise real wages generally in Australia. Pope and Withers report this was the case for Australia, from 1861 to 1991.[16] Most quantitative research, however, focuses on data for more recent periods, with mixed results.

For example, Harris and Robertson obtain a negative wage effect for skilled local workers arising from the entry of skilled migrants.[17] But other Australian studies[18] have found zero or slightly positive wage effects on incumbents. In a multi-country study, Docquier, Ozden and Peri find, for Australia, a negative relationship for high-skill workers, a positive relationship for low-skill workers and a small positive effect overall on average wages of local workers.[19]

A query is raised by Pincus as to why the effects found by Docquier et al are so large for Australia (and Singapore), hypothesising that the mining boom may have contributed to this result.[20] The higher relative earnings of workers in mining have been associated

with a surge in net overseas migration: "It is possible that Australian real wages would have risen even more, if immigration had been more controlled."[21]

Bond and Gaston use data for 2001–2004 from the survey of Household, Income and Labour Dynamics in Australia, HILDA, to model the effects of immigration on national labour markets for four educational groups: high school drop-outs, high school graduates, diploma and certificate holders, and university graduates.[22] What they find are small positive effects for most educational categories of workers, but (as in Harris and Robertson 2007) negative effects for certificate and diploma holders. This suggests that immigrants are complements to resident drop-outs, and to high school and university graduates. (Bond and Gaston do not test for complementarities across educational categories; and venture no estimate of the overall effect on wages.)

A new perspective: hands, mouths and minds

Kirchner has outlined a new way of thinking about the impact of population growth on per capita income.[23] According to Kirchner, three perspectives can be taken. The "hands" perspective emphasises the role of increased labour supply offset by greater demand; the "mouths" perspective takes a Malthusian view based on the more rapid depletion of limited resources; and the "minds" perspective stresses the role of new ideas and innovation associated with population growth.

According to this last perspective, population growth will contribute to productivity growth and living standards – indeed, it is the most important source of productivity. Simon expresses the idea in the following way:

> *"In the long-run, the most important economic effect of population size and growth is the contribution of additional people to our stock of useful knowledge. And this contribution is large enough in the long run to overcome all the costs of population growth…The source of these improvements in productivity is the human mind…"*

A similar argument is made in Ridley.[25] Kirchner emphasises the importance of new ideas, which are essentially non-rivalrous in generating positive spill-overs, enabling the exploitation of economies of scale. Population growth, migration and density can drive this process of "endogenous technical change". While the relative prices of scarce resources may increase in the short-term, innovative responses to price signals will moderate many of these price rises, and generally stimulate productivity improvements over the longer term. So rapid population growth caused, for example, by a large migration intake can bring about short-term pain – higher land and house prices – but will lead to higher living standards over time.

An obvious first response to this line of argument is: how many resident minds are needed to create the optimal supply of new ideas? Wilkie and McDonald present evidence that proximity to large and rich markets tends to raise productivity levels; and it does not matter much if the markets are domestic or foreign.[26] Moreover, there are many published studies of when and how fast the living standards and productivity of lagging countries "converge" or "catch-up" with those of leading countries. One of the mechanisms involved seems to be through the transfer of ideas, whether directly or embodied in traded goods. Why could these new ideas not simply be imported, by means of trade in goods and services, or directly? Through international exchange, a "small Australia" may have access to almost as many good ideas as would a "large Australia". With trade in goods, the short-run costs of population growth are avoided. However, the importation of ideas and techniques often involves at least some temporary migration.

Kirchner concedes that trade can play a role but asserts that is not a perfect substitute for a larger home market. Citing the work of Keller[27], he notes that technological diffusion tends to be geographically localised, with more intra-country than inter-country take-up. The implication is that a larger population can have advantages for productivity, via the generation of productivity-improving ideas that are country specific and home-grown.

The benefits of agglomeration

Related to the "minds" perspective of migration are the benefits of agglomeration – of a large number of people living in metropolises. These ideas are particularly associated with Edward Glaeser[28] [29] who sees multiple advantages to large conurbations. These benefits range from "thick" labour markets generating multiple job opportunities; granular division of labour; a wide choice of goods and services; and spill-over of ideas between closely located firms.

Ciccone and Hall found that population density was important in explaining productivity differences between US states – a doubling of population density was associated with an increase of six per cent in average labour productivity.[30]

Of course, there are several debatable issues associated with the benefits of agglomeration, relevant to Australia. As Kirchner notes, Australia is already a highly urbanised country – 87 per cent of the population live in the capital cities. However, the author also notes that Australia's largest city, Sydney, is only the 67th largest in the world. The argument boils down to the need for a much bigger population that will be concentrated in a few large cities.

There is also the possibility of a reverse causation being observed: successful cities attract more inhabitants, rather than that the presence of more inhabitants causes cities to be more productive.

And there are well-recognised downsides to large cities, including traffic congestion and loss of social amenity. The claim that these costs can be offset by the use of judicial policy measures is only partially correct. As Pincus argues:

> *"It is important to note that optimal policy adaptation to a larger population – for example, the use of congestion charges, greater reliance on medium-density housing or pollution permits and taxes – do not completely remove the disadvantages of bigness. What these policies can do is to make the best of a bad lot, that is, constrain the negative externalities to their optimal sizes – they do not guarantee that the existing population will not suffer a disadvantage."*[31]

In fact, Docquier *et al* conclude that there is very little evidence that the benefits of agglomeration are larger than the diseconomies associated with crowding and congestion.[32]

Conclusion

This chapter has considered the economic impact of population growth and migration. Not only should attention be focused on the "intensive" margin – that is the impact on *per capita* income and output – but consideration should also be given to the distribution of the benefits and costs between the resident population and the migrants themselves.

While population growth is the result of natural increase and net overseas migration, the government's potential policy levers really affect only the second flow. It is therefore fitting to emphasise the role of migration in driving population growth and affecting the composition of the population and the labour force.

It is absolutely clear that countries with large populations and countries with small populations can be equally prosperous. And more rapid population growth is not necessarily associated with higher *per capita* income growth. There are other important factors at play.

For studies that use models with the assumption of constant returns-to-scale and the standard national accounting framework, a typical result is that the impact of population growth via an increased migration intake is small, lagged and positive. Moreover, the gains largely accrue to the migrants, although the research of Docquier et al (2010) points to an increase in average wages across-the-board for Australia. In addition, some segments of the existing population can gain from immigration-driven population growth (for example land owners and developers, employers facing labour shortages and consumers of labour-intensive services).

Interpreting the economic research on the impact of migration is made difficult because the nature of models, and the assumptions contained in them, can significantly affect the answer to the question. As a consequence, there are reasons to rely on the research about the labour market impacts of migration that is subject to fewer qualifications. We note the importance of the distinction between migrant workers being either substitutes of or complements for local workers. The research in this area cannot be regarded as settled; however, the evidence suggests that migrant workers are complements for a number of categories of local workers. Taking into account demand at a macro level, real wages overall appear to rise with an increased migration intake.

New theories about the economic impact of population growth and migration highlight the importance of new ideas, the diffusion of those ideas and the benefits of large cities. By the same token, there are clearly offsetting costs associated with rapid population growth and larger cities. Optimal policies to deal with this scenario are useful, but do not entirely remove the costs for incumbents. Many of these new theories are not highly amenable to empirical research; they are interesting nonetheless.

Overall, there is an argument, albeit not an overwhelmingly strong one, that a country can be well-served by implementing a measured migration program focused on skills.

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4.2
Urban infrastructure and land use

Henry Ergas

Professor Henry Ergas is Senior Economic Adviser, Deloitte, and inaugural Professor of Infrastructure Economics at the University of Wollongong's SMART Infrastructure Facility. From 1978 to 1993 Henry was at the OECD in Paris where among other roles he headed the Secretary-General's Task Force on Structural Adjustment and was Counsellor for Structural Policy in the Economics Department. He has taught at a wide range of universities, including the École nationale de la statistique et de l'administration économique in Paris (1980–1990), the Kennedy School of Government at Harvard (1994–1995) and Monash University in Melbourne (1988–1990). He chaired the Intellectual Property and Competition Policy Review undertaken by the Howard Government in 1999–2001, and was a member of the Export Infrastructure Review in 2005. Henry is a lay member of the New Zealand High Court and a columnist for The Australian.

Concerns about urban infrastructure are central to Australia's population debate. A survey undertaken for the Productivity Commission in 2011 found 51 per cent of respondents "would not like increased population" compared to only 11 per cent who "would like it", with the proportions rising to 64 per cent and nine per cent respectively in Sydney. When asked why a greater population was undesirable, the overwhelming response was increased traffic congestion, with other major factors cited being increased noise, loss of street appeal and other amenities, and more crowded public transport.[1] Rightly or wrongly, Australians seem to feel the urban boat is full, if not already perilously overcrowded.

Those perceptions have important policy implications. Although the current resource boom has attracted some recent arrivals to remote mining communities, the long term experience is that 90 per cent of new migrants settle in the major cities. If the urban infrastructure struggles to cope with current population, a sustained increase in migration would likely prove as socially costly as it would be politically contentious.

This essay examines those strains and current and possible policy responses. In doing so, I start by summarising some important characteristics of our urban system as land use patterns and urban infrastructure requirements are intimately linked. I then examine how policies have developed in recent years, with a focus on land use and on the provision of public utility services and transport infrastructure. Having assessed the efficiency and effectiveness of those policies, I conclude by reviewing some elements of possible reform.

Major findings

First, Australia has long had a settlement pattern characterised by high levels of urbanisation in cities that by international standards have low population densities. This reflects relatively high and equally distributed incomes combined with the abundant availability of land. However, a low density settlement pattern has implied substantial infrastructure needs as population expands. Financing those infrastructure needs has largely been a matter for State Governments (albeit with assistance from the Commonwealth), which have also exercised primary control over the timing and location of development.

Second, in recent years, State Governments have sought to control those infrastructure costs both by increasing efficiency in infrastructure provision and by promoting denser settlement patterns (a goal usually referred to as "densification").

Third, there is some evidence that at least initially, these efforts at controlling infrastructure costs succeeded, as output growth in infrastructure services accelerated relative to input growth. However, that trend appears to have hit significant limits and since the mid-2000s, has reversed.

Fourth, governments have also succeeded in promoting denser settlement patterns, largely by constraining land availability at the city fringe and rezoning land to in-fill development, where necessary over-riding local residents' objections to densification. However, there are substantial reasons to doubt those policies are effective in dealing with issues such as congestion, and even stronger reasons to think they are likely to be inefficient and inequitable.

Fifth, a better policy approach to urban infrastructure would involve a greater role for prices, rather than command and control instruments. Instruments such as congestion charging are obvious candidates in this respect. However, it is not clear that the costs of congestion in any Australian city are near the levels at which it would be worthwhile

bearing the fixed costs congestion charging involves. Moreover, it is a mistake to think congestion charging would resolve the concerns existing residents could properly have about increased population: unless the income from the charges was recycled to those existing users, they would still likely be worse off, and almost certainly so as a group.

Sixth, better price signals also have an important role to play in land use decisions. It makes little sense to prevent fringe development if potential residents are willing to bear the full costs it involves. But for informed decisions to be made in that respect, decision-makers must face those costs. Equally, it does not make sense to force local communities to accept densification when the costs it imposes exceed the benefits. However, at the moment local communities bear a far larger share of the costs densification imposes, than they garner of the benefits, giving them incentives to be unduly restrictive. This, in turn, provides an excuse for State Governments to limit the role local communities play in land use decisions. A better response would be to decentralise local taxing, spending and settlement decisions to local councils, as that would improve the incentives local residents faced, encouraging them to approve development where its benefits exceed its costs, and oppose it otherwise.

The Australian settlement system

To understand the pressures on Australia's urban infrastructure, it is useful to start with eight salient features of our population geography.

First, from the earliest days of European settlement, Australia was a highly urbanised society and that urban focus has persisted to the present day. By 1911, the capital cities accounted for nearly 40 per cent of the population, with that proportion rising to over 60 per cent in 1961 and to around 65 per cent since then.

Second, although secondary cities have long been important in New South Wales and Queensland, the capital city has been dominant in all states and that dominance has become more pronounced, thanks partly to the decline in specialised centres of heavy industry such as Wollongong, Whyalla and the Latrobe Valley. Thus, areas of rapid urban growth in recent years, for instance, the Gold Coast in Queensland and the Hunter in New South Wales, have been, or have tended to become, part of greater conurbations centred on the capital city.

Third, the other side of this metropolitan dominance is the stability of the urban hierarchy, so that while the relativities between the capitals have changed, there has not been significant entry or exit into the hierarchy of larger cities since the formation of Canberra (which was a political decision, rather than the result of economic processes). To that extent, the barriers to the emergence of competing urban centres seem high, at least compared to the United States, despite relatively high population mobility. Competition has therefore been largely between incumbent cities.

Fourth, a consequence of the dominance of the capital city is that from the outset, governance of the major urban areas has been fairly tightly controlled by State Governments rather than vested in genuinely independent local bodies. All states delegate a range of taxing and spending functions to local governments, but even those functions are typically subject to substantial oversight and control by State Governments, especially as they bear on the capital city. As well as tending to entrench the capital city's dominance, this results in a complex structure of metropolitan governance, with blurred, frequently changing and often overlapping responsibilities between and within state and local bodies.[2]

Fifth, population concentration in a small number of capital cities has been accompanied by substantial population dispersion within those cities. Sydney had relatively high levels of population density in the 19th century, but even its 1891 average density of 54 people per hectare in the central areas hardly compared to the 675 per hectare of Chicago's then most populated district. And while topography hindered Sydney's expansion and to a degree Brisbane's, the other capital cities grew by spreading out: Melbourne, for example, covered a land mass twice Sydney's in 1891, despite having a population that was only 20 per cent larger. Moreover, once transport improvements were made in Sydney as of 1900, it too spread out rapidly, with a building boom in the 1920s establishing or expanding new suburbs to the west (such as Granville and Bankstown), the south (Rockdale) and the north (Willoughby and Lane Cove). A similar process occurred somewhat later in Brisbane, where it continues to the present day.

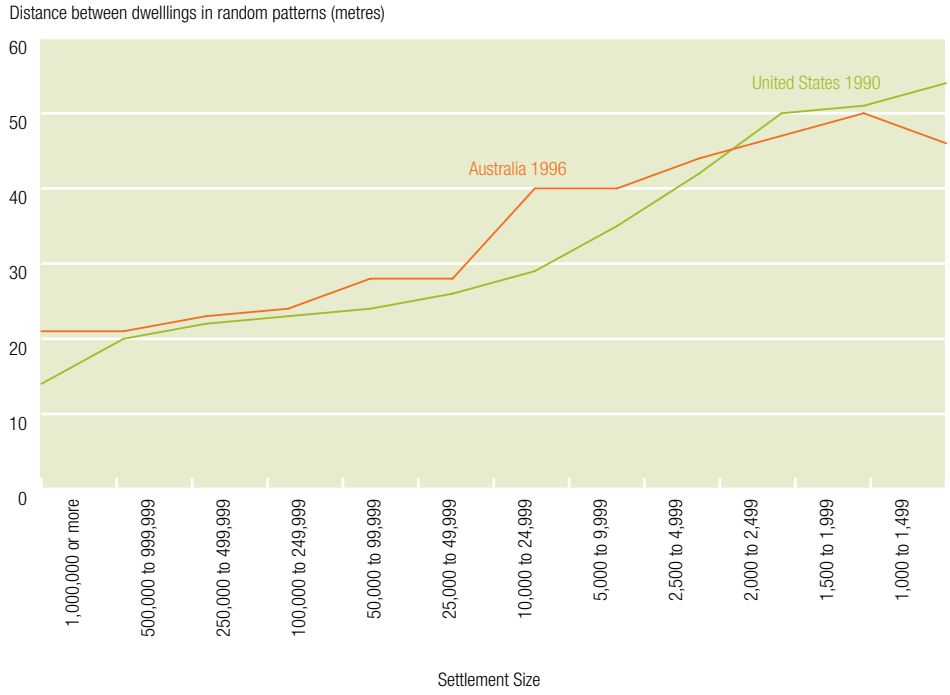
Sixth, this extensive form of suburban development has also been associated with relatively large lot sizes, so the distance between residences is high. This makes effective population density all the lower, even compared to the United States. While such comparisons are always difficult, Table 1 and Figure 1 present a relatively careful comparison for the 1990s, from which two conclusions emerge: at all levels in the urban hierarchy but the smallest, densities are lower in Australia than in the United States,

TABLE 1
CUMULATIVE DATA ON POPULATION AND HOUSING, AUSTRALIA 1996 AND THE UNITED STATES 1990

SETTLEMENT SIZE:	1,000,000 OR MORE	500,000 OR MORE	250,000 OR MORE	100,000 OR MORE	50,000 OR MORE
Australia					
Population	8,460,170	9,434,161	10,261,295	11,066,917	11,602,493
Dwellings	3,321,312	3,734,284	4,080,120	4,414,006	4,627,008
Area (sq km)	5596	6320	7049	7804	8464
Population density per sq km	1512	1493	1456	1418	1371
Dwelling density per sq km	594	591	579	566	547
Dwelling spacing (random pattern)	21	21	21	21	21
% of total population	48	53	58	62	65
United States					
Population	19,952,631	30,059,815	44,644,821	64,347,655	88,375,100
Dwellings	8,133,674	12,347,953	18,699,547	26,808,387	36,561,577
Area (sq km)	6330	13,220	25,358	42,428	63,940
Population density per sq km	3152	2274	1761	1517	1382
Dwelling density per sq km	1285	934	737	632	570
Dwelling spacing (random pattern)	14	16	18	20	21
% of total population	8	12	18	26	36

Sources: Australian Bureau of Statistics, 1996 Census, unpublished data.
United States Bureau of the Census, *1990 Census of Population and Housing: Population and Housing Unit Counts, United States.* 1990 CPH-2-1

FIGURE 1
INDICATIVE DWELLING AND SETTLEMENT SIZES



and especially so for the largest (million plus) cities; and the indicative average distance between dwellings (or more strictly between the centre of each dwelling) in Australian million plus cities is 21 metres, compared with 14 metres in the United States. This imposes relatively high capital costs on reticulation networks, such as those for electricity, telecommunications and water and sewerage.

Seventh, while Australian suburbs initially developed as a sprinkling of houses close to railway or tram lines with new lots being taken up over a period of several decades, access to petroleum-fuelled buses and to affordable motor cars gave population dispersion renewed impetus as of the 1920s. But since employment remained concentrated in the central business districts, the result was a settlement pattern extremely reliant on urban transport, with the annual distance travelled, in passenger kilometres per capita, rising from 5.8 thousand in 1945 to around 13.5 thousand today.

Initially, that burden fell on public transport: already by 1900, the public transport systems in the capital cities handled some 200 trips per annum per head of population, with that number more than doubling in the period to the end of the second world war. Increases in car ownership, however, dramatically reduced public transport's share of travel in the 1950s, with car travel first exceeding half of all metropolitan passenger kilometres in the late 1950s before rising to 80 per cent in 1975. Since then, the car share of metropolitan passenger kilometres has stabilised at between 80 and 85 per cent, while the number of annual public transport trips per capita fell from a peak of 442 in 1945 to 105 in 2010.

Eighth and last, the process of suburbanisation – which as well as abundant land and low construction and transport costs reflected high, relatively equally distributed, incomes – was accompanied by very high levels of home ownership, with owner-occupiers accounting for some 50 per cent of residential dwellings in 1901, compared to less than 10 per cent in the UK. Today, homeowners (including those who own their home outright and those in the process of acquiring it) account for around 85 per cent of houses (which themselves account for 80 per cent of metropolitan dwellings) and for about 45 per cent of flats. Reflecting widespread home ownership, the ABS has

estimated that residential real estate accounted in 2006 for 66 per cent of household assets. As a result, changes in local amenities, to the extent to which they are capitalised in land values, have a large and concentrated impact on household wealth.

In summary, the Australian urban structure has been dominated by a small and stable group of sprawling primary cities, with very low population density, large lots, costly social overhead capital and high transport needs. Their governance has involved fairly weak local governments operating in a context where voters are highly exposed to, and hence very sensitive to, housing prices.

The evolution of policy

This is the backdrop against which substantial pressures emerged in the last two decades, reflecting a mix of economic, political and social changes. These changes include tighter fiscal constraints on State Governments, accentuated by greater voter intolerance of budget deficits; widespread moves to reform infrastructure services, including by corporatising and in some cases privatising utilities while seeking to better control losses on, and subsidies to, public transport providers; a perception (backed up by opinion polls) that the electorate is becoming more volatile, not least because of the emergence of "aspirational" voters in once working class suburbs, increasing the risk faced by incumbent governments; and greater environmental consciousness and the rise of green voters, especially in the inner cities, including as a result of alarming (and often alarmist) claims about environmental risks.

Simplifying somewhat, the reaction to these changes has involved two major elements: a greater reluctance by State Governments to invest in infrastructure and other forms of social overhead capital ahead of demand, a reluctance accentuated by pressures on newly commercialised utilities to meet rate of return targets; and the attempt to reduce or at least defer infrastructure spending – and also meet claimed environmental objectives – by using planning laws to promote denser settlement patterns, i.e. to direct expansion in the dwelling stock towards in fill rather than continued spread of the urban fringe.

Controlling infrastructure spending

There is some evidence that efforts to control infrastructure spending were initially highly effective, at least in the sense that the existing capital stock was used more intensively.

To examine these impacts, I use the contribution approach developed by Dean Parham for the Productivity Commission. This approach decomposes into sectoral growth rate trends in multifactor productivity, which is broadly the ratio of outputs to inputs (so changes in multifactor productivity are the result of changes in outputs, and their growth rates, compared to changes in inputs). For example, if a sector adds more to overall input growth in the market sector as a whole than it adds to the market sector's overall output growth, then on balance, it reduces growth in the market sector's multifactor productivity. The contributions approach therefore allows one to examine input, output and productivity trends for individual sectors and their contribution to the aggregate input, output and productivity trends for the market sector.

Applying this approach to the infrastructure industries shows that they recorded strong productivity growth in the period following the reforms of the early 1990s – but also that that trend was subsequently reversed.

Taking the electricity, gas and water sector as a whole, its contribution to the market sector's aggregate input growth over the 1993–94 to 1998–99 productivity cycle was less than half its contribution to output growth, so that (with about one per cent of the market sector's input growth) it accounted for about three per cent of the overall improvement in multifactor productivity (MFP). Equally, transport (to which the ABS attributes the road capital stock) had a contribution to the growth of inputs in this period that was just over half its contribution to the growth of outputs. While it accounted for some 8.7 per cent of input growth, it therefore contributed 10.6 per cent of the increase in MFP.

However, by 2003–04 to 2007–08, during the most recent (and likely incomplete) productivity cycle, both these sectors' contributions to MFP growth had deteriorated greatly.

While input growth in the market sector as a whole doubled in the more recent cycle compared to the period from 1993–94 to 1998–99, input growth in electricity, gas and water increased nearly 10-fold, with strong increases in both capital and labour inputs. Since the sector's contribution to market sector output growth actually fell (from 0.09 percentage points per annum to 0.03 percentage points per annum), it accounted for a significant share of the fall in MFP: contributing –0.17 percentage points per annum to the –0.2 aggregate annual decline.

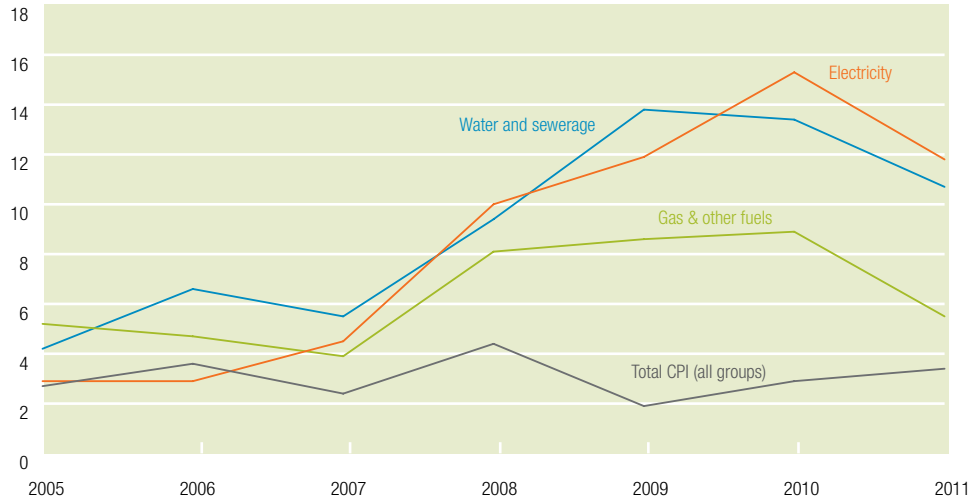
The outcomes for transport were less extreme, in that while the annual contribution to input growth nearly doubled (almost entirely because of an increase in the capital stock), the contribution to output growth increased too, albeit very slightly. As a result, the transport sector's contribution to annual market sector MFP growth declined markedly but remained (barely) positive, going from 0.19 percentage points per annum in the earlier period to 0.03 percentage points in the most recent cycle.

In short, taking the difference between the initial and most recent cycles in annual percentage point contribution to market sector MFP growth, the contribution for electricity, gas and water declined by 0.24 percentage points per annum while that for transport declined by 0.16 percentage points per annum. In both cases, the change appears to be the result of an unrequited acceleration in input growth, with an especially marked rise in the incremental capital/output ratio.

The simplest interpretation of these trends is that the earlier phase involved a deferral of outlays on inputs – a "squeezing of the lemon" – that reached limits in terms of some mix of economic and political acceptability. As those limits were reached, decisions were taken that either expanded capacity directly or imposed capacity expansion. Those decisions included the construction of extremely costly desalination plants; increases in reliability standards for electricity networks, subsequent to serious network failures in both Sydney and the greater Brisbane region, with the cost impacts of those increases being magnified by regulatory requirements imposing greater use of renewable energy sources; and greater spending on transport, with the ABS estimate of the value of the road capital stock increasing by 18 per cent over the period from 2006–07 to 2010–11.

From the point of view of consumers, the most direct impact of this change was a material increase in utility bills, highlighted in Figure 2.[3] The initial wave of corporatisation and of reform generally had allowed price decreases; now, prices have been rising and seemed set to rise further. By and large, demand for utility services is highly inelastic, with the result that much of the impact of rising relative prices involves reductions in real incomes rather than substitution to other goods and services.[4] Moreover, consumers tend to be more aware of utility bills than of many other expenses – because of their

FIGURE 2
AVERAGE ANNUAL CPI GROWTH IN AUSTRALIA



Source: Australian Bureau of Statistics, 6401.0, Dec-2011

size and periodicity, the absence of alternatives, and the extreme consequences of disconnection – making the pain associated with such sustained, on-going increases all the more acute.

High consumer sensitivity has also attached to the transport system, though with access largely either not priced (as for most roads) or heavily subsidised (as with public transport), the form the problems take differs. Rather than involving direct monetary outlays, the consumer cost comes mainly in the form of degradation in service quality, most notably congestion. And the perception has been that these costs have increased: on the roads, with somewhat slower traffic speeds at peak and the peaks themselves lasting longer; and on public transport, with greater crowding and some reduction in service availability.

While estimates of these costs are controversial, it is difficult to deny that there are indeed areas of severe congestion in the Australian transport system. For example, Sydney's Eastern Distributor (the M1), the M5 East Motorway and the Concord to Lapstone section of the Western Distributor (the M4), are all congested 13 or more hours a day. Moreover, most of the main Sydney links – the harbour crossings, the M5 and the M5 East, Southern Cross Drive and the M7 – average over 20,000 vehicles per lane daily, which is close to or exceeds theoretical carrying limits, and other major links (such as the Eastern Distributor, the M2 and the M4) are not far behind. Yet projections (again, controversial) are that traffic on the M5 will double by 2031, while traffic generally in the Sydney area will rise by around 80 per cent. Similar accounts could be given for at least Brisbane and Melbourne, with the latter also suffering congestion issues on parts of its public transport network.

There is, as a result, an impression that here too the "squeezing of the lemon" has reached its limits, or will soon do so: with consequent pressures for increased outlays. The obvious question this raises is the extent to which these scarce resources – be it of utility infrastructure or of transport links – have been provided and used efficiently. But putting that efficiency question aside for a moment, what is nonetheless clear is that if the intention was to avoid increased outlays by reshaping settlement patterns, that goal has not been achieved or at least, has only been achieved to a modest extent.

Promoting better land use

This brings me to the land use aspect of the urban policies pursued in recent years. As noted above, these have sought to contain the costs of population growth by promoting what is generally referred to as "densification" through a combination of restrictions on the size of the urban area, the availability of land at or on the city fringe relative to the scope for in fill development (such as the construction of units in existing suburbs), and the extent of charges imposed on developers as contributions to infrastructure costs.

While these measures have been implemented in different ways in the various jurisdictions, the common theme has been a desire to reduce the urban sprawl that has been the most pronounced and persistent feature of Australia's settlement pattern. Moreover, in doing so, State Governments have almost invariably clashed with local communities, not merely by imposing zoning and land use decisions that conflict with those taken by local bodies but also by transferring powers over land use away from elected local bodies to ministers or to entities appointed by ministers and, in several states, by narrowing or even eliminating appeals against planning decisions.

While any such statement is obviously a rather grand generalisation, it seems fair to say that as planners and state governments became more attached to denser development, local communities became increasingly opposed to it. And although local councils have often been able to hold up densification, they have rarely been able to prevent it altogether, as state governments typically have ultimate control. In contrast, state governments have had, and exercised, the ability to prevent development on the urban fringe, or failing that, to make locating there less attractive by limiting infrastructure provision in fringe areas. The result has been a tug of war over land release and zoning that raises obvious questions about efficiency.

From an efficiency perspective, there is nothing inherently undesirable about "sprawl", i.e extensive land settlement. After all, land is a normal good, and hence demand for it will rise with income. So long as households value extending the urban fringe at more than its costs, the mere fact that those extensions involve increases in social overhead capital and in travel times should be neither here nor there.

Similar considerations apply to local decisions about housing density: if local residents prefer a dispersed settlement pattern, with large, uniform, lots, to a denser pattern interspersed with small plots or multi-story dwellings, there is nothing inherently undesirable about those preferences. Indeed, so long as the local residents, in taking the decision to impose dispersed settlement (or oppose densification), face both the costs and the benefits to which it will give rise (an assumption to which I shall return), that decision is likely to be more efficient than one taken centrally.

Nor is it surprising that local residents might become more restrictive of potentially undesirable land uses over time. Amenity is not only a superior good but also a local public good, and hence its demand should be summed vertically. As the population in an area rises, the value placed on a given level of amenity will rise, but the gain to the individual undesirable land user (say, a polluter or other generator of negative externalities) from locating in the area may not. As a result, the efficient degree of restrictiveness is likely to increase as population and income rises.

But none of this denies that in practice, there may be, and likely are, factors that induce an inefficiently high level of urban dispersion. Four such factors stand out.

The first, and surely largest, is the tax system, and notably the tax preference to owner-occupied housing. That preference includes the exemption from income and consumption taxes of imputed rent; the exemption of owner-occupied housing from capital gains tax and from the means and assets tests for social security payments,

especially the pension and aged care benefits; and the tax exemption of imputed income from unpaid household labour. All these amount to a sizeable subsidy to land use, as land is a large part of what is purchased in the purchase of housing.[5]

A second set of inducements to excessive dispersion comes from the under-pricing of goods and services that are complements to extensive land use. These include local public goods, such as schools, hospitals and police services, where homeowners do not face the incremental costs arising from their settlement decisions; and the absence of congestion charges on roads, which create a wedge between the social cost of an added resident at the city fringe and the private cost that added resident bears.[6] The fuel excise does somewhat cut the other way – as it exceeds the marginal social cost of road use[7] on all but the most congested urban roads – but that is unlikely to be sufficient to eliminate the net subsidy these price distortions provide to extensive land use.

Third, misalignments between the distribution of costs and that of benefits distort decision-making in a way that could induce excess dispersion. In particular, the costs of densification, in terms of reduced amenity, typically fall on local communities; but given constraints on rates (notably in New South Wales) and more generally on council taxing and spending, local homeowners are unlikely to capture much of the benefits. This can create incentives to oppose rezoning decisions that increase density even if those decisions' overall benefits exceed their overall costs. Somewhat perversely, the likelihood of that occurring is accentuated by State Government decisions that impose binding urban growth boundaries. That can confer on local councils a degree of monopoly power, which, when exploited, translates into unduly restrictive land use decisions.

Fourth and last, distortions in labour markets may induce excessive decentralisation of employment. An industrial relations system that ensures unionised employees receive compensation packages that exceed their opportunity cost, will result in firms moving towards areas with low land rents (to reduce their input costs) up to the point where the resulting increase in commuting costs for their workers forces the real wage back to the competitive level. This substitution of low priced land for high priced labour imposes social losses in the form of excess commuting and the possible sacrifice of economies of agglomeration.

Given these factors, it is not necessarily inefficient for governments to "lean against" the pressures to population dispersion. And there is little doubt the "densification" policies have had some effect, as the density of Australian urban settlement has indeed increased, though some of that increase might well have occurred in any event. However, what is more questionable is the efficiency of the ways in which denser settlement has been pursued.

As a general matter, urban growth boundaries are not an efficient response to distortions such as the absence of congestion charging. In effect, congestion charges would increase land rents at or near the city centre while reducing them on the city fringe; in contrast, a binding urban growth boundary increases land rents at all locations.[8] This will induce inefficient substitution of capital for land, with the exact outcome depending on the degree of substitutability between these factors and on the extent to which population can shift to land located on the rural side of the boundary. Put slightly differently, using a growth boundary to force development in a central city may avoid inefficient commuting but it does so at the expense of inefficient use of capital.

Moreover, the restriction will distort the supply of housing, reducing its aggregate amount while shifting its composition away from low-cost, low-quality homes. Thus, while tax

preferences to homeownership raise the demand for new, high-quality housing, a binding urban growth boundary will cut its supply. This will increase prices in the quality range, low to high, (or building interval) in which buildings are produced in the market[9], in a way that tax preferences cannot (without a restriction on land availability, prices in the building interval are determined by long run construction costs, which can be assumed to be constant). In turn, higher prices for higher quality homes will reduce the incentives to downgrade, allowing the housing stock to deteriorate and reducing the supply of low-quality, low-cost housing. There is consequently a distortion to the quality spread as well as to supply in aggregate, with the costs falling disproportionately on low-income households.

Finally, and still as a general matter, these inefficiencies and inequities will be accompanied by a significant degree of ineffectiveness, especially in dealing with congestion.

Even in the simplest model of a circular city with evenly spaced population working in a city centre, the elasticity of the city radius with respect to density is exactly –1/2, so that an increase in density of one per cent reduces the radius by only 0.5 per cent. This means ever larger increases in density are needed to reduce the radius, and hence achieve any given proportionate reduction in travel times. Moreover, in practice, the costs of increasing density are likely to rise very rapidly with the target level of density increase, not merely because of diminishing marginal returns to capital/land substitution but also because of the constraints imposed by existing settlement patterns and road structures. And to make matters worse, almost any feasible increase in density is likely to have only minimal impacts on public transport use, as it is unlikely to bring densities in any Australian city above the levels at which high frequency service can be justified, with the increasingly decentralised structure of employment making any public transport benefits all the more improbable.[10]

There is consequently a risk that the main effect of forced densification will be to simply waste capital while increasing local congestion in the areas rezoned to denser settlement.[11]

All of these problems have been compounded by the way the densification goal has been pursued, notably in New South Wales. An incoherent policy mix has combined very tight restrictions on land availability at Sydney's urban fringe with capping of local council rates, reducing the incentives of local councils in the in-fill area to accept denser uses whose benefits they cannot appropriate. The resulting supply shortage has created enormous gains for those who can extract planning approvals[12]; and with the Labor Government allowing selective, centrally determined, rezoning, the outcome has been a system as tawdry as it is inefficient.[13] The harm caused is then magnified as the predictable reduction in the availability of low cost housing has driven low income earners to areas very poorly serviced by public infrastructure, truly remote from jobs and at high risk of concentrating social problems, with all these disadvantages reflected in an increasingly steep housing/distance curve.[14]

Doing better in future

In short, Australian cities have at best postponed, rather than resolved, their difficulties. As the resulting tensions come to the fore, it is unsurprising that local residents are reluctant to accept sustained population growth. The question then is whether there are policy changes that might ease the current constraints. Four points can be made in this respect.

First, particularly in the area of land use, **clearer policy objectives** would help. Land is a resource like any other; the goal of policy should be to ensure it is used efficiently. Subject to avoiding monopoly pricing, policy ought to aim at maximising land's unimproved value, which implies ensuring its allocation to most highly valued uses.[15] In contrast, the general approach to land use policy in Australia is to define a smorgasbord of often conflicting and poorly thought through objectives, as the Council of Australian Governments (COAG) has recently done.[16]

COAG's "capital city strategic planning systems criteria" includes elements such as "social inclusion, health, liveability, community wellbeing, and matters of national environmental significance", as well as "encouraging world-class urban design and architecture," apparently without regard to cost, and in any event with no indication of how trade-offs between these myriad goals should be evaluated. To make matters worse, despite nine primary criteria and over 20 sub-criteria, COAG's list does not include ensuring efficient use of land. Given such confusion at the body that is supposed to be providing strategic guidance, it is hardly surprising land use outcomes are unsatisfactory.

Second, in terms of the instruments that should be used to pursue those objectives, **better pricing** has a key role. In respect of infrastructure such as electricity, gas and water, there is a strong case in equity and efficiency for ensuring additional users bear the incremental costs of their supply, most directly through developer charges for the capital costs of extensions. This contrasts greatly with the current arrangements, which limit developer contributions and set user charges largely on the basis of averaged costs, with a significant element of geographical averaging. This results in encouraging inefficient settlement dispersion and penalising conservation. Matters are more difficult in respect of schools and other social services, but a move to vouchers, rather than direct provision, could help, were the voucher amount set to the marginal cost of efficient system expansion.

As for roads, the great merit of congestion charging is that it is a method of increasing the efficiency of road use that is not undermined by demand response: that is, by the fact that a reduction in congestion due, say, to capacity expansion, will induce short and long run traffic adjustments (Downs' "triple convergence"[17] in the short run and changes in location in the long run) that tend to return delays to their original level. As a result, congestion charging can increase the social return on efficiently timed capacity expansion, i.e. on building new roads or increasing the carrying capacity of existing ones, as the benefits are not dissipated through open access (which – in the classic but admittedly extreme case of perfectly elastic demand – would otherwise push use up to the point where all surplus was exhausted). Moreover, the price signal can help determine when capacity expansion should occur. And the gains will be all the greater if users have significantly different valuations of time, and charging allows the road surface to be allocated to those who value it most.

But congestion charging is certainly not a no-brainer. To begin with, any practical system of congestion charging has high costs, and given those costs and current levels of congestion, it is not clear there would be net benefits from city-wide congestion charging

in any Australian urban area. Moreover, congestion charges reward governments that have underinvested in the reduction of congestion and could encourage monopoly pricing of roads. The interaction of congestion charges and existing taxes can also lead to increases in effective marginal tax rates on labour effort, causing deadweight losses.

Additionally, the conventional analysis of congestion charging assumes a dollar is a dollar, so the revenues transferred to government are a mere transfer. However, if some of those revenues are wasted, then the transferred revenues should be valued at less than a dollar, i.e. there is some shrinkage along the way, with that shrinkage itself being a welfare loss. If there is such waste (say on ill-conceived public transport projects), then it takes proportionately very little of it to eliminate any efficiency gains from congestion charging.[18]

Last but not least, congestion charging will not remove the harm caused to existing residents by rapid population growth. To see this, assume the policy question is whether the incumbent motorists, i.e. those who used the road originally, are better off. The answer is that they will not be, in the absence of special income transfers back from government, as motorists as a group are worse off.[19] Abstracting from the use of the revenues, their welfare with the charge in place will be lower than it was without it, and presumably even lower than it was prior to the increase in migration. So congestion pricing, whatever its potential merits, is not a panacea and at least as matters now stand, the case for its implementation has not been made.

This brings me to the third policy prescription, which is **better governance of urban infrastructure**. It hardly needs to be said that there are still major weaknesses in the management of public transport. Again, New South Wales provides an extreme case, with costs per passenger kilometre in the Sydney rail system that are 40 per cent higher than those in Melbourne[20]: and Melbourne itself is no model of efficiency, especially in terms of track utilisation and the timeliness of capacity expansion.

Moreover, it is clear that we still do not do a good job of selecting major infrastructure projects – as highlighted by the now notorious case of the East-West rail project in Victoria, which was the top project recommended for funding in 2009 by Infrastructure Australia despite the fact that its costs were determined "on the back of a fag packet" by the then Victorian Labor Minister of Transport, the Commonwealth Infrastructure Minister and the head of the Victorian Department of Transport[21] and despite a cost-benefit appraisal that involved double counting of benefits and serious errors of analysis.

Nor has the attempt to introduce commercial disciplines by relying on Public Private Partnerships (PPPs) been a clear success. While these may have merits in terms of productive efficiency, their use has complex, and often undesirable, impacts on the quality of public administration. In particular, because the incentives are high-powered (i.e. the private party secures substantial gains from reducing costs under the contract), these arrangements increase the returns to rent-seeking and to tainted deals between governments and private sector suppliers. Particularly with PPPs, the effects are then three-fold: they concentrate the gains from the project (as some share of these is now captured by the private participant), and by so doing, increase the pay-offs from collusion between the public decision-maker and the project's private beneficiaries; they allow crucial aspects of the project to be cloaked in commercial confidentiality, reducing the transactions costs of collusion; and they relax (or, more properly, are widely but incorrectly claimed to relax) the public sector budget constraint. Each of these effects induces a deterioration in the efficiency of decisions and overall outcomes.[22]

Ultimately, PPPs are only as good as the governments that make them; and given governments intent on poor decisions, PPPs can not only make those decisions more (privately) profitable but allow them to be locked in through long term, judicially enforceable, contractual commitments. With scant transparency and limited public accountability, the predictable result is poor, but extremely costly, infrastructure decisions.

A fourth and final area then is **improved transparency and accountability**. While there are many dimensions to this, some of the greatest gains in the efficiency of Australian urban infrastructure, and hence in its ability to meet the needs of a growing population, could come from real decentralisation of taxing and spending decisions: that is, from a move to local governments that relied on land taxes to fund the construction and operation of social overhead capital, and that had autonomy in deciding both on the quantum of that capital and on the local settlement pattern.

The recent trend, in contrast, has been to reduce or constrain the role of local communities in planning decisions, including by restricting rights of appeal. That trend has suited some state governments, as it has allowed them to capture the rents from the exercise of discretion in determining planning applications; but is difficult to find any justification for it in considerations of efficiency.

After all, capitalisation into land prices provides a powerful signal of the efficiency or otherwise of the provision and financing of local public goods, as well as of the efficiency of land use decisions. Local homeowners, who are directly exposed to those changes in land prices, should therefore be well placed to assess the net welfare implications of planning decisions, especially if they also face the costs of those decisions. Moreover, for most local public goods, financing through land taxes, which would be an essential element of such a decentralisation, would be far superior to other forms of cost recovery.[23] Overall, local governments that were responsive to local homeowners, and sought to maximise the net value of land, would have clearer incentives to take efficient decisions in each of these respects than state governments or even more so the Commonwealth.

This could no more bring us to nirvana than any other system of government, and would doubtless involve real problems of coordination; but could it really do worse than what we now have?

I am grateful to Peter Abelson, Geoff Cohen, Mark Harrison, Dean Parham, Jonathan Pincus and Alex Robson for very helpful comments on earlier versions of this essay. However, the views it expresses are strictly my own.

Endnotes

1 Productivity Commission, *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*, 2011, pages 28–29.

2 Since the Whitlam government, the Commonwealth has also intruded, and at least the current Gillard government seems determined to do so even more in future, further confusing the chain of accountability.

3 Water users were also affected by water rationing, which amounts to a price increase (with the added inefficiency that comes from not allocating the scarce resource to those who value it most highly).

4 In other words, income effects are large compared to substitution effects.

5 Land is also a complement to unpaid household work and hence the exclusion from taxes of the imputed income from that work amounts to a subsidy to land. Moreover, with land tax-favoured, there will be a subsidy to private car ownership, as garages take up land and are a complement to car ownership. This garage subsidy accentuates the impact of the non-pricing of congestion and partly offsets the impact of fuel excise taxes that (other than on congested routes) exceed the marginal social cost of urban road use.

6 This effect is clearly starkest with radial transport patterns, where residents at the city fringe commute into town.

7 That is, the cost of otherwise avoided road wear plus externality costs from pollution, noise and the uninternalised component of accident costs.

8 In other words, while congestion charges make the bid-rent curve steeper, shifting in the point at which it intersects the x-axis, a binding urban growth boundary shifts the entire curve up. The exception is the pure open city model, where a city that inefficiently restricts its size simply bears the costs in terms of reduced population and where rents are pegged down by competition between cities. However, the assumptions underpinning that model are unlikely to hold, at least in the short run, for large cities such as Sydney.

9 The quality range in which housing is built is called the building interval. The underlying notion is that the most efficient way to provide low quality, low cost housing is to build higher quality, higher cost housing and allow it to depreciate. Given that, there will, under normal conditions, be a lower boundary to the quality at which housing will be built, and an upper boundary above which there is no demand. The resulting range is referred to as the building interval.

10 Even in a monocentric city, viable, high frequency public transport requires some 2,000 people per square kilometre. Sydney's population density is about 370 people per square kilometre.

11 Indeed, as is readily shown, rezoning to in-fill may even reduce density, at least in the central business district. Thus, assume capital and land are good (but plainly not quite perfect) substitutes. That means small decreases in the price of land cause large decreases in the density of development on that land. Now, rezone an area to get rid of the park in an inner suburb. The first level of response is that the boundary of the metropolitan area moves in. This reduces land prices everywhere, but reduces them most adjacent to the central business district. So of all still inhabited areas, the reduction in density is greatest right next to the urban centre. This will force the boundary of the metropolitan area out further, closer to where it had been before the change in zoning. Indeed, lower land prices everywhere lead to lower densities everywhere, and so the boundary could go back very close to where it had been before.

12 The Australian Financial Review reports, for example, that three houses in lower North Sydney were each valued at $1 million when zoned for low-density residential use. Once rezoned to mixed use, they sold for $14.5 million, an increase of 400 per cent. See B. Hurley (2011), 'Smart Owners Reap Windfall', The Australian Financial Review, 9 March, p3.

13 In an open city model, with each urban area lacking market power in the market for urban locations, distorting a city's housing supply and allowing its amenity to deteriorate (as the New South Wales government has done) would simply reduce land prices and incomes in that city, with the balance between the land price effect and the income effect depending on how amenities enter into the production function of firms. In practice, the New South Wales government seemed to act on the (likely correct) assumption that Sydney faces a downward sloping demand curve for location, at least in the short run, and hence that there was the scope to extract monopoly rents by restricting supply. It then seized those rents by taking control of land use decisions and effectively auctioning them off to its political supporters. This is plainly inefficient, as the "price" at which they were sold off reflected the willingness to supply of the political decision-maker, not the cost to Sydney residents. Moreover, such an approach raises the gains from monopoly, and hence increases the incentives to create monopoly power, as New South Wales government did by slowing the development of new housing lots.

14 The housing/distance curve relates house prices to distance from the city centre. Noting that the bid rent curve will be steeper than the housing/distance curve, Sydney is unusual among Australian cities in that this curve has become steeper, suggesting a rising price premium for inner areas. This may reflect rising congestion, but also the very low general desirability of housing on the city fringe.

15 As well as the caveat about avoiding monopoly pricing noted in the text, it is fair to note that in a complete model (in which households choose location to equalise utility while firms choose location subject to a zero profit constraint) changes in local amenity will be reflected in a mix of land value and income changes: in other words, should an area become more attractive, in equilibrium that will be reflected in a mix of increases in land rents and reductions in incomes. Obviously, the objective of policy should be to maximise the net worth derived from the land, which will encompass both these effects. That said, if the effect of amenities on the costs of production of mobile firms is small, the primary effect of changing the level of amenities will be on land rents and maximizing the unimproved value of land will provide a good approximation to the overall goal.

16 The criteria can be found at http://www.coagreformcouncil.gov.au/agenda/cities.cfm

17 When a transport link is improved relative to alternatives, transport will converge to it from other links, from other modes and from other times of travel. This is the process of 'triple convergence' first analysed by the economist Anthony Downs and reflected in "Down's law of traffic", which basically says that subsequent to a capacity expansion, travel times on a congested link will return to pre-expansion levels.

18 Obviously, there is also a social loss if charges are set at the wrong level (say, at a level that maximises revenue).

19 I am obviously assuming away two special cases – the one in which there is hyper-congestion, i.e. traffic is on the backward sloping part of the supply curve, and the one in which differences between motorists in the valuation of time are so large as to result in a net gain in motorists' welfare from the better allocation of road space.

20 This measure represents total working expenses plus long-run average capital charges divided by passenger kilometres. Sydney's unit costs per vehicle kilometer for rail are about 25 per cent higher than Melbourne's. In both cases, the comparison excludes trams.

21 (http://www.theage.com.au/victoria/baillieu-sorry-for-transport-blunder-20111120-1npe6.html)

22 That the officials negotiating the contracts stand to gain far less from them than the private parties only increases the risk of outcomes that adversely affect taxpayers. This is, of course, merely a form of the principal-agent problems that are pervasive in the public sector; giving higher power-incentives to one side of the relevant contracts can make those problems all the more acute.

23 This is because such taxes are borne by landowners and cannot be shifted onto other parties. Precisely because of this incidence, they are efficient, in the sense that the revenue the government gets is exactly equal to that landowners lose. This contrasts with most other taxes, where the loss caused by the tax exceeds the government's revenue gain, so taxpayers would be willing to pay more to the government to stop taxing them than the government collects from the tax. Of course, the efficiency of land taxes is subject to the important proviso that it is difficult to distinguish the value of land from that of improvements on it and that taxing improvements is not fully efficient. See generally Ken Henry and others, 2009, *Australia's Future Tax System: Report to the Treasurer*, pp.48 and follows.

4.3

Water security: Water for the farm and the city

John Langford and Nathan Taylor

Professor John Langford is a leader in urban and rural water management reform and received an Order of Australia in 2005. He's currently the Director of UniWater, a joint initiative of the best minds in water research from the University of Melbourne and Monash University. John has worked as an engineer and water resource manager in the water industry. In 2004 he was selected by Engineers Australia as among the 100 most influential engineers in Australia. Among his many distinguishing career highlights John was managing director of the Rural Water Corporation, Victoria's state-wide irrigation and rural water authority and the inaugural director to the Melbourne Water Research Centre.

Nathan Taylor is the Chief Economist at CEDA and a behavioural economist. He is responsible for the CEDA Research and Policy agenda which is undertaking an extensive series of reports into water, energy and population issues. The first volume examining water reform, Crisis and Opportunity: Lessons from Australian Water Reform, and a policy perspective on Australia's Nuclear Options were released in 2011. Nathan has held policy roles at the Reserve Bank of Australia, the Chamber of Commerce and Industry Western Australia, the WA Local Government Association and others. He is the author of a book on corporate governance and cultural change and the blog The Writings of a Naked Ape.

Introduction

Fears the world's burgeoning population would run out of food have not been realised because of human ingenuity and technological innovation. Over the past 200 years, applying the practices of industrialisation, greater access to fertile land and technological advances in a range of fields have combined to drive a rapid increase in the availability of food and fibre, much faster than any period since the agricultural revolution 10,000 years before. As a consequence, total production of cereals grew faster than population, from 877 million metric tonnes in 1961 to over 2494 million metric tonnes in 2009 while the world's population more than doubled to around seven billion and real per capita incomes tripled. Australia plays an important role in ensuring global food security, with per capita agricultural exports nine times the global average and contributing 19 million tonnes of agricultural commodities to worldwide consumption.[1] However, further reforms are required to ensure ongoing global access to adequate levels of food.

Water is of paramount importance to global food security and the ongoing liveability of urban centres. The agricultural irrigation industry is the dominant consumer of Australia's and the world's water, accounting for approximately 70 per cent of total global freshwater use. Irrigated land is significantly more productive for agricultural purposes than rain-fed land. Irrigated land represents 20 per cent of the world's cultivated land, but 40 per cent of global food production and 46 per cent of the world's agricultural economic output.[2] The high level of irrigation development and growth of cities since the Second World War has led to competition for water limited water resources, degradation of natural resources, including vital water resources, and unsustainable use of groundwater, particularly in India and China.

This chapter considers issues associated with Australia's food security currently being examined through CEDA's *Australian Water Project* (AWP). The AWP is a joint venture between CEDA, Uniwater (a joint venture between the University of Melbourne and Monash University), and Harvard University. A draft discussion paper was released in November 2011 and the project is examining the key policies around Australian water management in the urban and agricultural settings. It will make recommendations as to how these policies can be improved in 2012.

Australia's exceptionalism

The National Reform Agenda of 1994 consolidated a range of water policy and market reforms already underway into Australia's first coherent national water reform agenda. Australia implemented a series of unique water management reforms, and tied water reform to broader economic reform. As a consequence, the Australian governments, with the support of the Productivity Commission and the National Water Commission, applied competitive economic reform initiatives to both the irrigation and urban water sectors. This has allowed Australia to develop expertise in managing water that is of global significance.

The key components of Australia's reform program were the separation of water entitlements from land, and creating a market to trade water entitlements (permanent) and seasonal allocations (temporary).[3] The rationale for water trading was to enable more efficient use of scarce and valuable water resources (including by providing rewards for retiring marginal land).

Water trading enables users, rather than central planners, to make complex decisions about who should use water, where, when, and for what. The market allows water to be reallocated between uses, and gives water users the flexibility to respond to changes in their operating environment, including seasonal water availability and product market conditions. Market prices signal the opportunity cost of water and encourage users to make the most efficient decisions possible. Over 90 per cent of water trading in Australia occurs in the southern Murray-Darling Basin (MDB)[4], which is now a highly interconnected river system able to respond rapidly to emerging climatic and international market conditions.

The growth in water trading, primarily driven by water scarcity and improved understanding of market arrangements, resulted in a significant increase in both the volume of water traded and the value of water entitlements. The capital gains associated with owning water entitlements have yielded an internal rate of return usually well in excess of 12 per cent per annum, exceeding that of an ASX indexed portfolio.[5]

Realising the opportunity cost associated with water changed the investment incentives and behaviours of irrigators.[6] It stimulated investment in technologies designed to improve water use efficiency and reduced return flows.

The outcome of water trading is that water moves to the most productive enterprise, and most productive sector.[7] Water moves to the more efficient enterprises within each sector, evidenced by a continuing rationalisation of irrigators. As the scarcity of water increases, so does its price, which drives more efficient practices.

The recent stress test

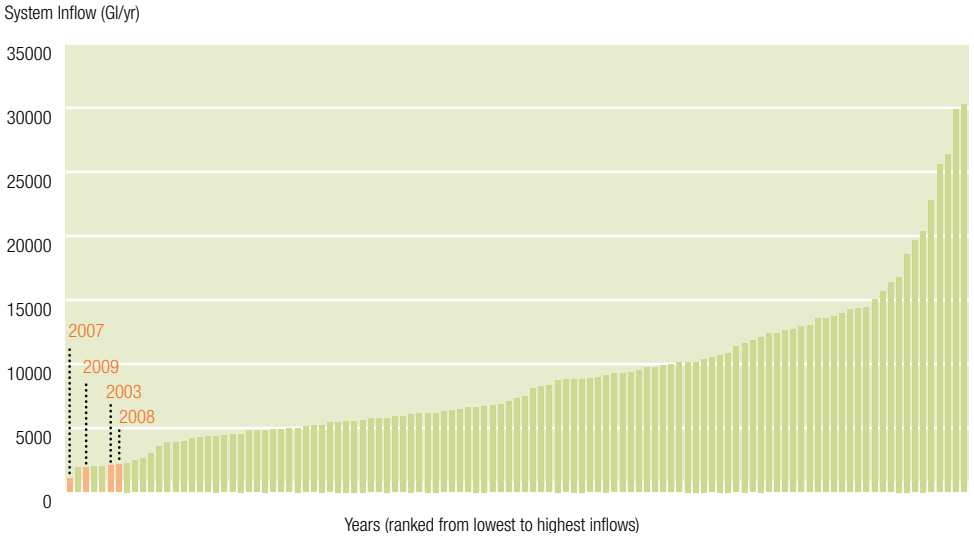
Australia, along with parts of Southern Africa, has the most variable water resources in the world.[8] Capacity to manage such variability was put to a severe test during the recent drought in South Eastern Australia. Wet months, where rainfall is in the top 90th percentile, are vital for generating run-off into storage reservoirs. Previously, the two longest historical sequences, each of three years without a wet month, were during the Federation drought and the Second World War drought. However, during the recent drought, South Eastern Australia underwent 15 years without a wet month, making it by far the driest period in recorded history. The result was a major reduction in water availability in the rural setting and major urban centres, such as Melbourne, which would have run out of water without water restrictions and other demand management measures being implemented. Figure 1 provides historical context on the extremely low level of water inflows associated with the recent drought.

Water trading was highly successful at reducing the impacts of the drought and acting as an automatic stabiliser for regional communities. At an aggregate level, economic modelling estimated that water trading more than maintained production and productive capacity in the southern MDB during the drought, increasing Australia's gross domestic product by $220 million in 2008–09.[9] These benefits were spread across all the states – New South Wales by an estimated $79 million, South Australia by $16 million and Victoria by $271 million in 2008–09.

The general movement of water was from producers with flexible irrigation demands to those with inflexible demands, such as long-lived perennial horticultural assets. The compensating flow of payments in the other direction helped to maintain individual farm businesses. For many irrigators, water sales were their only source of income for four dry years from 2006–07. Trade helped these irrigators survive and they are now able to respond to improved conditions. With improved water availability in the Murray and Murrumbidgee systems, and low water prices, rice growers are once again using their

FIGURE 1

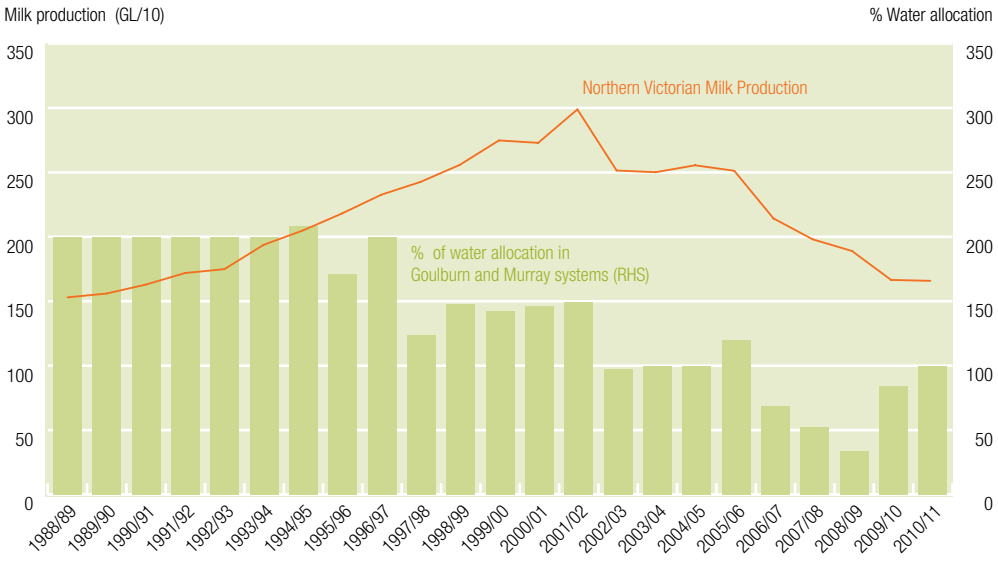
MURRAY SYSTEM INFLOWS SORTED IN ASCENDING ORDER FOR ALL YEARS 1892–93 TO 2008–09 (EXCLUDING SNOWY AND MENINDEE INFLOWS) SHOWING A CLUSTER OF YEARS FROM THE RECENT DROUGHT HAVING SOME OF THE LOWEST INFLOWS.



Source: Murray-Darling Basin Authority

FIGURE 2

NORTHERN VICTORIAN DAIRY PRODUCTION AND WATER USE IN THE VICTORIAN GOULBOURN IRRIGATION DISTRICT



Source: Dairy Australia and Goulbourn-Murray annual reports

water entitlements, and have begun buying allocations to expand production.

The rising cost of water encouraged farmers to find efficiencies. Consider the case of the Goulburn Irrigation District. In years when water allocations were low, water was purchased by the highest value users, such as horticulturalists. In contrast, dairy farmers found they could make more money by selling their water to horticulturalists and then purchasing feed, in some cases from failed wheat crops, giving wheat farmers some relief from the drought.

In addition to ensuring optimal use of available water resources, water prices encouraged dairy farmers to pay more attention to the nutrition of their cows and productivity increased. As a consequence, many dairy farmers managed to increase milk production as water allocation halved. Water allocations in the 1980s were typically 200 per

cent of water entitlements. The prolonged drought reduced water allocations to 100 per cent during the period 2002 to 2005 but milk production increased as a result of dairy farmers achieving a threefold increase in the amount of milk produced per unit of water allocation; a remarkable achievement by any standards. There were few signs of stress in the market for seasonal water allocations during this period with allocations typically changing hands at around $60/ML. However, when water allocations fell below 50 per cent there was substantial stress on the dairy industry although the leading dairy farmers in the Goulburn Murray Irrigation District were still able to make good returns on equity even under these trying conditions.

In the words of Professor John Briscoe of Harvard University:

> *"Australia's water management policies enabled it to do something that no other country could conceivably have managed – in a large irrigated economy (the Murray-Darling Basin) a 70 per cent reduction in water availability had very little aggregate economic impact. This represents an achievement of global significance as human communities across the world respond to a changing climate."*[10]

However, water markets were not fully liberalised: irrigation water was not freely traded with urban users or for environmental purposes. In particular, there were major environmental issues for the Murray-Darling Basin during the prolonged drought. For example, agriculture and ecosystems in the Lower Lakes region, essentially collapsed.[11] The lack of environmental water entitlement severely reduced the options available to managers of the region, already damaged by an over allocation of water entitlements to irrigation. Moreover, irrigation is subsidised, as irrigators are not charged the full cost of water, exacerbating the environmental damage and the cost of extracting environmental water entitlements.[12]

Commonwealth takes responsibility for the Murray-Darling Basin

During the longest drought in recorded history, only 10 per cent of the political and public blame for the environmental crisis was attributed to the underlying issue of over allocated water entitlements and subsidised irrigation water prices.[13] A political solution was adopted, in the form of the *Water Act 2007*. As justification for removing responsibility for water planning from the states, the Commonwealth relied upon the Ramsar Convention, which it had signed, that committed it to protecting wetlands crucial for migratory birds. The primary author of the 2007 Act, the Honorable Malcolm Turnbull, is explicit about the motivation of the Federal Government, saying:

> *"In the 1890s our founding fathers missed a big opportunity when they drafted our Constitution in not putting the management of interstate waters under federal jurisdiction. In 2007 we rectified that mistake with the Water Act."*[14]

In conjunction with the Water Act of 2007, a Water for the Future program was launched involving a 10 year, 10-point $10 billion plan, to "save" the MDB. These initiatives have been endorsed by all but a few federal politicians, from all parties, in both houses, twice, in 2007 and 2008 and under two separate Federal Governments. Such political endorsements are unusual.

The plan involved three elements:

- A water buy-back of about $3 billion of entitlements;
- Allocating almost $6 billion to upgrading irrigation infrastructure, with a portion of the water savings being designated for environmental purposes; and

- A new statutory planning authority, the Murray-Darling Basin Authority (MDBA) which would establish and enforce Sustainable Diversion Limits (a planning/regulatory approach).

There was little public justification for these quantities or the elements of the program, but considerable criticism. As a result, almost none of the $6 billion allocated for infrastructure investment has been spent as the proposed projects do not come close to meeting the normally very weak requirements for government investment in the area.[15]

The MDBA's initial ill-fated *Guide to the Basin Plan* followed the Water Act to the letter and asserted that:

> *"Over the past few decades….the focus has swung to looking at economics …and the role of the environment has been overlooked."*

The first attempt to implement the Act adopted a top-down, "experts know best", approach to resolving environmental damage.[16] It was not successful in engaging the relevant stakeholders—Australia's water scientists and regional communities—and did not succeed in rebalancing water shares.[17]

The Productivity Commission's interpretation of the Water Act 2007 was that:

> *"It requires the Murray-Darling Basin Authority to determine environmental water needs based on scientific information, but precludes consideration of economic and social costs in deciding the extent to which these needs should be met."*[18]

Effectively, the *Water Act 2007* was a detour from the successful collaborative processes that had established trade-offs between agricultural and environmental uses of water. The Living Murray Initiative, started in 2004[19], is an example of a program that was able to achieve a balance through a democratic process influenced by experts and engagement with the community.[20] In determining environmental entitlements, it is important to establish the environmental trade-offs, because then the costs of removing water are explicit and quantifiable for regional communities. While the Living Murray Initiative method of rebalancing water shares was proven to be successful, the volume of water returned to the environment was always considered to be merely the first, small, tranche.

There is a need to return to the consultative processes established by the Living Murray Initiative to determine appropriate levels of environmental water entitlements, using an adaptive management approach. Secure environmental water flows will enhance the quality of environment management.

Resolving over-allocation

In the five years immediately after the introduction of a cap on water entitlements in 1994, and the National Competition Policy that enhanced water trading, use of water increased by 29 per cent and the area irrigated increased by 22 per cent.[21] Unfortunately, this worsened the existing over-allocation in the MDB and exacerbated environmental damage during the drought. Therefore, a core issue for the *Water for the Future* program was the over-allocation of water entitlements in the MDB.

Despite almost two decades of commitments by state and Commonwealth governments to move towards full cost pricing for irrigation water, it still hasn't occurred.[22] Typically, taxpayers support irrigators in proportion to how much water they use. In this situation, the biggest users attract the greatest public subsidy. The existence of the subsidy makes the buy-back program considerably more expensive than otherwise. If governments had implemented pricing reforms so that the charges for irrigation water

were *either* the full economic value of that water (what it is worth) or the true economic costs of collection, storage and distribution, then the value of water entitlements in the secondary markets might have been closer to $20 per ML than $1200 or $2000/ML.[23] Furthermore, irrigators facing the real price of supplying water would presumably have demanded less than they do at the heavily subsidised price, reducing the quantum of entitlements required for environmental purposes.

Few, if any, existing irrigation schemes generate sufficient revenue at current water charges to cover their existing capital costs, let alone the operating costs or the opportunity costs of the water itself.[24] The $6 billion infrastructure "investment" initiative in the *Water for the Future* program largely represents a gift to irrigators.

Whatever the conditions of cost recovery, it remains the case that water purchases from irrigators provide the most efficient method of securing additional environmental flows. There are numerous claims about the severity of the regional damage to be wreaked by the $3 billion buy-back of water entitlements. However, economic modelling strongly suggests considerably less detrimental effects than often claimed.[25]

The key to achieving a sustainable allocation of water in the MDB is to ensure that the price of water achieves full cost recovery.

Urban water security

Melbourne has historically relied on water supply from reservoirs that, for 90 years, had relatively reliable inflows. This reliability meant that, until recently, Melbourne's water supply system was projected to be adequate until the 2030s, even with a moderate growth in the population. However, by 2007, expectations changed with evidence that the most severe drought in history was in progress. Scientific advice was that the future would bring steep declines, of up to almost 40 per cent, of water inflows into Melbourne's catchment areas.[26] A similar pattern was predicted for all Eastern Seaboard capital cities.

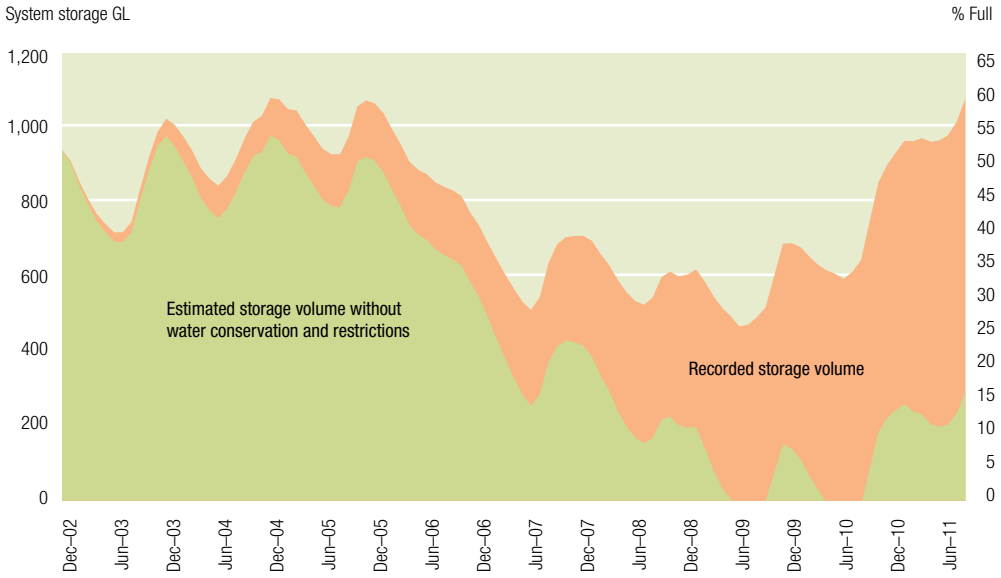
It is clear that Melbourne's historical water supply systems, and those of other capital cities, did not have the resilience to cope with the dual shocks of greater population growth and, especially, the unprecedented, prolonged drought. The planning institutions for urban and rural water supply buckled under the stress. The National Water Commission stated:

> *"The government intervened in water planning and investment decisions, first by restricting demand then by directing large-scale investments to boost supplies. This blurred the lines of accountability and created uncertainty about the roles and responsibilities of those involved in water delivery and regulation."*[27]

On the demand side a number of initiatives were launched to encourage water conservation, severe restrictions were introduced and household water use dropped. Without these initiatives, Melbourne would have run out of water in 2009 (see Figure 3). It appears as though community's use of water has experienced a sustained downward shift, with lower levels of use continuing in Brisbane and Melbourne. The experience of the drought revealed the potential to significantly alter community use of water.

Major investments in augmentation were also undertaken, with approximately $30 billion in new infrastructure deployed.[28] These infrastructure investments have essentially insured Australia's major urban centres have sufficient desalination capacity to supply almost 50 per cent of capital city water needs, based on 2008/09 water consumption,[29] effectively removing the threat of drought to these major urban centres.

FIGURE 3
MELBOURNE'S STORAGES – OBSERVED (WITH WATER EFFICIENCY MEASURES) AND WITHOUT WATER EFFICIENCY MEASURES.



Source: Melbourne Water

There are additional initiatives that could be undertaken to mitigate the cost of this insurance, but they require a new approach to urban water planning.

The experience of the drought highlighted the challenges of having an urban water supply highly correlated with rainfall. There are numerous other actions that can be taken to reduce the overall demand for water. These include enhanced water efficiency measures, rainwater tanks and precinct scale wastewater treatment and distribution systems. However, current investment decisions, and pricing proposals, are based on the assumption that water from reservoirs has an economic resource value of zero. Urban water trading that accurately priced water would enable better investment decisions.

As Australian cities sprawl the costs of providing water services to urban development on the fringes are increasing. Innovative local solutions or a combination of local and centralised water systems is likely to be more cost effective. The critical question is to know which solutions best fit particular locations. Evaluation of the total lifecycle costs of water from the source to the point of use and then through to the point of wastewater treatment and discharge to the environment, including costs that are not currently accounted for such as the costs of stormwater management including the costs of mitigating nitrogen loads in stormwater. Knowledge of these lifecycle costs is essential to assessment of the cost effectiveness of the diversity of innovative local solutions to water supply, wastewater and stormwater in particular locations. This knowledge is also essential in developing cost reflective pricing that give price signals as to the actual costs of developing in particular locations. Cost reflective pricing is an essential first step before introduction of third party access regimes to avoid the exploitation of subsidies inherent in postage stamp water pricing across a city.

The stress test of the drought had some commentators predicting Australia's capital cities would soon become ghost towns.[30] These predictions proved to be unfounded. In the short run, this was due to community acceptance, even enthusiasm, for demand management through non-price means. In the longer run, the introduction of more competition; the adoption of technological options; better demand management; and whole of water lifecycle pricing will mean that Australia's urban centres have access to sufficient water to ensure their ongoing ability to provide reliable, safe water supplies to growing populations, at reasonable and sustainable prices.

Strategic opportunities

Australia's irrigation industries and water management policies can enable the nation to exploit a substantial economic opportunity. World food prices are likely to continue to rise, due to a combination of falling rates of growth in agricultural productivity, increasing global population, climatic changes influencing the amount of arable land and usable water, and changing diets in the rapidly developing countries of Asia. For instance, both China and India rely on mined groundwater that is rapidly being depleted and polluted while their economic growth is driving an expansion in caloric demand. While world population is forecast to grow by over 33 per cent to 2050, world caloric demand is set to increase by 45 per cent. The opportunity for Australia is especially pronounced due to the global decline in growth of developed country crop yields: measurable but comparatively sluggish growth prior to 1950, historically rapid growth for the subsequent four decades 1950–90, the green revolution, and then a substantial slowdown from 1990 onwards.[31]

With the right policy frameworks, Australia's agricultural sector could significantly improve the efficiency of its use of water. Currently approximately 70 per cent of agricultural output in Australia is based on flood irrigation.[32] One option to improve efficiency is to create a smart grid that utilises cloud computing and network sensors. Such intelligent, interconnected systems enable exploitation of existing infrastructure to full capacity, delivering a superior water distribution service that enables preventative maintenance, and allows operators to cope with extreme circumstances without greatly sacrificing performance. This form of technological deployment requires the whole of life services of water to be costed in order to justify investments.

The improved services that advanced water supply infrastructure deliver can result in substantive improvements to agricultural profitability. For instance, in horticulture, juicing apples are worth approximately two cents while eating apples are worth 30 cents.[33] Traditional manual irrigation results in about half a crop of apples being of juicing quality. However, with automated irrigation, moisture sensors and, ultimately with plant sensors, a very substantial increase in eating apples can be achieved while also delivering something like a 75 per cent improvement in water productivity.

To capitalise on Australia's agricultural strategic opportunities requires that the water management reform, begun in 1994, be continued. Rather than building or modernising irrigation infrastructure in an attempt to achieve social policy outcomes[34], investment decisions should be financed by irrigators to meet the quality demanded by the market. More accurate pricing of water services in both the rural and urban environment will create the appropriate incentives to encourage such investments.

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4.4

Critiquing government regional development policies

John Daley

John Daley is Chief Executive of the Grattan Institute. Grattan Institute's work is independent, rigorous, and practical and fosters informed public debate on the key issues for Australia, through both private forums and public events, engaging key decision makers and the broader community. The current programs of Grattan Institute focus on productivity growth, cities, school education, tertiary education, and energy. These programs were selected as important to Australia's future, where fact-based analysis could assist the debate, and where issues would benefit from further public discussion. John graduated from the University of Oxford in 1999 with a DPhil in public law after completing an LLB (Hons) and a BSc from the University of Melbourne in 1990. He has 20 years' experience spanning policy, academic, government and corporate roles at the University of Melbourne, the University of Oxford, the Victorian Department of Justice, consulting firm McKinsey and Co and most recently at ANZ where he was Managing Director of the online stockbroker, E*TRADE Australia. John's current research and publishing interests include government prioritisation, the objectives of government, the situations in which government intervention is justified, and the limits to government. John is also a keen amateur pianist and gardener.

Introduction

Australia's history of regional assistance policy

Australian governments are under constant pressure to intervene to support the economies of particular regions, particularly those that grow more slowly. The most prominent recent example is the Commonwealth Government's "Commitment to Regional Australia" in September 2010[1] that promised $10b over eight years, partly implemented through the Investing in Australia's Regions package in the May 2011 budget.[2] Other examples include the Victorian Government's Regional Growth Fund allocating $1b over eight years,[3] and the Royalties for Regions program of the West Australian Government, allocating over $1b per year. Although some of this money is for improved regional services, a significant proportion purports to develop regional economies.

Such substantial spending on regional assistance has a rich heritage in Australia, as shown in Judith Brett's Quarterly Essay, *Fair Share*.[4] State-owned enterprises from the Post-Master General to electricity and irrigation utilities to government airlines had mandates to subsidise regional services. Soldier settlement programs explicitly aimed to boost regional populations. The Commonwealth Government redistributes tax revenues between the states using a process that aims to enable states and territories to provide Australians with services at the same standard irrespective of location. This effectively provides additional revenues to states with more people in remote areas, that are costly to service.

In part this spending was driven by what Judith Brett identifies as an "historic sense of entitlement to special treatment", often expressed as a claim to a "fair share". In fact *spending per capita* on services such as schools, police and hospitals is often higher in regional areas than in capital cities.[5] Of course, the higher costs of remote delivery mean that the *quality* of services in regional areas may be lower, and much of the debate is driven by the tension between spend and outcome.

Popular support for equal regional service outcomes may be weakening. As Brett shows, additional spending on regional services was historically justified as recompense to the bush for having to pay higher prices as a result of tariff barriers, and by the belief that national security required Australia to "populate or perish". The popular imagination also clung to the "Australian legend" of the itinerant male bushworker, whereas urban workers did not seem to be distinctive from their counterparts in cities the world over. These motivations are breaking down. Tariffs have been dismantled. The University of Western Australia no longer bans books that point out that much of Australia cannot support large populations. And increasingly the Australian archetype is a successful graduate with migrant parents in a big city.

Economic and service objectives

While there is a strong moral argument for providing services to Australians wherever they live, it is less clear that it is worthwhile to encourage equal economic opportunities – let alone outcomes – in every region. Economic opportunity varies substantially between regions depending on natural resources (such as mining, agriculture, ports and rivers), existing infrastructure (such as transport links, buildings and communications), and most importantly, people. The fundamental assumption of the theory of comparative advantage is that on average people will be better off if governments encourage trade between areas with different advantages rather than mandating equal outcomes.

However, there is often substantial overlap – and confusion – between the policy objectives of better regional services and regional economic development. For example, a ministerial media release in 2010 asserted that a $100m spend to build community facilities such as playgrounds and sporting fields would "not only improve community facilities but at the same time support local jobs and boost local economies".[6]

It is valuable to be clear about which aim a regional policy is really trying to serve. There is a strong moral case for equitable provision of regional services. By contrast, government interventions to raise economic development in slower growing regions are harder to justify on equity grounds – and as discussed below, are potentially futile. Regional economic development policies have different priorities to regional services policies. Policies aimed at regional services should be explicitly directed to the areas of greatest need. Needs may arise if service quality is low because delivery costs more in sparsely populated areas. Alternatively, needs may be greatest in fast growing regions where population growth outstrips infrastructure build.

This chapter focuses on suggestions that government should intervene to promote economic development in slow-growing regions. It considers the questions, which policies do little for economic development but are equitable because they aim to provide regional services? Which policies are efficient because they accelerate economic growth? And of policies aiming to increase net economic growth, which are effective because they have worked in practice in the past, and might work in the future?

In analysing these questions, we tend to use population growth as a proxy for economic growth. This is clearly imperfect – some of the fastest growing regions in Australia such as Hervey Bay and Cairns also have among the highest unemployment rates. Nevertheless, population and economic growth are closely correlated over time. And if anything, measuring population understates the economic growth of large capital cities relative to regions as capital city income per capita is higher and unemployment rates are generally lower.[7]

Patterns of regional development

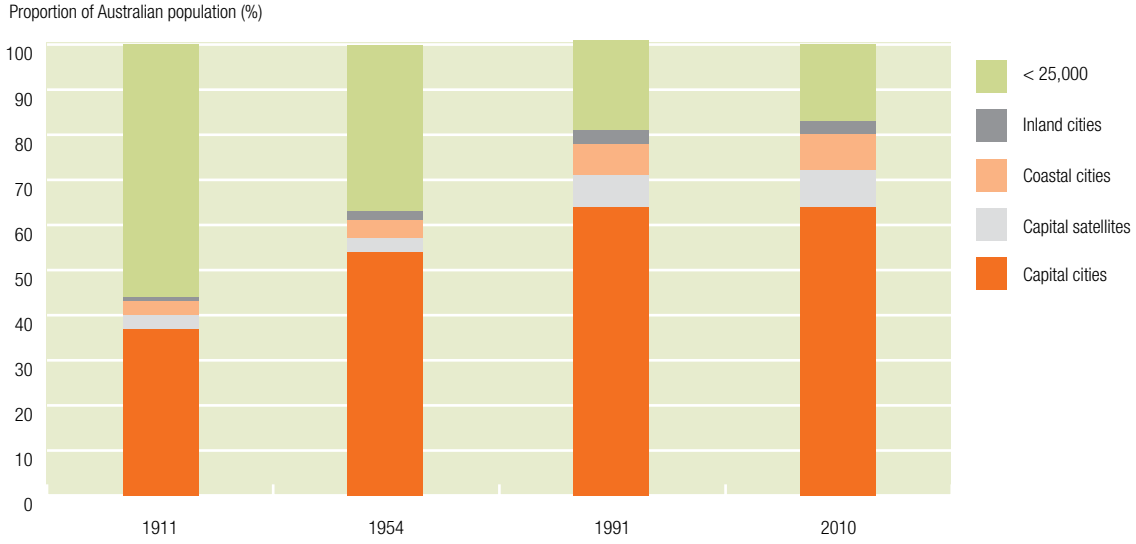
Geography of development in Australia

Despite decades of government intervention to promote economic development in regions outside our capital cities, the long-run trends have prevailed. Australian capitals have steadily gained in share of the population; inland areas, particularly towns of less than 25,000 people have lost share; capital city satellites within 150km of a major capital, and coastal cities have grown substantially (Figure 1). These patterns of population growth are matched by analysis of shifts in shares of employment between Functional Economic Regions.[8]

This long-term pattern continued through the last decade. Capital city satellites and coastal cities grew faster than capital cities; inland cities and regional areas grew more slowly. Although some have suggested that the slow growth of inland cities and rural areas in the last decade is a consequence of the decade of drought on the east coast,[9] it is consistent with a much longer pattern.

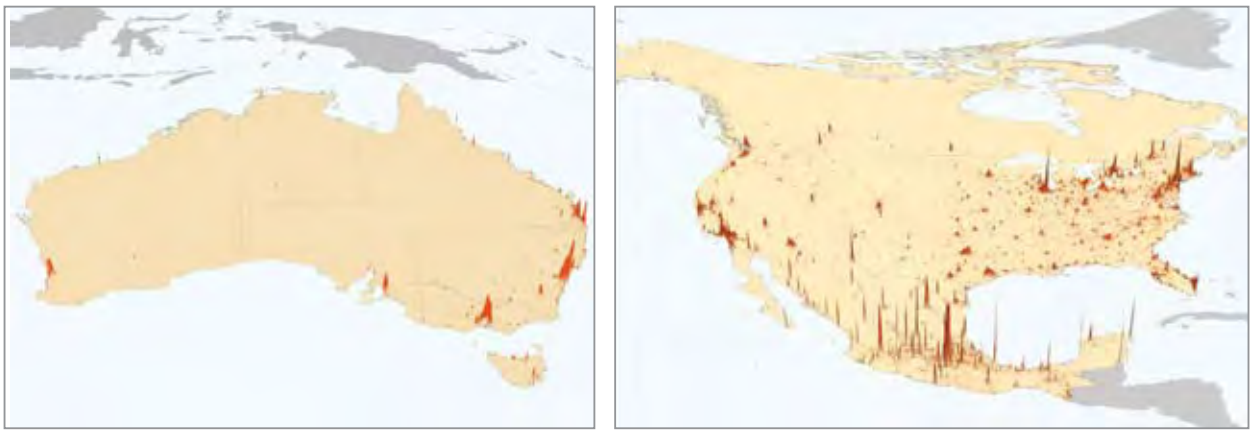
However, it is notable that over the last decade, *no* city with more than 25,000 people lost population. Of course, some smaller towns are shrinking, particularly as their population moves to the larger regional centres. The fastest growth areas are principally the satellite cities close to major capitals, generally also on the coast, such as Mandurah near Perth, and the Gold and Sunshine Coasts near Brisbane, as well as a number

FIGURE 1
AUSTRALIAN POPULATION DISTRIBUTION



Source: Australian Bureau of Statistics; Grattan Institute analysis

FIGURE 2
POPULATION DISTRIBUTION: AUSTRALIA AND NORTH AMERICA



Source: Tomaney J, "New thinking on local and regional development", presentation to ANZRSAI Conference, Canberra (6 December 2011), citing European Commission.

of the West Australian and Queensland coastal cities such as Geraldton and Hervey Bay.

Theory of development

These Australian patterns shouldn't be a surprise. Agglomeration economics – the benefits that accrue to individuals and businesses when they concentrate in the same place – is becoming increasingly influential in explaining the central role of large urban areas in economic growth.[10] It is entirely consistent with this theory that the most rapidly growing areas are in or close to major capital cities, and that inland regional cities grow faster than their surrounding districts. Australia is more concentrated than any other country in the OECD, with 64 per cent of its population living in just 10 per cent of the regions.[11] Australia is a series of concentrated cities with large relatively unpopulated areas between, as shown in Figure 2.

Potential policy interventions

Areas of policy focus

Given these large-scale historic economic forces, what can Australian Governments do that would promote economic and population growth in our slower growing regions?

Policy interventions that simply redistribute growth from one Australian region to another are unlikely to promote net economic growth. In general, markets encourage economic growth wherever it is most efficient, so government intervention to move economic activity will usually impose a drag that is ultimately paid by the entire community as lower productivity and lower living standards. For example, providing subsidies for businesses to set up in a particular region ultimately just redistributes activity around Australia, but with the additional costs of the subsidy and the associated taxation borne by the Australian community.

Instead, successful regional economic policy makes a particular region more productive than it would be otherwise. In technical terms, it increases "endogenous growth". Such policies could increase the total size of the Australian pie, making both the region *and* Australia better off.

The OECD's work on regional development suggests that higher regional economic growth can be driven by education, supporting infrastructure (such as transport links), and propensity for innovation.[12] Proximity to other regions with large populations and higher growth rates also influences growth – consistently with the rapid growth of "capital satellites" in Australia. These findings are consistent with new growth theory, which explains productivity growth as ultimately a consequence of education, infrastructure and innovation, alongside institutions that promote competitive markets and reliable legal frameworks.[13]

Regional job creation

Despite this theory, Australia has a long history of regionally focused job creation programs, particularly where industries are in decline. Faced with local job losses, there is often substantial political pressure for government to "do something". But as outlined above, business encouragement and job creation programs are unlikely to do more than redistribute economic activity around the country, imposing costs on taxpayers in the process. Even worse, it is not obvious from the available evidence that they succeed in creating local jobs.

For many of these programs, evidence of their impact is simply not collected, as numerous reports by Auditors-General have complained.[14]

Where evidence is available, these programs appear to have little impact, much less justify the costs that they impose on other taxpayers. As a case study we reviewed government spending of $90m in Adelaide to encourage new businesses and job creation following a number of high profile plant closures. We found little link between unemployment rates and either plant closures or government spending, as illustrated in Figure 3.[15]

This is reasonably consistent with interviews conducted with the people employed in the Mitsubishi motor vehicle plant closure in Adelaide. These showed that 12 months after closure, only 13 per cent of the workforce were still unemployed, three per cent were retired but would prefer to be working, and four per cent were not working due to a disability.[16]

FIGURE 3
UNEMPLOYMENT RATES AND STRUCTURAL ADJUSTMENT SPENDING IN ADELAIDE

Source: Australian Bureau of Statistics; Grattan Institute

The Adelaide case study may not be representative – manufacturing workers in these areas are often highly skilled and may be more valuable to other employers than the subjects of other job attraction schemes. However, the case study is a reminder that government intervention to "create jobs" may have little impact on the target region – as well as being expensive. The general failure to collect evidence about these programs, encourages the suspicion that those responsible are aware of the significant possibility that they neither work, nor justify their costs.

Education

By contrast with regional job creation programs, there is at least some theoretical justification for government intervention to increase education levels in regions that are growing relatively slowly. In Australia this often translates into advocacy for a regional university in the belief that it will contribute to long-run economic growth for the region.

Unfortunately, advocacy for regional universities often does not analyse carefully whether they are contributing to long-run productivity. Many of the claims about regional universities focus on their employment of academic staff, attraction of students, and the associated economic activity servicing these people.[17] But on this basis, a regional university is ultimately just another regional job creation scheme that redistributes activity around Australia, but does not contribute to productivity growth and overall living standards. Headline numbers about the economic activity attributable to the university are only rigorous if they include analysis about how much economic activity would have been generated if the university had been located in or close to a major capital. In any case, such analysis is highly dependent on dubious assumptions about the "multiplier effects" of regional or urban academic jobs.

There are clearly costs to redistributing activity through regional universities, which are generally more costly per student. The Commonwealth Government pays a regional loading per student to regional universities recognising their own claims that teaching at regional campuses has higher costs as a result of remoteness and fewer economies of scale.[18]

If regional universities in Australia succeed in accelerating regional productivity growth rather than merely redistributing activity, one would expect that university cities would innovate more than cities without a university. But patenting rates – a partial if not perfect proxy for innovation – are not materially higher for university cities in Australia than for non-university cities of a similar size.[19] Although some point out that there are many other facets to innovation that should be measured,[20] patenting rates are the measure used in the only study (from Sweden) referred to by the Commonwealth Department of Education, Employment and Workplace Relations to justify claims that regional universities increase total economic productivity.[21] There is little evidence in Australia that regional universities contribute to productive innovation on this measure.

Similarly, one would expect that the private sector would grow faster in university cities than in non-university cities. If regional universities do more than redistribute growth, then this would not merely be a one-off increase in private sector employment. Instead, one would expect to see these cities generating more economic activity – and growing employment faster – than in non university cities. But the data shows no material differences in private sector employment growth.

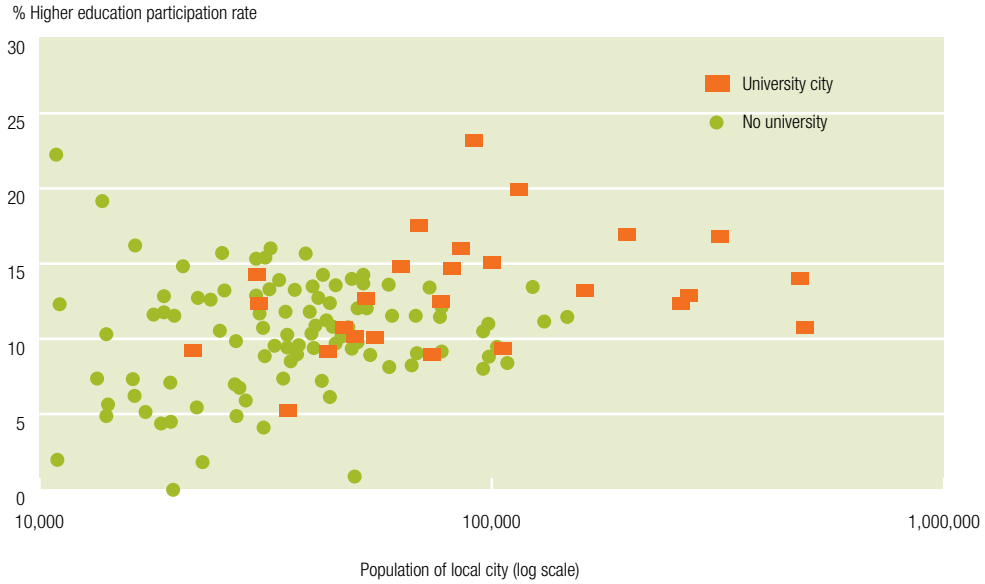
One would also expect university cities to have higher local participation rates. Higher education participation rates are generally higher in larger cities. But in cities of similar size, participation rates of school leavers appear to be similar, whether or not there is a substantial local higher education campus, as illustrated visually in Figure 4.

However, this analysis of school-leavers may understate the impact of regional universities on the participation of mature age students. Regional universities attract more mature age students than urban universities, with a higher proportion of students who care for others at least 10 hours a week (31 per cent vs 17 per cent at urban universities).[22]

Nevertheless, the presence of a local university does not seem to be the major driver of university participation. The majority of students from regional areas who attend university do so in major urban areas, as shown in Figure 5. Indeed, on the assumption that students from remote areas do not have a local regional university, the presence of a local university only diverts about 11 per cent of potential higher education entrants from an urban to a regional university.

Nor do regional universities significantly influence school leavers who participate in higher education to stay in their home town. Again, analysis of the census shows

FIGURE 4
HIGHER EDUCATION ATTAINMENT BY REGION



Source: Daley & Lancey, *Investing in regions: Making a difference* at p.36, analysing all 22 year olds in the 2006 census.

FIGURE 5
SCHOOLING LOCATION AND UNIVERSITY LOCATION

PRIMARY SCHOOL LOCATION	% OF THOSE IN HIGHER EDUCATION GOING TO URBAN INSTITUTION
Remote	69%
Rural	61%
Regional	58%
Urban	89%

Source: Graduate Pathways Survey, as reported in Australian Council for Educational Research, *Higher education & community benefits: The role of regional provision* (Joining the dots research briefing, 2011) at p.4; Grattan Institute analysis

that the presence of a local university has little impact on the number of people who participated in higher education, and who still lived in their "home town" aged 22.[23]

Regional universities do have a significant impact in *attracting* people to their region, who then stay after completing their studies, disproportionately in domestic service sectors. Graduates of regional universities are much more likely to reside in regional areas than graduates of urban universities (66 per cent vs 16 per cent). However, regional university graduates in disciplines leading to employment in the market sectors of the economy (other than agriculture) generally move to large cities after their studies. By contrast, 34 per cent of graduates who went to regional universities and then stay in a region work in education. This local service sector employs much more of the graduate workforce in regions than in urban areas, where only 22 per cent of graduates work in education, whether or not they attended a regional university.[24]

Therefore, there is limited evidence that regional universities contribute to endogenous economic growth – that is, productivity growth rates higher than otherwise. However, clearly they succeed in redistributing economic activity around Australia. They probably

contribute substantially to improving the labour pool for regional services, and it is likely that they play a significant role in the cultural and social life of their area. However, it is hard to find clear evidence in Australia that they increase total economic growth and productivity.

Infrastructure

Governments also allocate significant funds to regional infrastructure on the basis that it will contribute to economic growth. The Victorian Government's Regional Growth Fund documents, for example, note $220m in local road funding, justified on the basis that it will "further support regional growth".[25] Again, it is obvious that such spending improves regional services, and the quality of life in regional areas. But it is hard to find evidence that the costs of infrastructure deliver higher economic growth than simply leaving the money in taxpayer pockets.[26] The spending may well provide services benefiting the community that only government can provide. But these programs then need to be justified on this basis rather than claiming the rhetorical force of contributing to economic growth.

Local involvement

The area of regional policy that perhaps requires most attention is the role of government in encouraging local networking and participation to create new businesses and activities. The shift towards "place-based" approaches adopted in the European Union over the last decade emphasises the need for local involvement and local government to identify local assets, and then determine local strategies.[27] There are some success stories internationally,[28] although it is seldom obvious which interventions are responsible for improvement, nor is it clear if the benefits outweigh the costs of similar but unsuccessful interventions elsewhere.

Such local involvement is not a new prospect for Australian regional development. A paper in 2002 by Paul Collits, then a Manager of Regional Policy in the NSW Department of State and Regional Development, cited half a dozen studies and a number of programs over the previous 15 years emphasising the importance of local involvement and ownership for local strategies.[29] More recently, one fifth of the Victorian Government's Regional Development Fund is for the Putting Locals First Program that funds opportunities for development identified by local organisations and governments.

However, local involvement does not necessarily lead to productive investment in the right skills and infrastructure that leverage genuinely distinctive local assets to sustain businesses for the long term. Local leadership has many political incentives to propose projects that redistribute resources from elsewhere in Australia to improve local services and facilities, and increase local spending in the short-term, but do little to promote long-term local businesses or increase national productivity.

Indeed, it is arguable that the allure of "free" government money for such local projects may divert local leadership from the hard choices implicit in building sustainable local businesses. Being honest about which assets are truly distinctive, building a network of relationships, and creating businesses competitive with the outside world despite remoteness is always going to be a challenge. It is easy to see how attention could be distracted by "farming the grant" rather than "building the business".

However, it is unlikely that Australian governments would adopt a policy of official neglect simply to send an unambiguous message that viable activity must be sustainable without government intervention. And some viable long-term activities do require government support for infrastructure and skills that private enterprise is unlikely to supply given problems of coordination, free-riding, and spill-overs.

As a result, there is real tension between the desires to promote genuine local initiative, to respond to political imperatives, and to target genuinely productive infrastructure. This tension makes it all the more important that programs for regional economic development are clear about their objectives, and require rigorous evaluation as a condition of government intervention. This clarity and rigour would make it more likely that government intervenes to promote economic development only when it is truly required.

Conclusion

The evidence is underwhelming that the current suite of government policy interventions are doing much to increase Australian regional growth and productivity. Evidence is often unavailable. Over the long run, patterns of regional development reflect long-term economic and social shifts, rather than regional policy initiatives. Where evidence for particular programs can be gathered, there are seldom clear indications that they have increased regional growth rather than just redistributing activity around Australia, and no evidence that they have increased regional activity by more than they have reduced it elsewhere in Australia.

Objectives of improving regional services are often blurred with claims about driving higher economic growth. If intervention in a region genuinely increases economic productivity of the region, then it is ultimately in the interests of all Australians – which is presumably why proponents of regional assistance are quick to make this claim even when the major impact is to improve regional services. Improving regional services is often a legitimate equitable goal, but it imposes costs on the rest of the Australian community. The historical forces that encouraged governments to pay these costs may be weakening. Clear eyed analysis of whether government intervention will truly promote regional economic growth is therefore even more important today than in the past.

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Section 5.0
Conclusions and recommendations

5.1
The future of population policy
Glenn Withers

Glenn Withers has recently returned to his position as Professor of Public Policy, Crawford School, Australian National University. Previously he was Chief Executive Officer of Universities Australia, the peak council for the universities of Australia. He has published numerous books and articles on economics and public policy. Professor Withers has also held major positions in government including as Head of the Economic Planning and Advisory Commission reporting to the Prime Minister and as Chair of the National Population Council. He has chaired national public inquiries into population, infrastructure and immigration and was Chair of the Migrant Skills and Qualifications Board. Professor Withers has also been adviser to major Australian businesses and business groups, such as the Business Council of Australia, to international bodies such as the OECD and World Bank and to overseas governments. He is a Harvard graduate, has taught on the Faculties of Harvard and Cambridge, and was made an Officer in the Order of Australia for development of the Australian immigration points system.

Much of the story of Australia is the story of the peopling of Australia: births and deaths; immigration and emigration; learning, caring and working.

As a consequence, many of the issues of our time have a population dimension. Informed discussion is important to ensure that discussions in this field are constructive.

CEDA has played a long and worthy role in fostering balanced and informed debate in this area and does so again through this volume.

This volume provides much updated information and discussion, with the coverage achieved being ably summarised in the introduction by Jonathan Pincus and Graeme Hugo, who deserve our thanks for their oversight of this project.

The appropriate questions at the end of the discussion are now those of policy. There is widespread agreement as reflected in this volume that the impacts of population are important for the economy, our society and our environment.

Therefore policy engagement in some form is inevitable. Certainly, responsive policy that seeks to improve the benefits and minimise the harms from population change, in each of these dimensions, seems widely endorsed and desirable.

However, there is disagreement over the precise responsive policy settings and in judging and weighting the impacts. There are also differing views over more pro-active policies, those which deliberately and consciously seek to influence the course and nature of population growth itself.

Treasury's three Ps: population, participation and productivity

According to Treasury, the three Ps are central to our national well-being: population, participation and productivity. Alternative population settings affect each in major ways.

For instance, from where we start now at a **population** of about 22 million, Australia could with a one per cent migration rate, (and fertility stabilising) move toward a population of around 40 million or more by mid-century.

If, by contrast, Australia adopted a policy of zero net migration, the population would peak within three decades at around 25 million and thereafter decline steadily.

An historical trend growth rate of 1.25 per cent per annum, met by balancing the net natural increase with net overseas migration as needed, would lead to a population of around 35 million at mid century.

So the total population is indeed a matter of public choice, especially through net migration.

But there are also options to alter the **natural increase and work force participation**. These were the focus of the Howard Government's activities around the "Babies Budget" of 2004 (where the Treasurer spoke of one baby for each partner and "one for your country") and significant increases in fertility then followed, contrary to many projections of continuing decline and assertions of policy ineffectiveness.

Global insight does show why the Treasurer was right. Other comparable countries have managed to have both higher fertility than Australia and higher female labour participation rates than Australia. By one calculation Australia may have almost half

a million fewer women in the work-force than is the pattern for comparable Anglo-American countries, let alone for Scandinavian countries.[1]

To improve this situation, there is much that can be done in workplace policies. It is no accident that female participation rates are the nation's highest by far in the ACT where public service working conditions for women today far exceed arrangements that apply in most Australian workplaces.

But government has an important role beyond that of model employer, especially in carefully balancing the incentive effects of its social security policies to induce improved participation appropriately. In doing so there are inevitable dilemmas. JK Galbraith saw one such dilemma as the trap of believing "the now compelling supply-side doctrine that the rich were working because they had too little money, the poor because they had too much". It is encouraging to see some recognition of this in recent Australian debate over unemployment support.

A particularly reliable circuit breaker for this dilemma is education. The effects of increased education levels upon labour force participation are quite profound and quite universal and show no signs of diminishing returns over quite large ranges of increased educational participation across countries and over time.[2]

Next, there is much that can be done to **enhance productivity growth** itself. There do remain significant areas of incomplete micro-economic reform and there are many opportunities for catch-up to world best practice by Australian business and public and not-for-profit organisations and for addressing the large under-performing tails of weak practice in these areas. The opening of the Australian economy and weaning business and labour off protectionism has helped mightily, and recidivism here must be resisted. But the capability to compete well requires investment and here there is growing realisation that we may well have sold ourselves short in infrastructure provision and in education investment and innovation.

Perhaps what is really needed now is not another Intergenerational Report, which after all, has had its impact in displaying the implications of an ageing population – but a *Future Generation Report* which displays the participation and education and training solutions for the downsides of the changing population age structure. The "narrative" that former prime minister Paul Keating says that we lack, might even be found here.

A population policy framework

So a positive population policy is possible. Indeed there will be a policy one way or another. The options are population policy by default (muddling through), by manipulation (policy by technocrats or interest groups) or by design (balancing democratic populism with leadership and vision). The constructive question is how can we further encourage good policy by design?

Well-informed policy

One lesson from the earlier era of successful Australian reform is that good policy is well-informed policy. Unfortunately the remorseless abolition of dedicated government research agencies for this area such as the Bureau of Labour Market Research, the Bureau of Immigration, Population and Multicultural Research, the Bureau of Industry Economics, and the Economic Planning Advisory Commission limits the contemporary non-partisan evidence base for policy formation, for modest savings.

Social science research in universities has been squeezed out by high student-staff ratios and by government research funding formulae which reward international journal basic research and not applied Australian analysis. The field is instead left more to consultancies and think tanks with a specific viewpoint, so that advice becomes more that of "policy-based evidence" rather than "evidence-based policy". Politicians and bureaucrats are increasingly ill-equipped consumers of this material.

The Productivity Commission does remain as a bastion of more rigorous insight, but even it depends upon a Treasurer's reference for its inquiries and upon the beneficence of the government of the day for adequate resourcing.

While various existing researchers do seek to summarise the state of knowledge on population as they see it, some key uncertainties consequently remain, especially in a thin research market. These uncertainties include that:

- The economic effects on per capita income and incomes of the existing population are not well understood because of the reliance upon simulation models (as noted in the Introduction and Chapter 4.1 by Jonathan Pincus and Judith Sloan). These models do not yet allow for dynamic effects (such as entrepreneurship and innovation), externalities and public goods (such as defence benefits, knowledge access and synergy) and economies of scale, all of which may be of the essence in the population arena.[3]
- The social effects of population change on the requirements for an ageing population are not well understood using standard demographic projection methods. Such projections normally assume constant absolute migration levels projected into the future, which therefore miss the potential for slowing the growth of dependency pressure[4] through constant or even growing rates of population.
- The environmental effects of population change all too rarely distinguish key distributional aspects of analysis such as the difference between population growth (eg natural increase) and population relocation (eg net migration) on greenhouse emissions; or how most water use is predominantly about the activities of a small and declining rural population, whereas road congestion is more directly a mass population urban commuters' issue.
- The defence and national security effects of population change often focus on recruitment or public finance issues (as seen in Mark Thomson's chapter 1.1) but there are wider and perhaps more subtle foreign affairs and soft-diplomacy issues once termed "global positioning" by former prime minister Malcolm Fraser that also need close scrutiny to determine if population size and movements can be important in boosting this.
- Understanding of public attitudes toward migration is considerably inhibited by the dominant forms of attitudinal polling that ask aggregate level questions such as is immigration too high, without interrogating the depth and intensity of attitudes and knowledge and without reviewing what levers will influence these attitudes or meet concerns. (Andrew Markus, in Chapter 3.1, offers illustration of the benefit of such interrogation).

Methodologies exist to deal with all of these deficiencies, but the funding and institutional support for such research is limited. All too often we have scraps and suggestions of knowledge rather than a secure knowledge base that can overwhelm the particular predilections of any small group of researchers.

Despite their fundamental importance to good national policy, humanities and social science research funding by government is one-tenth that of the sciences. This is not to say that sciences need to be cut, but that supplementation for the key policy disciplines is also needed. Each approach pays its way.[5]

For the present, ongoing work by organisations such as CEDA is even more crucial than usual in providing balance in the market place of ideas, as this present volume well demonstrates.

Whole of government

A second lesson of the Australian reform era of the later decades of the twentieth century and early twenty-first century is that whole of government approaches are needed. Nowhere is this more evident than in the population field. Ministerial and bureaucratic and federal-state silos mean that decisions made may too often ignore the consequences for others.

For example:

- Immigration decisions by a Federal Minister that vary immigration levels up or down with little notice mean that state planning for roads and sewerage and land release is severely compromised.
- Education decisions for the provision of professional skilled graduates by universities and VET college provision of technical skills training are fundamentally compromised if new arrangements for temporary entry overseas skill supply are announced without consultation.
- New child care, aged care support or social security funding schemes substantially impact upon hospital provision, schooling and retirement home requirements and even work-force availability.
- Changes in retirement policy, health care and pharmaceutical arrangements or dental care all flow through strongly to education and infrastructure requirements.

At the very least, improved policy co-ordination arrangements by central agencies and federal-state bodies assist. For example the establishment of new agencies with some foresight capability such as Skills Australia, Infrastructure Australia and the COAG Reform Council help ensure that more information is provided and shared and that informed input and consultation is better facilitated.

An Australian Population Council would also seem to be a fitting complement to these other initiatives. It could advise government upon the broad framework for its population-related decisions and in the process help keep the numerous decision-makers informed of the context in which they operate.

In particular, advice to government might include consideration of the merits of alternative population paths or ranges, as in monetary policy, rather than singling out any inevitably arbitrary number that would anyway appropriately vary as associated conditions change. Good policy advice would also encompass structure as well as numbers and would be comprehensive across fertility and participation, as well as immigration. Skills Australia does precisely this for the work-force and skills formation at present, and it has enhanced government understanding without compromising the responsibility of governments for taking the decisions for which they will be held accountable.

As the Hawke era showed, buy-in via consensus and shared understandings of the nation's problems and potential can allow a break-through for the log-jam of vested interests that so bedevil visionary policy. The current tendency of ongoing adversarialism in Australian politics has cost us the bi-partisanship that supported much good policy during the height of the reform period. This earlier approach helped position Australia very well for GFC type challenges, compared to most other OECD countries.

Transparent government spending review

A third lesson from the earlier reform era was that systematic and transparent review of new government policy proposals served Australia well. This happened principally through the legislation review and regulation review processes and also to an extent through the Treasury's internal tax policy matrix process (as well as the one-off Henry Tax Review). In each case the government action had to establish its necessity (show that a genuine market failure was being addressed), and its effectiveness, meaning that it could reasonably be expected to remedy the problem. Further it was required that the government action would adopt the lightest touch response consistent with achieving the objectives of the policy. Empirical evidence was required for each step.

Unfortunately, the processes were all too often by-passed and watered down and alternatives were often weakly defined or evaluated and evidence was selective. But a framework and a transparent procedure that has served Australia well is there and can be revitalised. It is to be hoped that the new Parliamentary Budget Office will facilitate more such evaluation alongside the efforts of the Auditor General and the all too constrained efforts of Infrastructure Australia to provide transparent cost-benefit evaluation for major infrastructure projects. As CEDA's work program has shown, major investments in infrastructure such as the National Broadband Network could well have benefitted substantially from this approach.

However, where invigoration is especially needed is in the spending arena. This has never been subject to transparent, systematic, comprehensive evaluation across all spending proposals. Rigorous cost-benefit or like analyses of all major spending is the administrative reform that Australian Government most needs if special pleading and pork barrelling is to be better restricted. This is where the interstices of government are least exposed to the sunshine. This is the area of government most affected by population policy – health, education, social security and infrastructure spending.

CEDA fills some of these gaps through its work program. This could be complemented by a revival of university engagement with these fields. Bodies such as the Melbourne Institute and the Crawford School of Economics and Government are important contributors, but new initiatives could also be undertaken such as a collaborative cross-university National Consortium of Economic Research or a Council of Economic Review comprising independent economists to hold government to account through expert evaluation of spending, tax, regulation and macro-economic policy.

Mutual responsibility

A fourth lesson of previous reform success is that principles of "conditionality" or "mutual responsibility" can and should be applied. It might be argued, for instance, that concrete policy progress be in train in ameliorating environmental impacts or providing complementary infrastructure before expansive new population growth policies are agreed. This would potentially deliver more buy-in from those suspicious of the potential for promises to be delayed or derailed. In the population area, for example, government promises of an infrastructure body to oversee this area at a federal level in the 1990s took a decade to be implemented, and then by a new government.

There may be concern in the population area that delay means that immediate labour shortages will not be assuaged by, say, increases in skilled migration. Pressure from employers will be hard to resist since this seems a common-sense point. But there are two worries. One is that the short-term solution may reduce commitment to long-term action. For example, there may be resultant reduced effort by firms and governments in domestic skills formation and in education and training.[6] Mutual responsibility would require complementary domestic action in skill and knowledge management.[7]

The second worry is that the seeming short-term benefit is actually largely illusory, even though the perception is understandable. The fact is that in this area there is abundant and consistent research which confirms that for every existing job vacancy filled by a new migrant, spending by or for those migrants generates at least as many new job vacancies. For example, a new overseas carpenter needs a car which requires a new automotive engineer who needs a home which requires a new brick-layer. The studies show a broadly balanced outcome for the macro-economy in the short-term in the sense that more migrants create as many jobs as they fill. Population policy then may be incorrectly targeted if the goals chosen are short-term or immediate problems. Population policy might therefore be better recognised as more usefully being understood as a vehicle for enhancing the longer-term development of Australia through broad-based labour force enhancement and global integration, not a short-term labour market panacea.

The good policy imperative

A fifth and final lesson from earlier reform success is that good policies should be pursued wherever they are identified. This means that no specific population policy imprimatur may be needed for many worthy policies that will complement population policy and which may influence population impacts in areas such as the environment, social change and economic prosperity. Awareness of population context may certainly help here in good policy formation, as argued above, but opportunities for achieving good policy outcomes irrespective of broader population policy settings should be taken where they are identified. This especially applies in areas that are likely to be seen anyway as further removed from core population number matters and the more that beneficial outcomes will ensue from the policy irrespective of the population situation.

For example, there is no denying that there are important urban problems of crowding and pollution to be dealt with. Nor that population change plays a role in exacerbating these. But it is important to say that such problems will also occur irrespective of population policies as there are also wider causes at play. Therefore they should be addressed by direct urban and environmental policies, not just by relying on population control. The behaviour of the existing population in this sphere is as much an issue as population numbers are for the future.

Similarly there is no denying that Australia has environmental problems such as river salinity and biodiversity loss. But many of these are the products of practices of a small and declining rural share of the population, not the growing cities. Rural land use issues arise in Australia because of supply to world markets and are largely unrelated to local population. Direct environmental policies and sensible planning policies are the required first best response and domestic population control issues may actually have limited impact.

Complementary population policies may still at times be useful. For example the actual success of regional migration programs is little appreciated. In the first five years of their operation, numbers under these programs rose to 25 per cent of the skilled entry program, and are capable of further beneficial development.[8] This might operate by the greater delegation of decision-making to state and regional authorities as in Canada, to encourage better community support arrangements. There is also a possible need to tighten criteria around eligible areas for regional migration so large metropolitan areas are excluded and smaller provincial centres are included. It is a puzzle why cities such as Canberra, Newcastle and Wollongong have not in the past been eligible for some migration regional concession schemes, while metropolitan Melbourne has been.

Australian achievement

The assimilation of people from all around the world in reasonable harmony and prosperity, and certainly as much or more than any other nation, has been a worthy achievement. Australia now rates as number one in the OECD Quality of Life Index and number two in the UN's Human Development Index. Our cities rate well in Liveable City rankings.

Such metrics are always to be taken with a grain of salt as they depend on the regimen adopted, the weights applied and the measures used. But it is true that Australia has been able to re-invigorate and sustain its living standards more than many countries. It has done this through well-targeted and competitive economic reforms and by building a worthy safety net across education, health and income. Australia actually does stand as an exemplar, for all its faults, as to how betterment is possible.

For this achievement to continue or even be enhanced, one way forward is a population policy supported by the principles and approaches discussed here. It does not normally feature in the reform discussion of major analysts and decision-makers. But there is a case to be made that many commentators here are a little like generals fighting the last war. The focus on industrial relations, tax, privatisation and regulation is worthy and more remains to be done and important pay-offs await. But when close scrutiny and good empirical work is also applied to neglected areas such as education, training, infrastructure and innovation, even greater pay-offs can be discerned.[9]

INITIATIVE	INCREASE IN GDP
Australia-Indonesia Free Trade Agreement	0.02%
A Single National Workplace Relations System	0.05%
The Bracks Motor Vehicle Reform Package	0.06%
The Henry Tax Review Reforms accepted	0.07%
Increased Superannuation Guarantee (from 9% to 12%)	0.33%
The National Broadband Network	2.00%
The Henry Tax Review complete package	2.50%
The COAG Human Capital Reform Agenda (schools and health)	3.00%
The Bradley Higher Education Review Reform Package	6.10%

There is an argument we should take standard economic evidence seriously in a consistent way, and not just when it suits a pre-conceived approach to policy. If so, we need to also move reform to include a new phase of generating enhanced competitive capability. The Australian people are at the centre of this need and of its potential.

Australia actually had the world's highest per capita income in the second half of the 19th century. It was democratically and socially progressive by the standards of the day, and its affluence came not simply because of the exploitation of natural resources, but also because the country was integrated with the global economy and it was a clever country. Australia defied the "resource curse". It had more patents per capita than any other. School participation rates were ahead of any other country. Universities were established as early as the 1850s. Migrants were chosen carefully and were skilled ahead of migrants to North America – even our convicts were Britain's finest.

The now significantly deregulated Australian economy, combined with strong welfare safety net arrangements (although it is acknowledged there is still some excessive middle class welfare) provides the opportunity for Australia to "go back to the future". This may particularly be expected if complementary policies on education, infrastructure and innovation can be enhanced and operate within a sensible population policy framework. The framework could seek to embed the characteristics listed above and throughout this volume. It doesn't hurt that it would also help with matters neglected in our historical past such as gender issues, indigenous issues and the environment.

Thanks are due to Jonathan Pincus for comments. The views expressed are those of the author.

Endnotes

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2 OECD, Education at a Glance, 2011.

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5 KPMG Econtech, Economic Modelling of Improved Funding and Reform Arrangements for Universities, Report for Universities Australia, April 2010.

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7 R. Green,, Agarwal, R., Van Reenen, J., Bloom, N., Mathews, J., Boedker, C., Sampson, D., Gollan, P., Toner, P., Tan, H., Brown, P.J., 'Management Matters in Australia: Just how productive are we?', Department of Industry, Innovation, Science and Research, Canberra, Australia,2009.

8 K. Golebiowska, "Regional Policy for Skilled Migration in Australia and Canada, unpublished PHD dissertation, ANU, 2007.

9 If the criteria is changed from GDP aggregate impacts to rates of return to recognise differing magnitude of policy initiatives, then again a policy such as the national Broadband Network has an estimated six per cent real rate of return as opposed to the Bradley Reform package of 14.1 per cent, which well exceeds benchmark private sector rates for business investment of around 10 per cent (as established by the ACCC) and a public sector discount rate of seven per cent (as specified by the Department of Finance). The Bradley return is commensurate with the internal rate of return for major private minerals developments such as the NorthWest Shelf development, Australia's largest established mineral project. See Universities Australia, Budget Submission 2012–13, January 2012.

National
Level 13, 440 Collins Street
Melbourne VIC 3000
GPO Box 2117
Melbourne VIC 3001
Telephone 03 9662 3544
Fax 03 9640 0849

New South Wales and the ACT
Level 14
The John Hunter Building
9 Hunter Street
Sydney NSW 2000
GPO Box 2100
Sydney NSW 2001
Telephone 02 9299 7022
Fax 02 9232 7559

Queensland
Level 17, 300 Adelaide Street
Brisbane QLD 4000
GPO Box 2900
Brisbane QLD 4001
Telephone 07 3229 9955
Fax 07 3229 8166

South Australia and the Northern Territory
Level 7, 144 North Terrace
Adelaide SA 5000
PO Box 8248,
Station Arcade
Adelaide SA 5000
Telephone 08 8211 7222
Fax 08 8211 8222

Victoria and Tasmania
Level 13, 440 Collins Street
Melbourne VIC 3000
GPO Box 2117
Melbourne VIC 3001
Telephone 03 9662 3544
Fax 03 9640 0849

Western Australia
Level 5, BGC Centre
28 The Esplanade
Perth WA 6000
PO Box 5631, St Georges Tce
Perth WA 6831
Telephone 08 9228 2155
Fax 08 9228 2166