Inter GENERATIONAL REPORT 2007

Circulated by
The Honourable Peter Costello, MP
Treasurer of the Commonwealth of Australia

April 2007

1967   1987   2007   2027   2047

FOREWORD

This is the Australian Government's second intergenerational report. The report provides a basis for considering the Australian Government's fiscal outlook over the long term and the sustainability of economic growth in light of Australia's ageing population and other factors.

As required under the Government's *Charter of Budget Honesty Act 1998*,

> 'An intergenerational report is to assess the long term sustainability of current Government policies over the 40 years following the release of the report, including by taking account of the financial implications of demographic change.'

The first intergenerational report was published as part of the 2002-03 Budget in May 2002 and assessed the long-term financial implications of policy commitments current at that time on the overall budget balance. These issues and the effects of demographic change on future economic growth have been developed since 2002. Issues have been discussed in speeches, reports and budget papers, including the consultative document, *Australia's Demographic Challenges* of 25 February 2004 and the research report from the Productivity Commission *Economic Implications of an Ageing Australia* released on 12 April 2005.

This report provides an update of the long-term demographic, economic and spending projections and the implications for the sustainability of fiscal policy. Broad policy choices to address the sustainability challenges are discussed.

NOTES

(a)   The following definitions are used in this report:

  – 'real' means adjusted for the effect of inflation; and

  – one billion is equal to one thousand million.

(b)   Figures in tables and generally in the text have been rounded. Discrepancies in tables between totals and sums of components are due to rounding.

(c)   The following notations are used:

  $m $ million;

  *   information is not available; and

  neg   negligible.

(d)   References to the 'States' include the Territories.

(e)   Projections are based on the *2006-07 Mid-Year Economic and Fiscal Outlook* adjusted for major government decisions announced since that time, up to and including 6 March 2007.

CONTENTS

EXECUTIVE SUMMARY

The Australian Government's long-term fiscal sustainability has improved since the first intergenerational report in 2002 (IGR1), although demographic and other factors continue to pose substantial challenges for economic growth and long-term fiscal sustainability.

Fiscal sustainability is assessed by the ratio of government spending to Gross Domestic Product (GDP) or, equivalently, the ratio of government spending per person to GDP per person, and its implications on net debt.

Over the next 40 years, the ageing of the population (specifically the impact of relatively fewer people of traditional working age) is projected to slow economic growth, with real GDP per person rising more slowly than in the past 40 years: 1.6 per cent per year on average over the next 40 years compared with 2.1 per cent over the past 40 years.

At the same time, spending pressures in areas such as health, age pensions, and aged care are projected to rise, due to demographic and other factors. Real Australian Government spending per person is projected to increase by 2 per cent a year on average over the next 40 years. Accordingly, Australian Government spending is projected to rise by around 4¾ percentage points of GDP by 2046-47. After taking into account the strong fiscal starting position of a surplus of just over 1 per cent of GDP, the 'fiscal gap' or the amount by which spending is projected to exceed revenue will be around 3½ per cent of GDP by 2046-47. As a consequence, net debt is projected to re-emerge and rise rapidly, reaching around 30 per cent of GDP by 2046-47.

The outcome for the second intergenerational report (IGR2) compares to a projected fiscal gap in IGR1 of 5 per cent of GDP by 2041-42. The improved outcome is due to a lower rate of growth of projected spending per person and higher projected nominal GDP per person compared to IGR1. The lower projected spending is mainly in health partly offset by increases in some areas such as education and aged care. The higher projected nominal GDP per person is predominantly attributable to the recent strong rise in the terms of trade. Higher labour force participation and skilled migration also have increased nominal GDP per person.

Steps to manage these fiscal pressures will need to continue, including managing the growth in government spending and lifting economic growth.

It will be important to focus on the efficiency and effectiveness of government spending including the potential role of market-based mechanisms in managing spending pressures. It also may be necessary to make choices about spending priorities as fiscal pressures associated with ageing and other factors emerge.

Policies to lift labour force participation and productivity will increase economic growth and GDP per person. They need also to take account of other issues such as the possibility of exogenous shocks, international developments and long-term forces acting on the economy such as innovation, and increasing pressures on our natural resources and global climate.

The demographic, economic and fiscal projections in this report assist the policy debate about the choices governments can make today to improve the wellbeing of current and future generations of Australians.

SOUND FOUNDATIONS FOR THE FUTURE

The economy has grown strongly in recent years and has performed better than many other countries (Chart 1). In the five years since IGR1, strong policy frameworks and steady progress in reform have improved the outlook.

Chart 1: Australian real GDP per person relative to OECD average
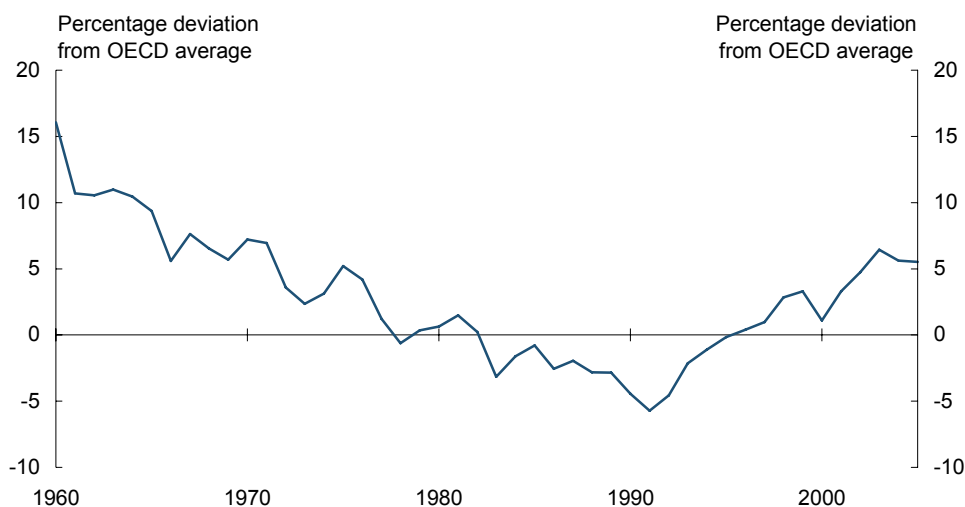
Note: OECD average is calculated for the 24 longest standing OECD member countries.
Source: Conference Board and Groningen Growth and Development Centre, Total Economy Database, January 2007.

Australia's medium-term macroeconomic policy framework continues to underpin economic growth. A sustainable fiscal policy framework enables governments to manage their finances so they can meet their spending commitments, both now and in the future. Fiscal policy focused on sustainability also provides greater stability and certainty of future tax burdens. This supports informed long-term decision making, and encourages investment and economic growth.

Since IGR1, the Government has continued to deliver strong fiscal outcomes, by maintaining budget surpluses, eliminating net debt and establishing the Future Fund. In

addition, spending pressures have begun to be addressed through measures such as reforms to the Pharmaceutical Benefits Scheme.

Complementing these strong macroeconomic and fiscal policy frameworks, reforms since IGR1 include policies designed to improve the drivers of economic growth, particularly participation and productivity. These include strengthening incentives to participate in the labour force and improving the flexibility of the labour market. Policy changes include reductions in personal income tax, family tax benefit adjustments, workplace relations changes, modifications to income support (including the Welfare to Work changes) and significant improvements to the superannuation system.

In addition, the Council of Australian Governments' National Reform Agenda is focused on human capital and competition reforms to improve participation and productivity in the longer term. This represents a significant example of reforms that should be undertaken and which could address the implications of an ageing population sufficiently early to avoid large adjustments later.

LONG-TERM DEMOGRAPHIC AND ECONOMIC PROJECTIONS

The ageing of the population continues to pose challenges for economic growth and the long-term fiscal outlook.

Australia's population is projected to grow and continue to age over the next 40 years with the fastest rates of growth in the numbers of people aged 65 and over (Chart 2). Declining mortality rates leading to higher life expectancy, as well as the ageing of the baby boomer generation mean that about 25 per cent of the population is projected to be aged 65 and over by 2047: the rate of ageing will quicken after 2010 (Chart 3). There have been positive developments in respect of the fertility rate which has increased recently, but it is still significantly below the replacement rate. The policy shift in recent years towards younger, skilled migrants is assumed to continue, partially offsetting the rate of population ageing.

Chart 2: Historic and projected Australian population

Millions of people   Millions of people
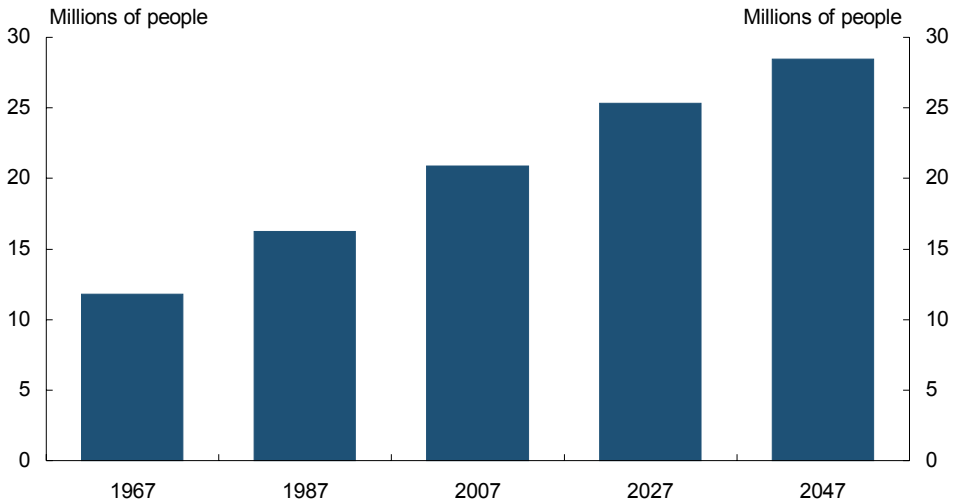
Source: Australian Bureau of Statistics data and Treasury projections.

Chart 3: Proportions of total Australian population in different age groups
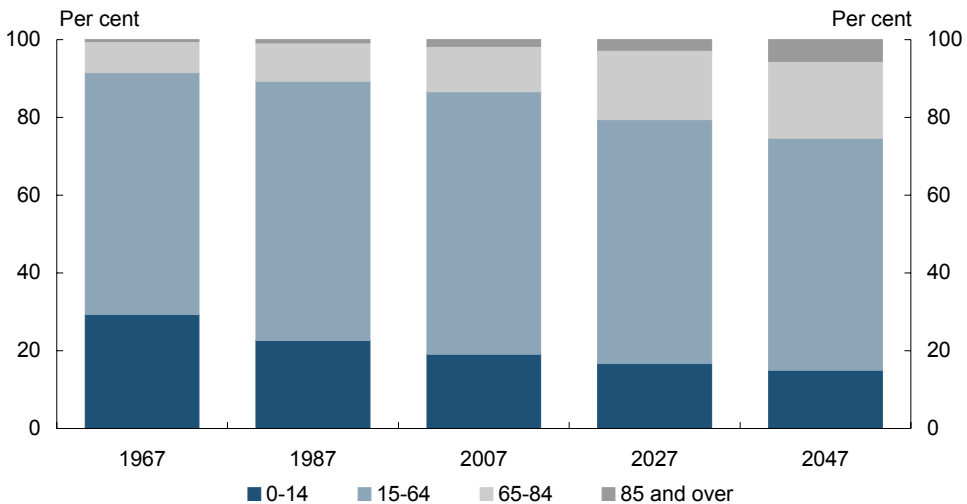
Per cent   Per cent

■ 0-14   ■ 15-64   ■ 65-84   ■ 85 and over

Source: Australian Bureau of Statistics Historic Australian Population Statistics 3105.0.65.001 Table 19 and Treasury projections.

These demographic changes will lead to a reduction in the proportion of the population of traditional working age, 15-64 years. As a consequence of the subsequent flow through to the proportion of the population who work, this is projected to reduce the average rate of economic growth in the next 40 years.

The population of traditional working age, 15-64 years, is projected to grow by over 20 per cent by 2047, but to fall as a proportion of the total population by around

8 percentage points to 60 per cent. The fastest growing group of traditional working age people is that aged 55-64, rising by nearly 50 per cent over the next 40 years.

Total labour force participation rates (aged 15+) are projected to fall, reflecting the rapid increase in the proportion of the population aged 65 and over (Chart 4). However, the recent lift in labour force participation for older workers is likely to remain significant and has softened the projected decline in labour force participation. Labour productivity is assumed to grow at its average rate of the past 30 years.

Chart 4: Historic and projected labour force participation rates
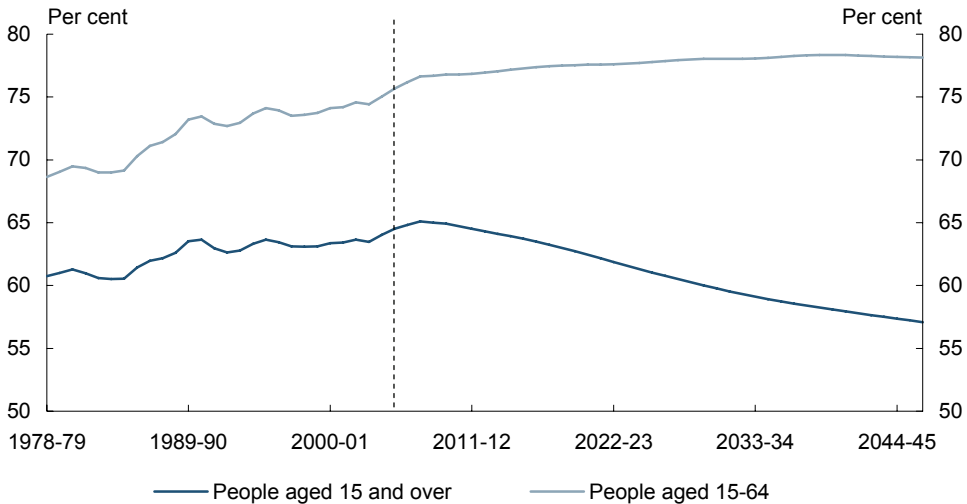
Source: Australian Bureau of Statistics data and Treasury projections.

Overall, the combination of these factors points to a slowing of economic growth over the next 40 years (Chart 5), particularly during the 2020s when a substantial fall in the proportion of the population of traditional working age is projected, due to the retirement of the baby boomer generation.

Chart 5: Contributions to growth in real GDP per person
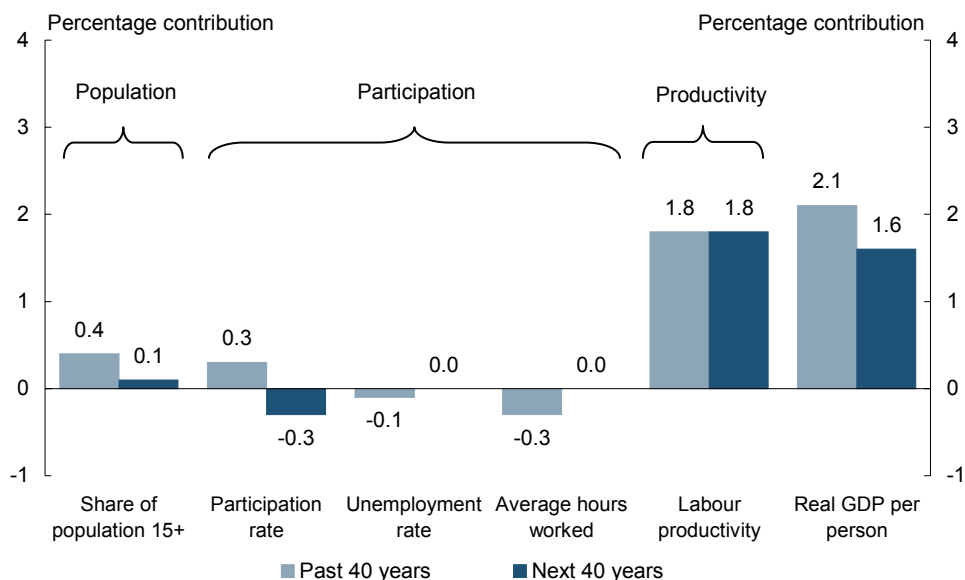
Source: Australian Bureau of Statistics data and Treasury projections.

LONG-TERM FISCAL PROJECTIONS

Demographic and other factors are projected to place significant pressure on government finances over the longer term and result in an unsustainable path for net debt towards the end of the projection period.

Australian Government spending is projected, in the absence of policy adjustments, to rise by around 4¾ per cent of GDP by 2046-47 (Chart 6). By that time, a fiscal gap of around 3½ per cent of GDP is projected to develop. This compares to a projected a fiscal gap of 5 per cent of GDP by 2041-42 in IGR1 (Chart 7).

If surpluses are maintained to 2022-23 as projected, then net debt would not re-emerge until the mid-2030s but would rise very quickly to reach around 30 per cent of GDP in 2046-47 and continue to increase after that date (Chart 8).

Chart 6: Projection of spending pressure

Per cent of GDP   Per cent of GDP
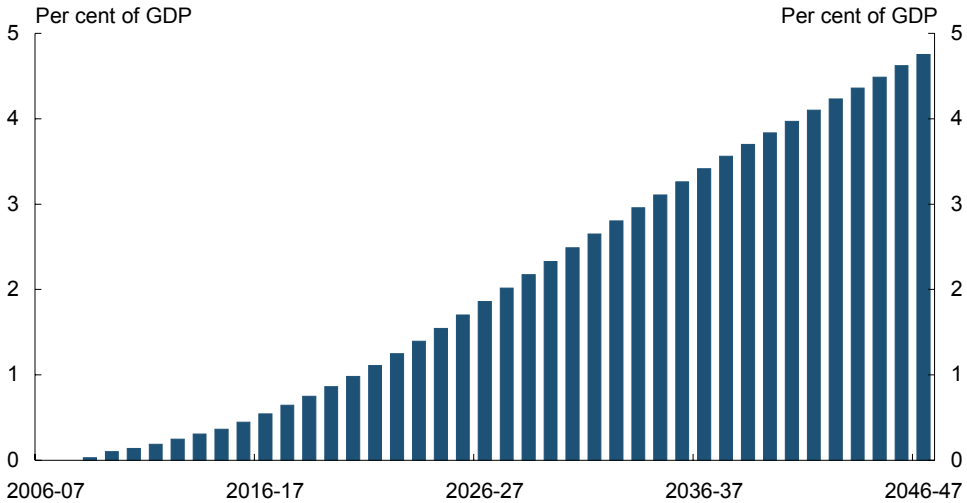
Source: Treasury projections.

Chart 7: Comparison of IGR1 and IGR2 projected primary balances
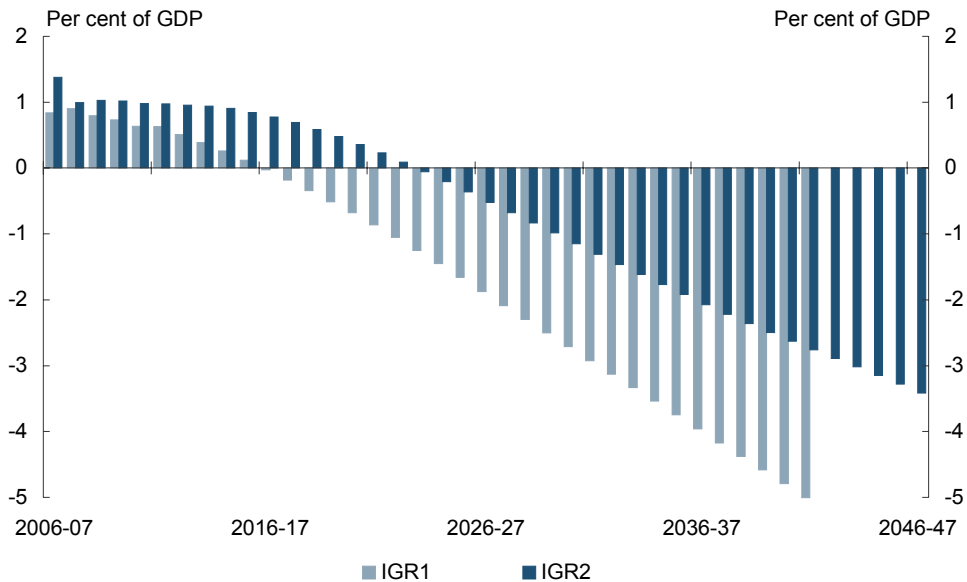
Per cent of GDP   Per cent of GDP

■ IGR1   ■ IGR2

Note: The projections are of the primary balance (which excludes net interest payments and Future Fund earnings). The first four years of the IGR2 projections are primary balances based on the *2006-07 Mid-Year Economic and Fiscal Outlook* adjusted for major government decisions announced since that time. Since IGR1, there have been some changes in projection methodologies incorporating new data and modelling approaches.
Source: Treasury projections.

Chart 8: Projected path of net debt
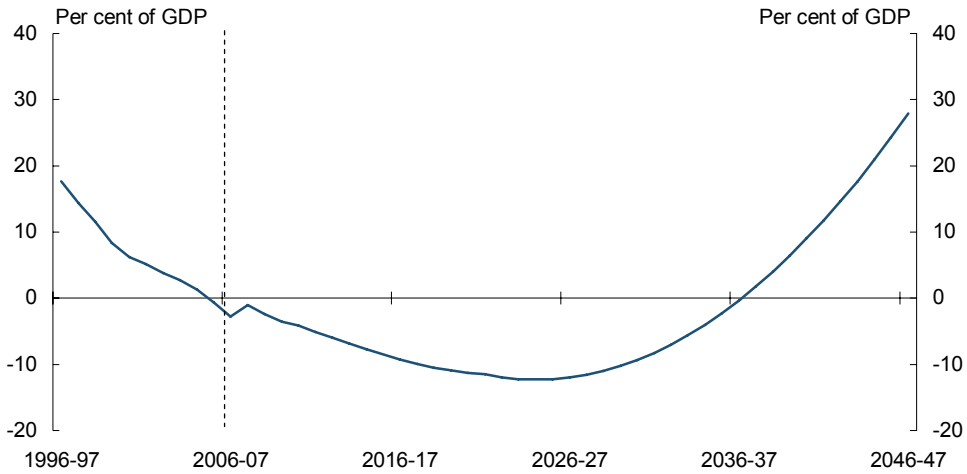
Note: The projections of net debt include net interest payments. The small increase in Australian Government net debt in 2007-08 reflects the expected change in the financial asset composition of the Future Fund as it moves towards a portfolio allocation consistent with the benchmark return specified in the Australian Government's investment mandate.
Source: Treasury projections.

The main spending pressures continue to be in health, age pensions and aged care (Chart 9). All these areas will be affected by gradual demographic change as well as non-demographic factors.

While an ageing population is projected to contribute to an increase in spending over the next 40 years, roughly two-thirds of the projected increase in real spending per person is driven by factors other than ageing. This is most notable for health spending, where a significant component of the projected increase is driven by non-demographic factors such as the development of new drugs.

Chart 9: Projections of Australian Government spending by category
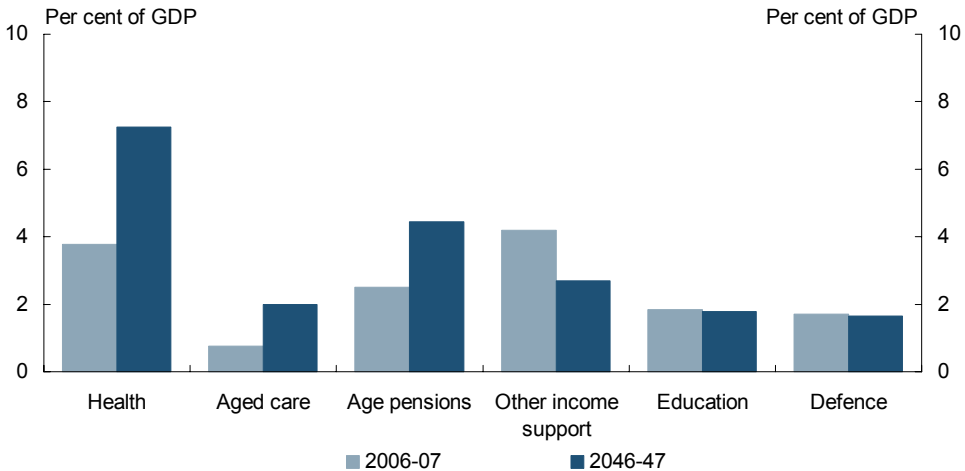
Source: Treasury projections and assumptions.

Australian Government health spending is projected to continue to rise strongly and is the main spending pressure, even with recent policy changes. Spending on pharmaceutical benefits is projected to grow faster than Australian Government spending on hospitals, medical benefits and other areas.

The major influence on government spending on aged care is the number of people aged 85 and over and this number is projected to more than quadruple within the next 40 years.

The strongest growth in income support payments over the projection period will be income payments to the aged including age pensions. However, the system of means-tested flat rate pensions puts Australia in a better position than many other OECD countries. Recent changes to simplify and streamline superannuation also should assist in relieving pressure in the longer term by encouraging higher retirement saving and longer workforce participation.

PART 1: ECONOMIC AND FISCAL SUSTAINABILITY — SOUND FOUNDATIONS

OVERVIEW

Australia's strong economic performance with low unemployment, high labour force participation and solid productivity growth reflects the strength of its medium-term macroeconomic frameworks and the Government's commitment to well-functioning markets.

Reforms since IGR1 have further improved the frameworks to support economic growth and sustainability of government finances, and will help avoid costly burdens being passed on to future generations.

SUSTAINING ECONOMIC, SOCIAL AND ENVIRONMENTAL CONDITIONS

The wellbeing of successive generations requires sustainable economic, social and environmental conditions. The Government's policy framework therefore aims to ensure that economic, social and environmental policies complement each other to bring about improvements in wellbeing.

While wellbeing has a number of elements, sustainable economic growth is an important component, being a major determinant of living standards in society. Steady sustainable growth achieved with low and stable inflation and unemployment is a better outcome than volatile economic conditions. A sound macroeconomic policy framework for monetary and fiscal policy supports these outcomes. In addition, an economy which is flexible and resilient, that adapts readily to changing circumstances — whether opportunities, challenges or unexpected shocks — will be better able to deliver steady economic growth.

A concern for the wellbeing of future generations also needs to take account of social and environmental conditions. Conditions which support and provide opportunities for Australians, for example through employment and investment opportunities, will lead to improvements in wellbeing through time.

Improving wellbeing and achieving sustainable economic growth also requires that appropriate environmental conditions are maintained through time. Natural resources are

essential inputs into Australia's productive capacity, including land, water and other resources. However, economic growth also affects the environment. The sustainability of economic growth can be undermined by poor use of resources or degradation of the environment. More generally, the wellbeing of future generations may be affected by the activities of current generations, if there is loss of productive capacity and/or social amenity from degradation of the environment.

This report focuses on the implications of demographic change for economic growth and then assesses the financial implications of continuing current Government policies over the next four decades. Policy approaches are also discussed. In weighing up the policy options to manage demographic challenges consideration needs to be given to the other forces affecting outcomes, and the interaction of policies.

MACROECONOMIC POLICY FRAMEWORKS

A sustainable fiscal framework is one element of the Government's broader macroeconomic policy framework, which aims to deliver sustainable economic growth, and contribute to rising employment and higher living standards.

In 1996, the Government implemented a medium-term framework for fiscal policy. This has formed the basis for government fiscal management over the past decade and has delivered sound fiscal outcomes. Key elements include the *Charter of Budget Honesty Act 1998* (the Charter) and the medium-term fiscal strategy. Both ensure fiscal policy is characterised by a disciplined approach to budgeting, transparent reporting and accountability.

The Charter requires the Government to frame its fiscal strategy having regard to: fiscal risks, including by maintaining Australian general government debt at prudent levels; the state of the economic cycle; the adequacy of national saving; the stability and integrity of the tax system; and the financial effect of policy decisions on future generations.

Consistent with the Charter's requirements, the Government's medium-term fiscal strategy is to maintain budget balance, on average, over the course of the economic cycle. Supplementary objectives include maintaining fiscal surpluses over the forward estimates period while economic growth prospects remain sound; not increasing the overall tax burden from its 1996-97 level; and improving the Australian Government net worth position over the medium to longer term.

The Charter also requires the Government to produce, at least every five years, an intergenerational report assessing the long-term sustainability of current Government policies, including by taking account of the financial implications of demographic change. By explicitly showing the long-term fiscal consequences of its policies, the Government has committed to improving its transparency and accountability to the community. The

report also is an important tool in monitoring and improving policies and frameworks to facilitate sustainability through time.

Also central to the macroeconomic framework is the inflation targeting regime that aims to achieve Consumer Price Index (CPI) inflation of 2 to 3 per cent per year on average over the course of the economic cycle. The inflation targeting regime was formalised by the Government in August 1996 in a 'Statement on the Conduct of Monetary Policy', issued jointly by the Treasurer and the Governor of the Reserve Bank. This statement formalised the Reserve Bank's operational independence in achieving this goal. It was recently renewed on 18 September 2006 between the Treasurer and the incoming Reserve Bank Governor.

AUSTRALIA'S ECONOMIC AND FISCAL RECORD

The medium-term macroeconomic policy framework, combined with more flexible financial, product and labour markets, has contributed to Australia's strong economic and fiscal performance over the past decade.

Since the early 1990s recession, Australia has maintained uninterrupted and reasonably stable economic growth (Chart 1.1).

Chart 1.1: Australian real GDP growth, December 1960 to December 2006
(per cent through-the-year)
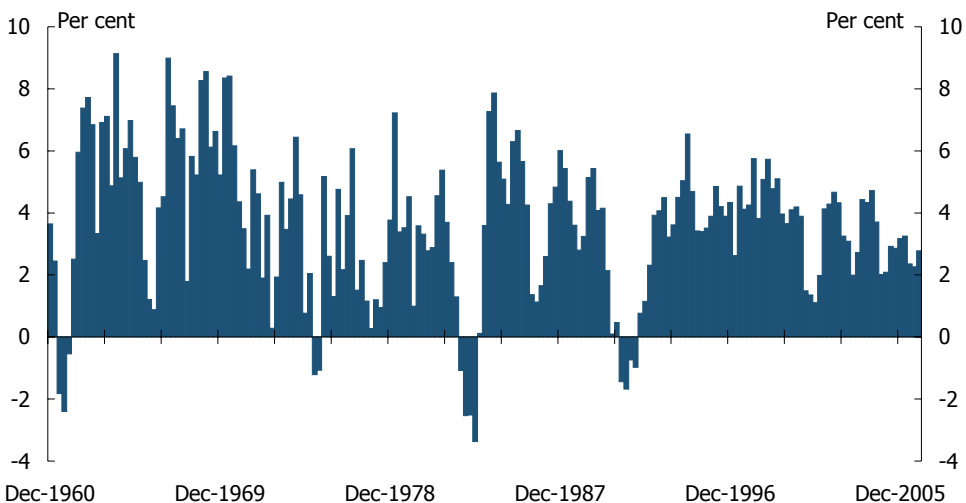
Source: Australian Bureau of Statistics Cat. No. 5206.0.

Employment growth has been strong, with unemployment falling virtually continuously, from a peak of around 10½ per cent in 1992 to below 5 per cent currently. Labour force participation rates have been rising, particularly after 2000. As a consequence, the

proportion of the population aged 15 and over in employment is at its highest level ever (Chart 1.2).

Chart 1.2: Proportion of the population in employment
(People aged 15 and over)
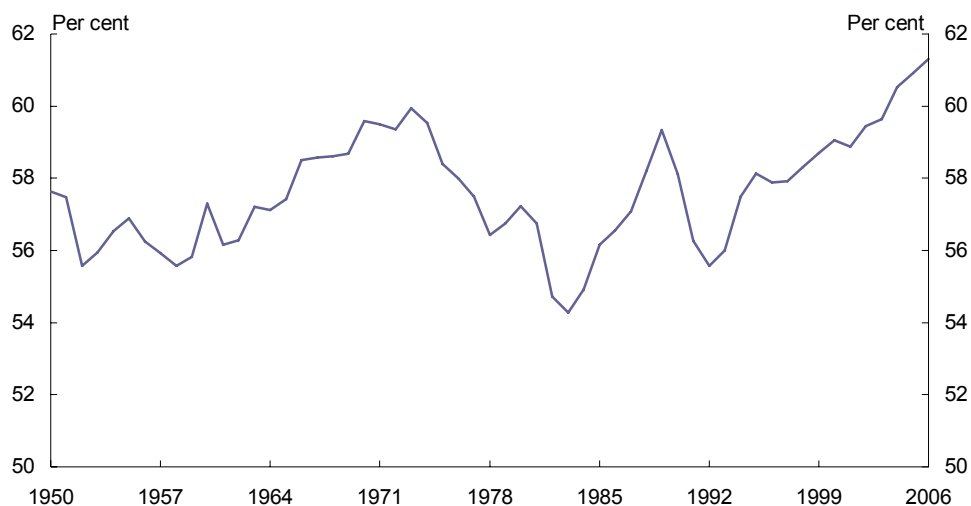
Source: Conference Board and Groningen Growth and Development Centre, Total Economy Database, January 2007.

After averaging around 8 per cent per year during the 1980s, inflation has fallen and averaged around 2½ per cent per year since the early 1990s.

Australia also experienced strong productivity growth in the 1990s, following decades of lagging behind other major developed countries, although productivity growth has slowed somewhat this decade. This productivity performance has underpinned consistent growth in real wages and seen Australian real GDP per person rise more rapidly than the average for OECD countries — a clear contrast to the experience of the previous several decades (Chart 1.3).

Chart 1.3: Australian real GDP per person relative to OECD average
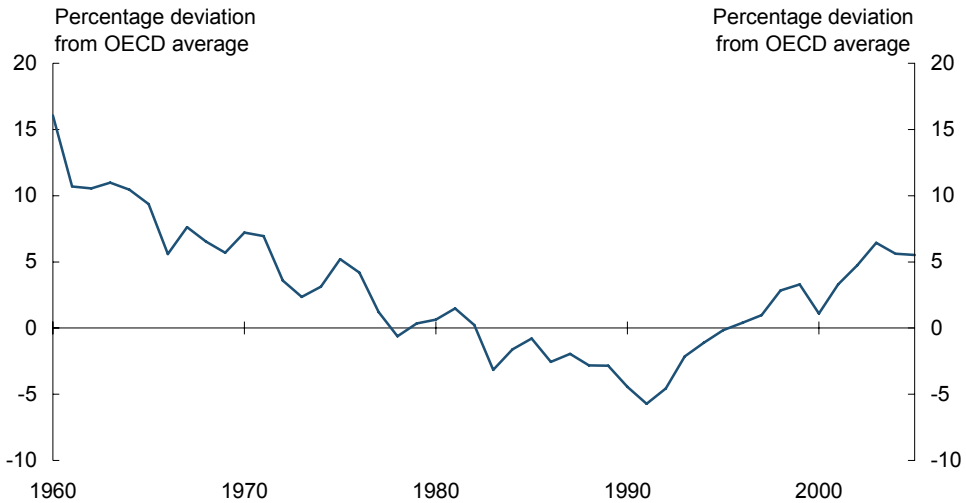
Note: OECD average is calculated for the 24 longest standing OECD member countries.
Source: Conference Board and Groningen Growth and Development Centre, Total Economy Database, January 2007.

Responsible fiscal management supports Australia's recent economic performance. Over the 10 years to 2005-06, underlying cash surpluses have averaged around 1 per cent of GDP. These surpluses have contributed to the elimination of Australian Government general government sector net debt for the first time in three decades (Chart 1.4).

Chart 1.4: Australian Government general government sector net debt
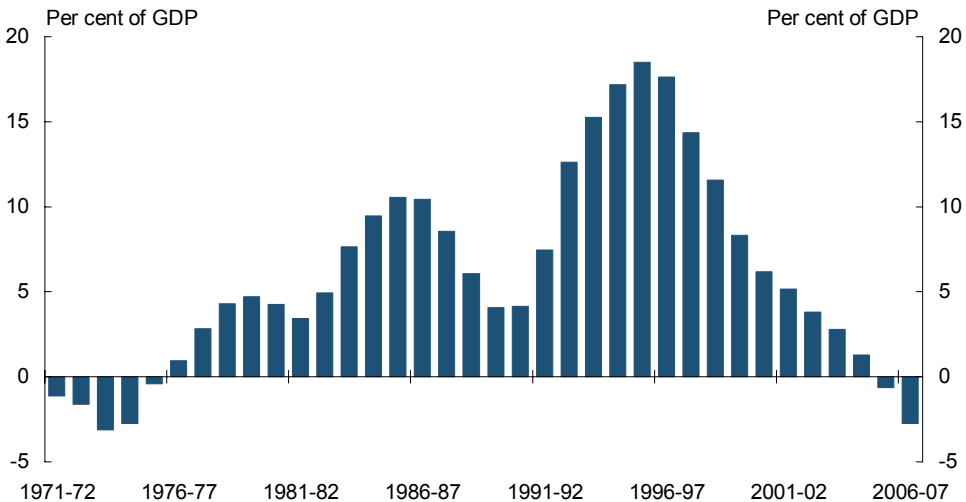
Note: Data are for the Australian Government general government sector.
Source: Australian Bureau of Statistics Cat. No. 5501.0 and 5513.0, Final Budget Outcomes, *2006-07 Mid-Year Economic and Fiscal Outlook*, and Treasury estimates.

Economic reforms along with the development of medium-term monetary and fiscal policy frameworks, and the demonstrated commitment to use these frameworks to achieve disciplined monetary and fiscal policy outcomes, have improved Australia's economic resilience. This is despite sizeable shocks, particularly the 1997-98 Asian financial crisis, the worldwide economic downturn in the early 2000s, and an extended drought beginning in 2002-03.

POLICY PROGRESS SINCE IGR1

IGR1 raised awareness of demographic pressures and other challenges that Australia is likely to face over the long term and their implications for economic growth and fiscal sustainability. The Government has introduced policy measures to improve the sustainability of economic growth and government finances, and help avoid costly burdens being placed on future generations. Steps taken today reduce the need for larger policy adjustments in the future.

The Government has achieved strong fiscal outcomes since IGR1, delivering budget surpluses totalling over $40 billion, eliminating net debt and establishing the Future Fund to fund outstanding Australian Government superannuation liabilities by 2020. Funding the Australian Government's superannuation liability now will reduce future pressures on the budget at a time when the budget will face the spending challenges associated with an ageing population and other pressures.

The Government has taken steps to address major spending pressures identified in IGR1. Building on the Pharmaceutical Benefits Scheme (PBS) initiatives announced in the 2002-03 Budget, the Government recently announced further reforms to reduce the costs to the Government of medicines while maintaining the price caps to patients. These reforms are estimated to save the PBS $3 billion over 10 years. They will assist in improving the sustainability of the PBS and create 'head room' for financing the provision of new drugs and treatments that emerge in future years.

But IGR1 showed that while population ageing will drive faster growth in government spending in some areas, a key risk to fiscal sustainability also comes from the impact of population ageing on the rate of economic growth. In response, the Government has introduced a range of policies to support economic growth through increased population, participation and productivity.

Higher fertility and higher levels of migration slow the rate of overall ageing of the population. Policy initiatives that have supported this include expansion of the Maternity Payment and other policies to support families, including large increases in the maximum rate of the Family Tax Benefit. The Government also increased the size, and shifted the balance, of Australia's migration programme. The net migration intake has increased from an average of around 90,000 during the late 1990s to 110,000 over the last ten years.

Within this, there also has been a shift in favour of skilled migration, adding to the population of workforce age.

Policies to raise labour force participation help address the slowing of labour force growth associated with an ageing population. The Government has placed particular emphasis on such policies since IGR1. The Welfare to Work package contained a comprehensive package of measures designed to increase incentives to enter the workforce and reduce reliance on welfare. Personal income tax cuts, including cuts in marginal tax rates and increased thresholds, announced in successive budgets, and changes to the Family Tax Benefit also have increased returns to work. Introduction of the mature age worker tax offset and especially the recent superannuation reforms have enhanced work incentives for older age groups.

As labour force growth slows with the ageing population, it will be important to lift productivity to sustain acceptable rates of economic growth. Many of the Government's policies aim to improve productivity through improving the operation of markets, such as creating a more flexible labour market through the Government's WorkChoices reforms. Improved links with international markets have been achieved through tariff reductions and trade agreements. Implementation of international standards in areas such as accounting and prudential regulation have improved the cross-border regulation of markets and facilitated competition.

The National Reform Agenda (NRA) announced by the Council of Australian Governments also will contribute to growth in productivity and labour force participation. It aims to build on the gains made by the National Competition Policy agenda. The NRA provides a framework for boosting competition in the areas of transport, energy and infrastructure; reducing the regulatory burden imposed by the three levels of government; and delivering improvements to human capital.

PART 2: LONG-TERM DEMOGRAPHIC AND ECONOMIC PROJECTIONS

OVERVIEW

Demographic and economic factors are important determinants of government expenditure. They are also the chief determinants of growth in real GDP per person which, in turn, determines the government's ability to finance expenditure.

Demographic change is projected to have major effects on the future size and composition of the Australian population. The composition of the population will change considerably as a result of a decline in fertility rates which commenced in the 1960s. This, and increasing life expectancy, will lead to a marked ageing of the population, although a continuation of significant levels of net migration will reduce the rate of ageing to some extent.

Productivity improvements have driven growth in real GDP per person over the past 40 years, and are projected to continue to be the main source of this growth over the next 40 years.

Other factors have made a small positive contribution to growth in real GDP per person over the past 40 years, but are projected to subtract from growth in the future. Ageing of the population is projected to slow the rate of growth in real GDP per person by reducing the proportion of the population of traditional working age (15–64 years) and therefore the rate of labour force participation across the whole population.

Reflecting recent trends, projections of fertility rates, life expectancies, age-specific participation rates and levels of migration are all higher in IGR2 than in IGR1. As a result of higher fertility rates, life expectancies and net migration, the population is projected to be larger over the next 40 years than in IGR1. The current level of nominal GDP per person is significantly higher than was projected in IGR1, due to the recent strong rise in the terms of trade, higher labour force participation and higher levels of skilled migration. This higher level is projected to be sustained over the next 40 years, with favourable implications for the fiscal gaps projected in this report.

FRAMEWORK FOR ANALYSING REAL ECONOMIC GROWTH — 3PS

In analysing the projections in this report, real economic output (real GDP) is disaggregated into three components: population, participation and productivity (the 3Ps) (Chart 2.1). In this decomposition, population is the number of people of working age (15 and over); participation is the average number of hours worked in the labour force by each working-age person; and productivity is the average output produced per hour worked.

Projections for each of the 3Ps are, in turn, determined by a range of demographic and economic assumptions. The demographic assumptions are those for fertility, mortality and migration, which affect the number of people of working age (population) as well as the composition of the population by age and gender. Because employment and hours worked differ substantially across age-gender cohorts, changes in the composition of the population also significantly affect participation. Furthermore, changes in labour force participation or average hours worked by different age-gender cohorts affect aggregate participation, as do changes in the unemployment rate. Finally, in this decomposition, the assumed level of labour productivity (productivity) contributes directly to the level of real GDP.

There are also interactions among the 3Ps, for example, between participation and productivity. For example, at a time of low unemployment, increasing participation could draw less productive workers into employment and temporarily reduce overall average productivity growth.

Demographic and economic projections are inherently uncertain, especially over periods as long as 40 years. This report presents baseline projections for demographic and economic developments over this time, based on historical trends. Nevertheless, it is inevitable that currently unforeseen developments will, sooner or later, render these projections inaccurate. The sensitivity analysis in Appendix B provides results for reasonable alternative assumptions to the baseline projections presented in this report.

Chart 2.1: Population, participation, productivity and real GDP
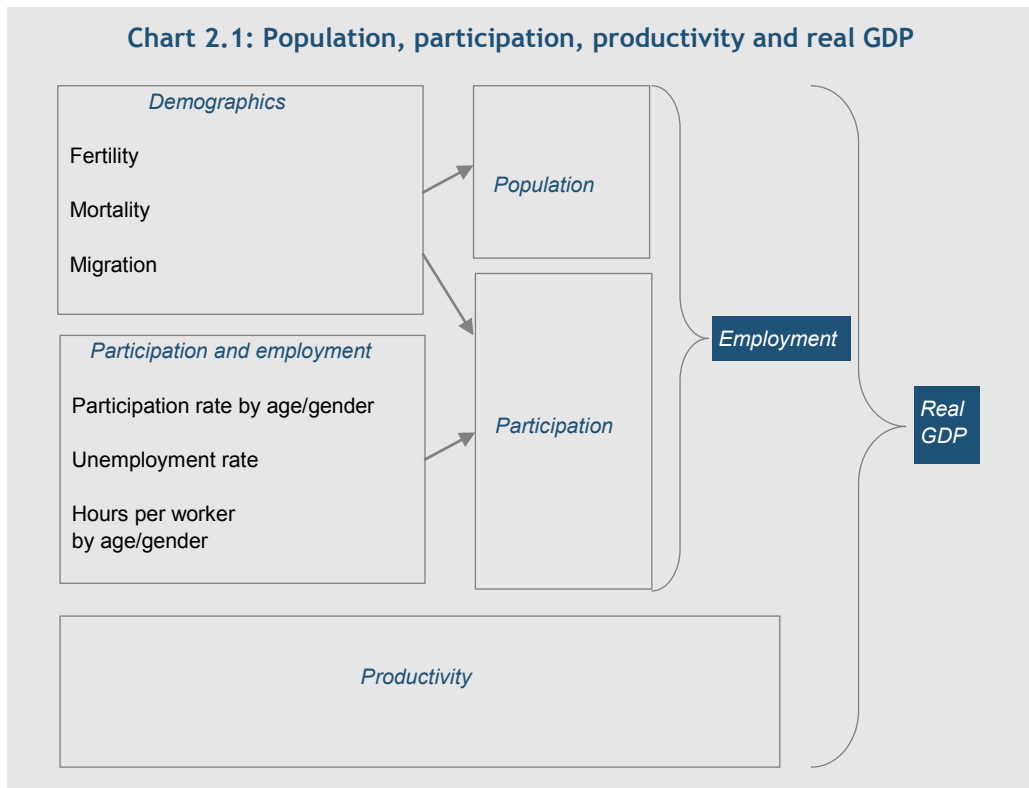
Source: Treasury.

POPULATION

Projections of the population depend on assumptions about fertility, mortality and migration. In common with other OECD countries, the Australian population will continue to age, driven by steadily declining mortality rates and below-replacement fertility rates. Net overseas migration into Australia will increase the population and reduce the rate of population ageing, as migrants are significantly younger on average than the resident population.

Several developments since IGR1 are projected to continue into the future and will have an impact on both the size and average age of the Australian population. Mortality rates have fallen more rapidly than anticipated in IGR1, tending to raise slightly the average age of the projected population. Higher-than-anticipated fertility rates and changes to Government policy encouraging greater numbers of skilled migrants — who are younger on average than the resident population — tend to lower slightly this average age. Taken together, these changes have led to a projection of a significantly larger and slightly younger population than in IGR1.

Between now and 2047, it is projected that the number of young (0-14 years) resident Australians will rise slightly, those of traditional working age (15-64 years) will rise by about one-fifth, older people (65-84 years) will more than double, and the very old (85 and over) will more than quadruple.

Fertility

The total fertility rate (TFR) of Australian women peaked at 3.5 births per woman in 1961 at the end of the post World War II baby boom. After that, Australia's TFR declined rapidly during the 1960s and 1970s, stabilised during the 1980s and gradually declined over the 1990s. The TFR has broadly stabilised since around 1998, increasing slightly since 2001 (Chart 2.2).

Age-specific data show increasing numbers of women deferring child bearing until their late 20s or early 30s. This trend has been evident since the 1990s, and remains a key influence on Australia's changing population structure. The increasing number of children born to women in their 30s is not compensating fully, however, for the declining number born to women in their 20s.

Australia's current TFR of around 1.8 births per woman is higher than the fertility rates in many OECD countries, including Italy, Germany, Japan and Canada, and higher than the OECD average of 1.6. However, it is below those for New Zealand (1.95 in 2003) and the United States (2.04 in 2003). Based on recent age-specific fertility trends, Australia's TFR is projected to increase initially, then to fall slowly to 1.7 by 2047 (Chart 2.2), higher than the TFR of 1.6 in 2042 which was projected in IGR1.

Chart 2.2: Australia's historical and projected total fertility rate
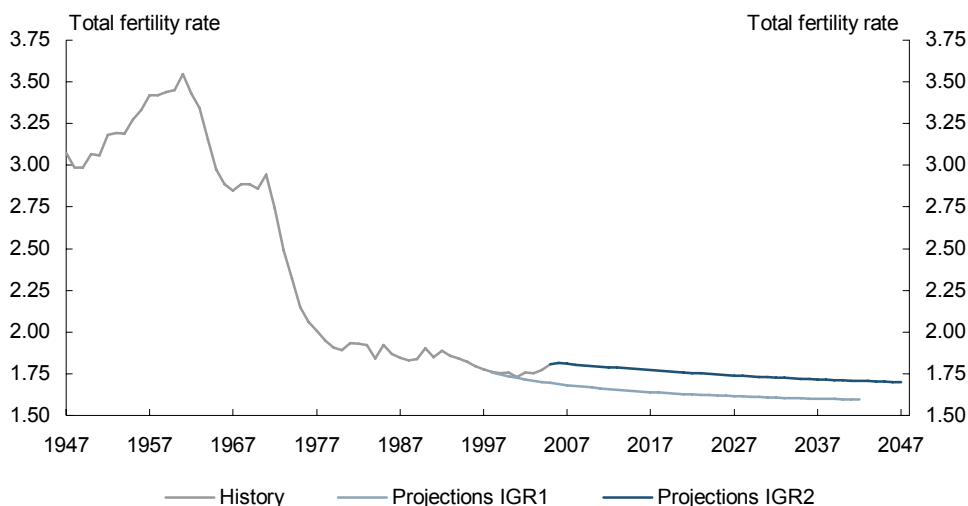
Note: The total fertility rate is the number of children a woman would bear during her lifetime if she experienced the current age-specific fertility rates at each age of her reproductive life.
Source: Australian Bureau of Statistics Cat. No. 3301.0 (various) and Treasury projections.

Mortality

Average Australian mortality rates have fallen strongly over the past century. As a consequence, life expectancies have risen for both men and women. Falling mortality rates add to population growth and imply a higher proportion of aged people in the population.

Australia's crude death rate has fallen from 8.0 deaths per thousand in 1976 to its lowest recorded rate of around 6.4 deaths per thousand in 2005.

Mortality rates are falling across all age groups and this trend is projected to continue for at least the next four decades. Women have lower mortality rates than men and are projected to continue to live longer on average. Nevertheless, mortality rates for men are falling slightly faster than those for women, so that in older age groups, the proportion of men is projected to continue to rise slowly.

Australians' life expectancies are now among the highest in the world. United Nations data indicate that Australia's life expectancy at birth for both men and women is higher than in most other countries including Canada, New Zealand, the United Kingdom and the United States.[1] For men only Iceland, Hong Kong, Japan and Switzerland have higher life expectancies at birth. For women only Japan, Hong Kong, Switzerland, Spain and France have higher life expectancies at birth.

Australians' life expectancy at birth for men rose from 55.2 years in the period 1901-10 to 78.5 years in 2003-05, and for women, from 58.8 to 83.3 years in the same time spans. Over the past five years, life expectancies have risen more rapidly than expected in IGR1; a trend that is projected to continue. Men born in 2047 are now projected to live an average of 6.9 years longer than those born in 2007, and women an average of 6 years longer (Table 2.1).

Table 2.1: Australians' projected life expectancy (in years)

	2007	2017	2027	2037	2047
Life expectancy at birth					
Men	79.1	81.4	83.2	84.6	86.0
Women	83.8	85.6	87.2	88.5	89.8
Life expectancy at age 60					
Men	22.6	24.2	25.5	26.6	27.7
Women	26.1	27.4	28.6	29.8	30.8

Source: Treasury projections.

Also of importance to population ageing is the projected rise in life expectancy at older ages. Based on recent trends, men aged 60 in 2047 are projected to live an average of 5.1 years longer than those aged 60 in 2007, and women an average of 4.7 years longer (Table 2.1).

---

1   United Nations, World Population Prospects: The 2006 Revision Population Database.

Migration

The level of net overseas migration is important: net inflows of migrants to Australia reduce the rate of population ageing because migrants are younger on average than the resident population. Currently, around 85 per cent of migrants are aged under 40 when they migrate to Australia, compared to around 55 per cent for the resident population (Chart 2.3).[2] Of course, migrants also age and add to the older-age resident population over time.

Chart 2.3: Age distribution of Australian population and migrants
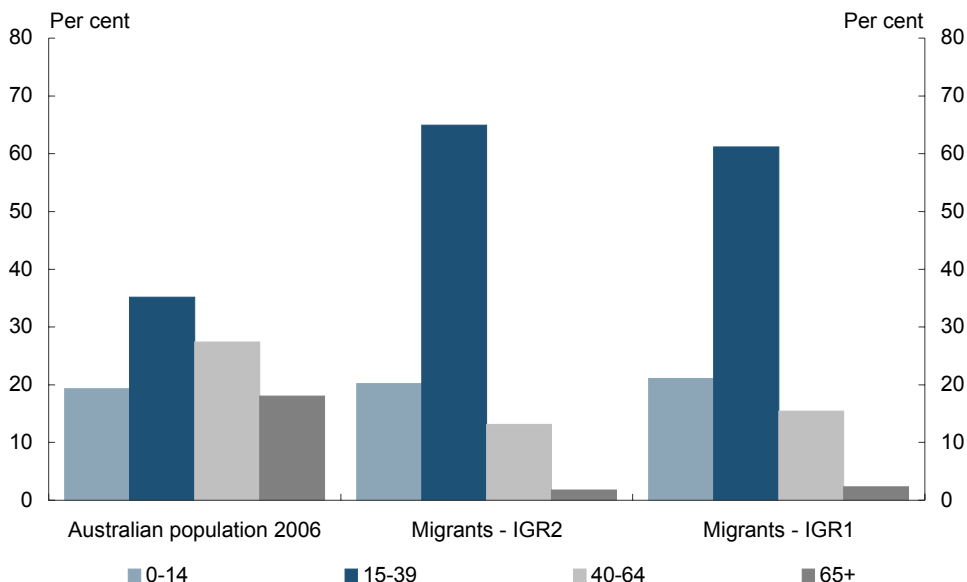
Source: Australian Bureau of Statistics data and Treasury projections.

The contribution of net overseas migration to population growth has varied significantly over the past four decades (Chart 2.4). Net migration tends to fall during economic downturns, both because governments respond by adjusting the migrant intake and because permanent and long-term departures increase at these times.

---

2   To be precise, both the 85 per cent and the chart refer to the age distribution of the net inflow of migrants to Australia. This net inflow is the number of permanent and long-term arrivals to Australia minus the number of permanent and long-term departures from Australia. The chart also shows the age distribution of the net inflow of migrants used in projections in IGR1. This IGR1 distribution is discussed later.

Chart 2.4: Net migration and natural increase in population
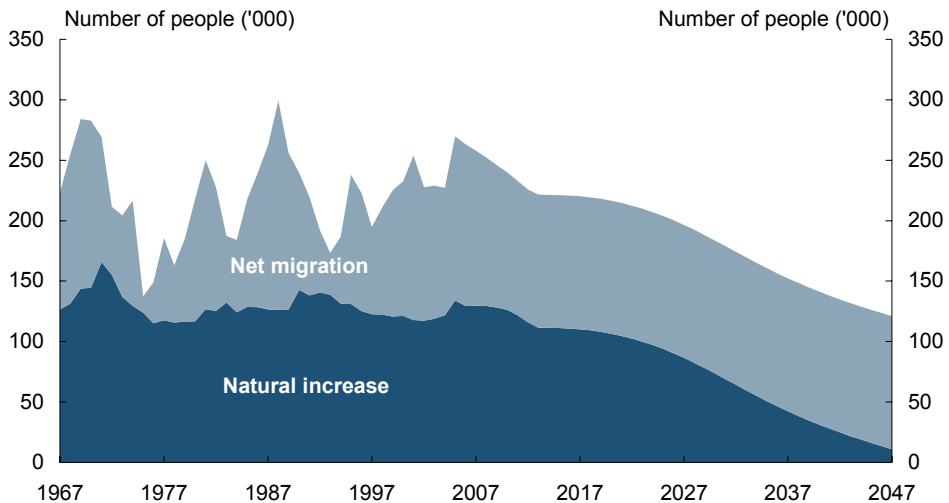
Source: Australian Bureau of Statistics Australian Historical Population Statistics Cat. No. 3105.0.65.001 and Treasury projections.

Consistent with the annual average over the past 10 years, future net overseas migration is projected to be constant at 110,000 people per year from the end of the forward estimates period, with the same age-gender profile as at present. In recent years, Government policy to increase the level of skilled migration has resulted in higher net migration and slightly younger migrants, on average, than anticipated earlier. (The IGR1 population projections were based on net overseas migration of 90,000 people per year.)

Population projections

Australia's estimated resident population reached slightly over 20.6 million in June 2006, and is projected to rise by 38 per cent to 28.5 million by June 2047. The annual growth rate of the population is projected to slow gradually, from 1.3 per cent in 2006-07 to 0.4 per cent in 2046-47. Natural increase (total births minus total deaths) is projected to remain positive until after 2046-47,[3] with net overseas migration adding further to total population growth. The population in all age groups is projected to rise, although rates of growth differ among age groups, leading to different shares in the 2047 population than at present (Table 2.2).

---

3   The number of births is affected by the number of women of child bearing age, along with the TFR; whereas the number of deaths is mainly driven by the number of people aged over 65 and their longevity. Over time, the ageing population will result in both a decrease in the proportion of women of child bearing age and an increase in the proportion of aged people. In the current Treasury projections, population ageing is expected to lead to a slow decline in the level of natural increase from 2020. However, it is not until the 2050s that net natural increase is projected to be negative.

Table 2.2: Australian population history and projections

Population as at 30 June (millions of people)

Age range	1967	2007	2017	2027	2037	2047
0-14	3.5	4.0	4.1	4.2	4.3	4.3
15-64	7.3	14.1	15.2	15.9	16.4	17.0
65-84	0.9	2.4	3.4	4.5	5.3	5.6
85 and over	0.1	0.4	0.5	0.7	1.1	1.6
Total	**11.8**	**20.9**	**23.2**	**25.3**	**27.1**	**28.5**
Percentage of total population						
0-14	29.3	19.1	17.7	16.7	15.7	15.0
15-64	62.2	67.4	65.6	62.7	60.7	59.7
65-84	8.0	11.7	14.5	17.8	19.4	19.7
85 and over	0.5	1.7	2.2	2.7	4.2	5.6

Source: Australian Bureau of Statistics Australian Historical Population Statistics Cat. No. 3105.0.65.001 and Treasury projections.

Chart 2.5: Proportion of the Australian population in different age groups
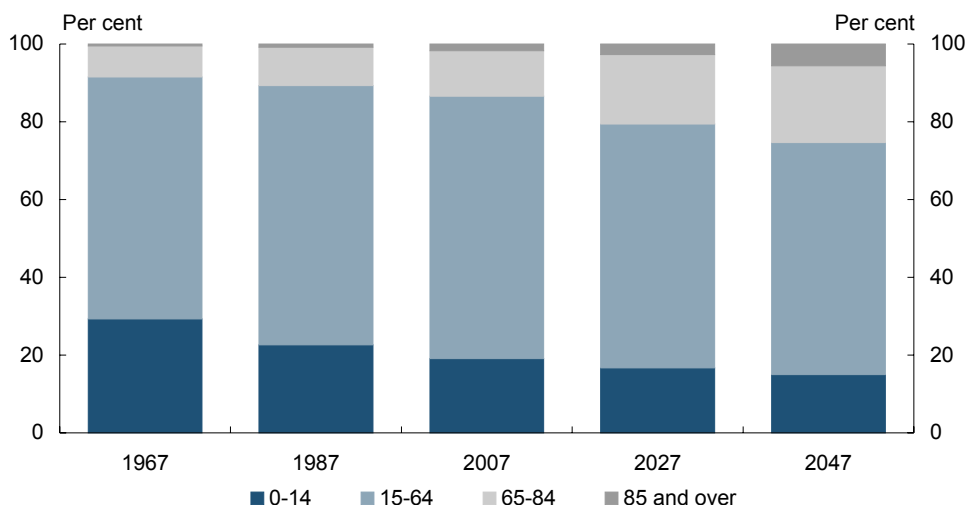
Source: Australian Bureau of Statistics Historic Australian Population Statistics 3105.0.65.001 Table 19 and Treasury projections.

The projected population for selected age ranges highlights the continuing growth in the proportion of older people. In June 2007, the proportion of those aged 65 and over is projected to reach 13.4 per cent, rising from only 4 per cent a century ago. By 2047, just over 25 per cent of Australia's population is projected to be aged 65 and over (Table 2.2). The proportion of the very old (aged 85 and over) is projected to rise from 1.7 per cent in 2007 to 5.6 per cent in 2047 (Chart 2.5).

The population of traditional working age (15-64 years) is projected to grow by over 20 per cent by 2047, but to fall as a proportion of the total population by around 8 percentage points from current high levels of around 67½ per cent. The fastest growing group of traditional working age people is that aged 55-64, rising by nearly 50 per cent over the next 40 years (Chart 2.6). The growing number of people in the 15-64 age group is projected to increase the size of the total labour force.

Chart 2.6: Population indices by age group
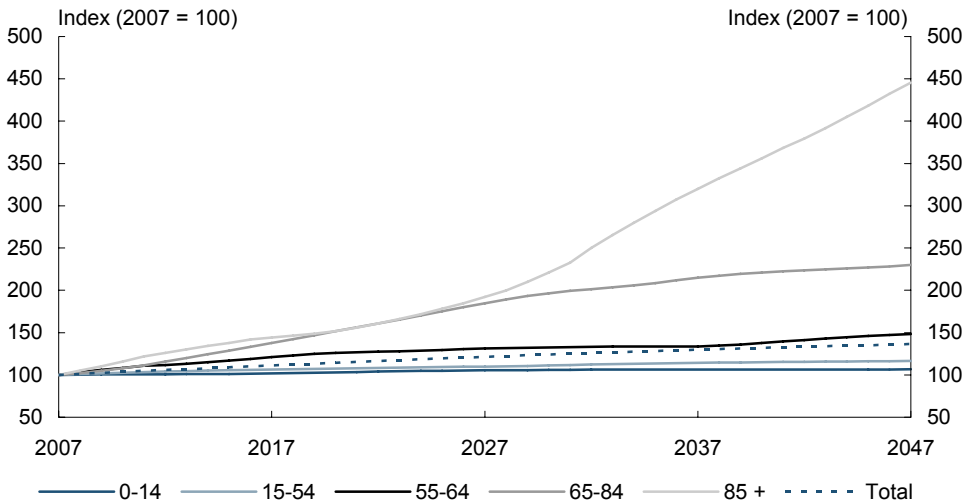
Source: Treasury projections.

In 2007, the aged-to-working-age ratio (the proportion of people aged over 65 to people of traditional working age, 15-64) is almost 20 per cent. This is projected to rise to over 42 per cent by 2047 (Chart 2.7). Over the same period, the child-to-working-age ratio (the proportion of people aged under 15 to those aged 15-64) is projected to fall by slightly over 3 percentage points. In 2007 there are 5 people of working age to support every person aged 65 and over. By 2047, there will only be 2.4 people of working age supporting each person aged 65 and over.

Chart 2.7: Australia's child- and aged-to-working-age ratios
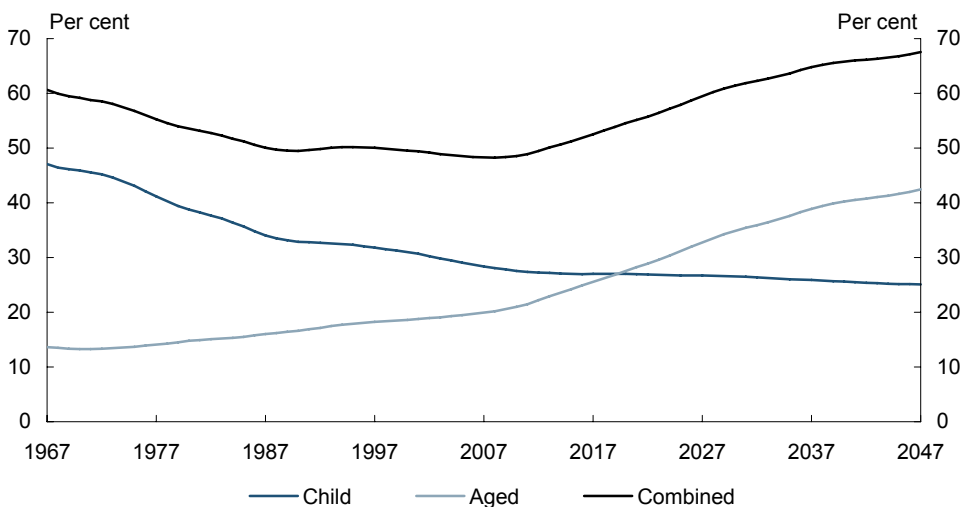
Source: Australian Bureau of Statistics Cat. No. 3201.0 (various) and Treasury projections.

Box 2.1: Global demographic change

Populations across the globe are ageing because of declining rates of both mortality and fertility, which in turn are driven by rising levels of development and improving health care. However, across countries the rates of change are diverse.

These demographic trends are manifest in rising old-age dependency ratios, which are projected to at least double for Australia, Europe, India and Japan, but more than triple for China from now until 2050 (Chart 2.8). The US old-age dependency ratio is projected to rise but, with relatively favourable demographics, less than for other major countries and regions.

Chart 2.8: Old-age dependency ratios
Ratio of over 64-year-olds to 15-64-year-olds
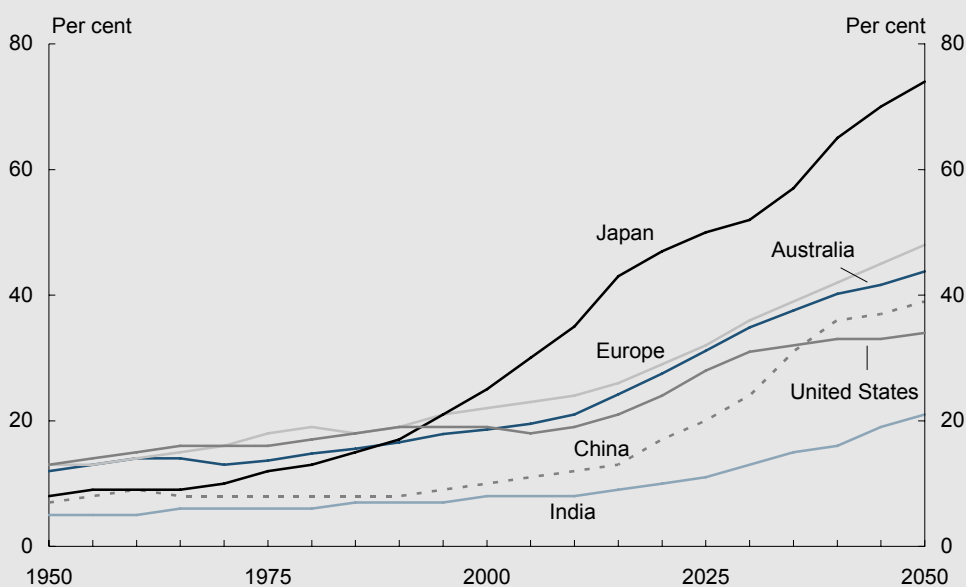
Source: Treasury projections and United Nations 2006 Revision Population Database, medium variant projections.

Sizeable differences in population growth rates across the globe will reflect differences in both demographic trends and openness to migration. Largely due to higher projected rates of migration, population growth in Australia to 2050 is expected to be faster than in all the other countries and regions in Chart 2.9, except for India.

Some countries and regions are expected to experience either declining or very slowly growing populations. The populations in Europe and Japan are projected to fall from now to 2050. China's population is projected to rise by around 10 per cent over the next 25 years, then decline gradually.

Box 2.1: Global demographic change (continued)

Chart 2.9: Projected population trends
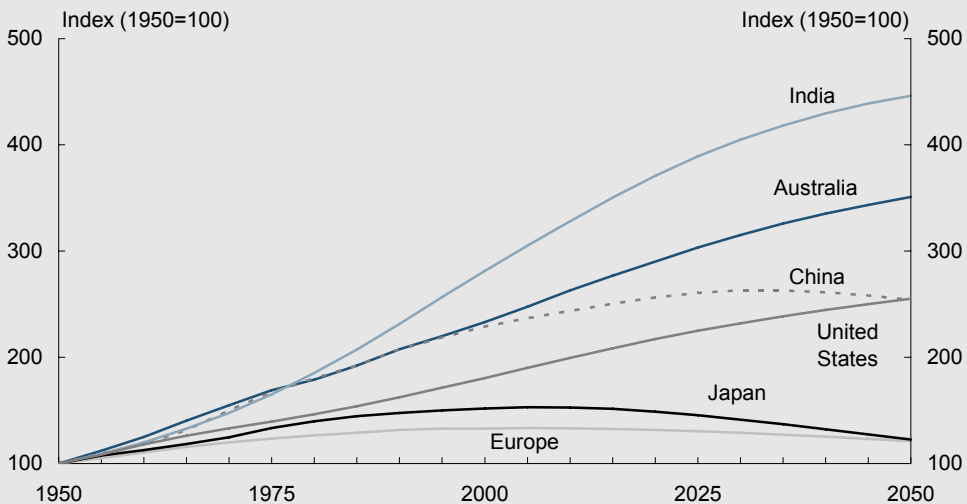
Index (1950=100)   Index (1950=100)

Source: Treasury projections and United Nations 2006 Revision Population Database, medium variant projections.

PARTICIPATION

Participation in employment is determined by the proportion of people of working age in the labour force (the participation rate), the proportion of people in the labour force who are employed, and the average hours worked by those in employment. For the population as a whole, the participation rate and average hours worked, in turn, depend on the distribution of the population between different age and gender cohorts, and on the participation rates and average hours worked by people in each of these cohorts.

Participation rate

The total labour force participation rate for people aged 15 and over has risen gradually from 60.7 per cent in 1978-79 to 64.5 per cent in 2005-06 (Chart 2.10). This is due to a strong rise in women's participation over that time, from 43.5 per cent to 57.2 per cent, partly offset by a fall in men's participation, from 78.5 per cent to 72.1 per cent.

The projections of Australia's long-term total participation rate are based on historical trends in participation rates for men and women of different ages. The labour force projections also incorporate the changing demographic structure of Australia's population.

The composition of the labour force has changed considerably over the past two decades, with a greater proportion of women of all ages now participating in the workforce, a rise in part-time participation for both genders and higher participation rates for older workers than in the late 1970s.

The ageing of the population is projected to lead to falling total participation rates over the next 40 years. Notwithstanding significant recent rises in participation rates, older people are projected to continue to have lower labour market attachment than people of prime working age. The participation rate for people aged 15 and over is projected to fall gradually from 2008-09, reaching 57.1 per cent by 2046-47 (Chart 2.10).

The participation rate for people of traditional working age (15-64 years) is projected to rise from 76.2 per cent in 2006-07 to 78.1 per cent by 2046-47, mainly due to an increase in participation rates of older workers (aged 55-64 years) (Chart 2.10).

Chart 2.10: Historic and projected participation rates
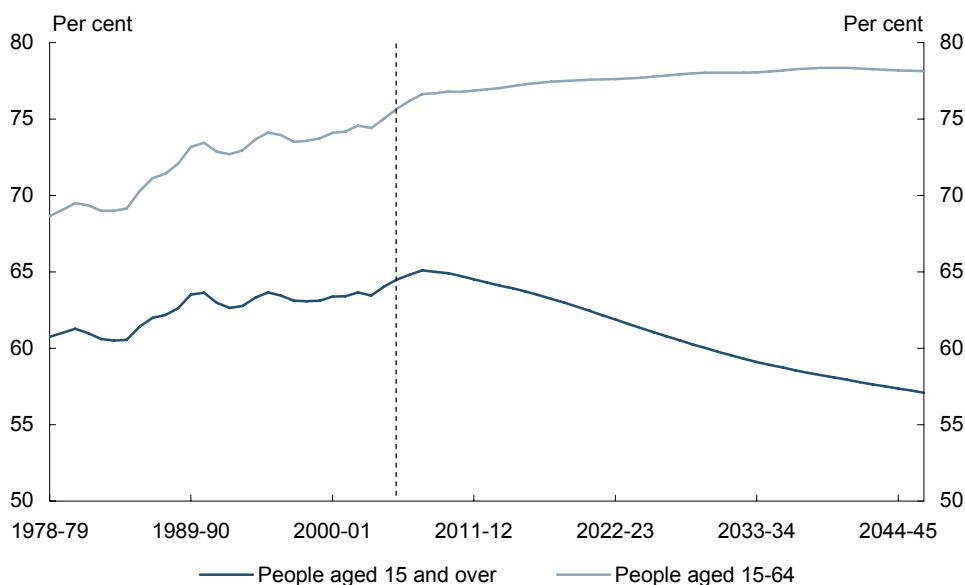
Source: Australian Bureau of Statistics data and Treasury projections.

In the past, the participation rate for Australians aged 15-64 has been around 10 percentage points more than for all Australians aged 15 and over. By 2046-47 this difference will have increased to around 20 percentage points, reflecting the rapid increase in the proportion of the population aged 65 and over.

The age-specific participation rates for both men and women are projected to stabilise or increase in all age groups to 2046-47 (Chart 2.11). For most age groups (other than the very young) the total participation rate for men is higher than for women. This is projected to continue to 2046-47. The vast majority of prime-aged men — those aged 20-54 — are in the labour force. Prime-aged workers historically have had higher

participation rates than those over 55, although rates for older people have risen in recent years, a trend which is projected to continue.

Participation rates are projected to increase for women of all ages, particularly older women. The participation rates of older women have increased significantly over the past 20 years. In recent times, this may be associated with the gradual increase in the Age Pension age for women (63 at present and reaching 65 by 2014).

It also is projected that by 2046-47 women participating in the workforce will be almost evenly distributed between full-time and part-time work.

Chart 2.11: Participation rates: history and projections

Age 15-19

Age 20-24

Age 25-29

Age 30-34

Age 35-39

Age 40-44

Source: Australian Bureau of Statistics data and Treasury projections.

Chart 2.11: Participation rates: history and projections (continued)

Age 45-49

Age 50-54

Age 55-59

Age 60-64

Age 65-69

Age 70 and over
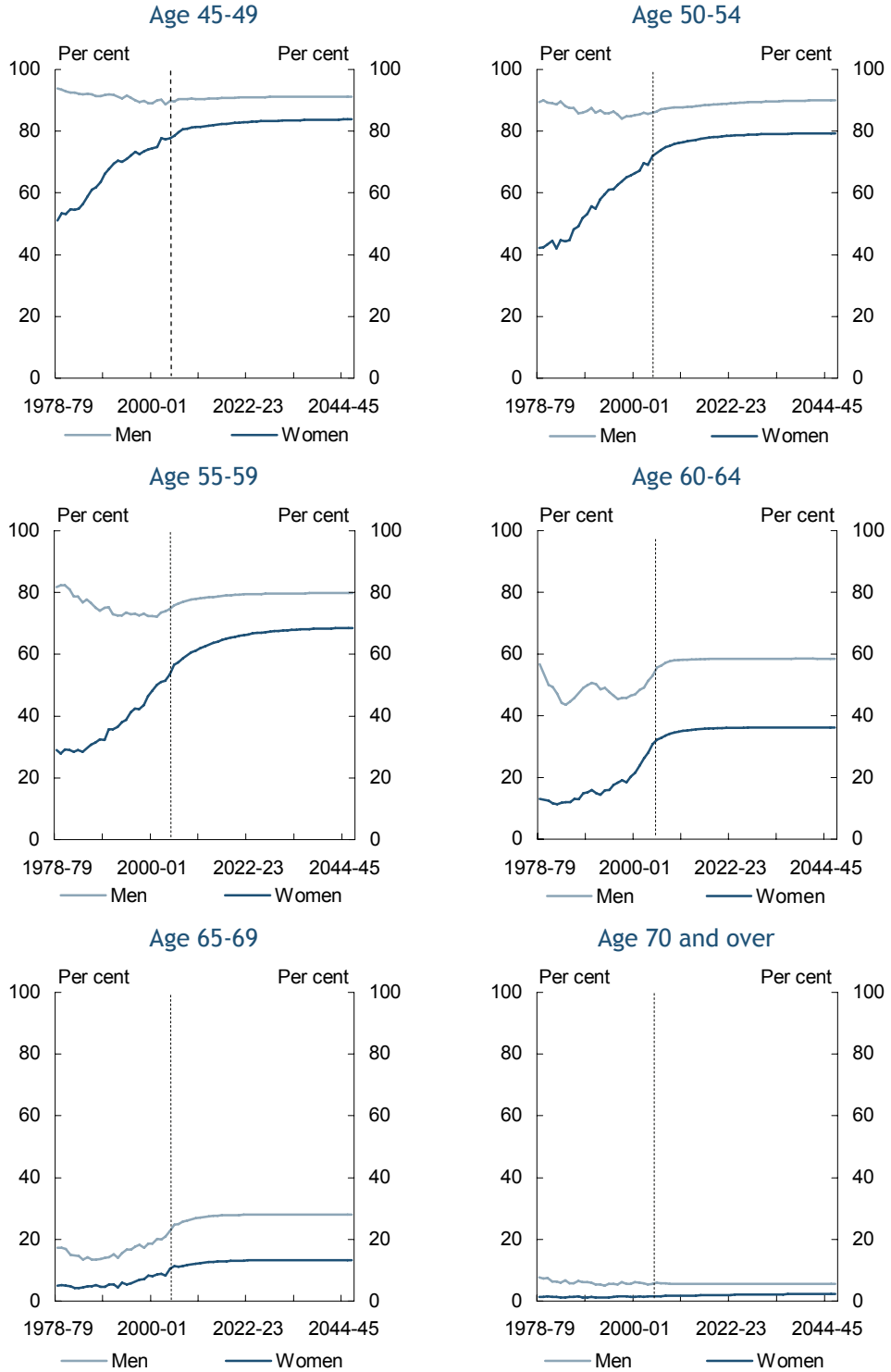
Source: Australian Bureau of Statistics data and Treasury projections.

Box 2.2: Participation rates across the OECD

Australia's participation rate of 76.2 per cent for people aged 15-64 in 2006 is the twelfth highest in the OECD (Chart 2.12).

Chart 2.12: OECD participation rates 2006, people aged 15-64
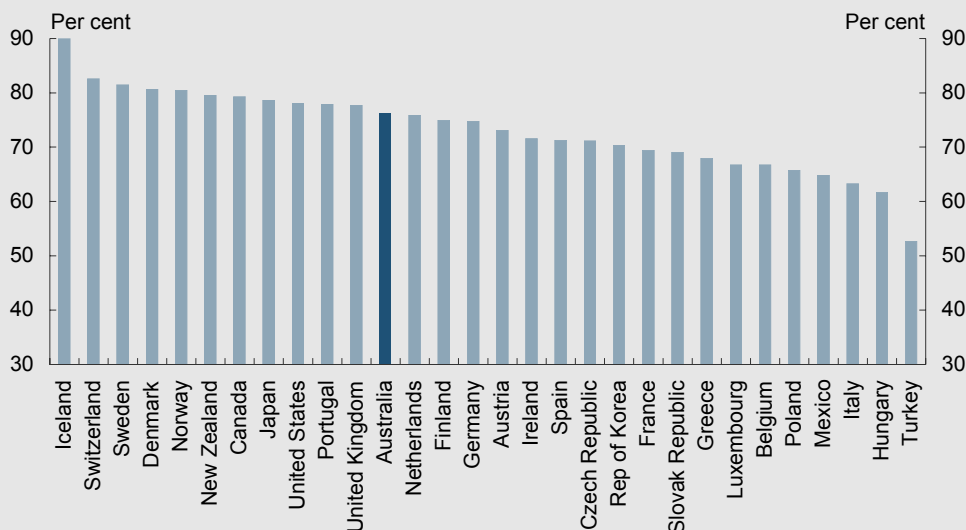
Source: OECD Employment Outlook 2006, Australian Bureau of Statistics data.

The participation of mature-age people has been a major contributor to the high participation rates for these countries. Across the OECD, mature-age participation rates have been rising on average over recent years.

For men, mature-age participation rates across the OECD have risen gradually, although outcomes differ widely across countries (Chart 2.13). Australia's mature-age participation rates for men have risen faster than the OECD average. The rate for men aged 55-64 has risen from 60 per cent in 1997 to over 66 per cent in 2005, just higher than the OECD average in that year.

Participation rates for women across the OECD in the same 55-64 age group have risen more strongly than those for men. Australia's rise has been particularly strong — 14 percentage points since 1997. This brings the Australian rate for women in this age group to just higher than the OECD average (Chart 2.14).

Notwithstanding these significant rises, several countries continue to have much higher mature-age participation rates, including some with similar economic circumstances to Australia. The participation rate for men aged 55-64 in New Zealand rose to 80 per cent in 2005, 14 percentage points higher than Australia's rate in that year. The rise for mature-age women in New Zealand has been even more striking, from 44 per cent in 1997 to 63 per cent in 2005, 18 percentage points higher than Australia's rate in that year.

Box 2.2: Participation rates across the OECD (continued)

Chart 2.13: Participation rates for men aged 55-64
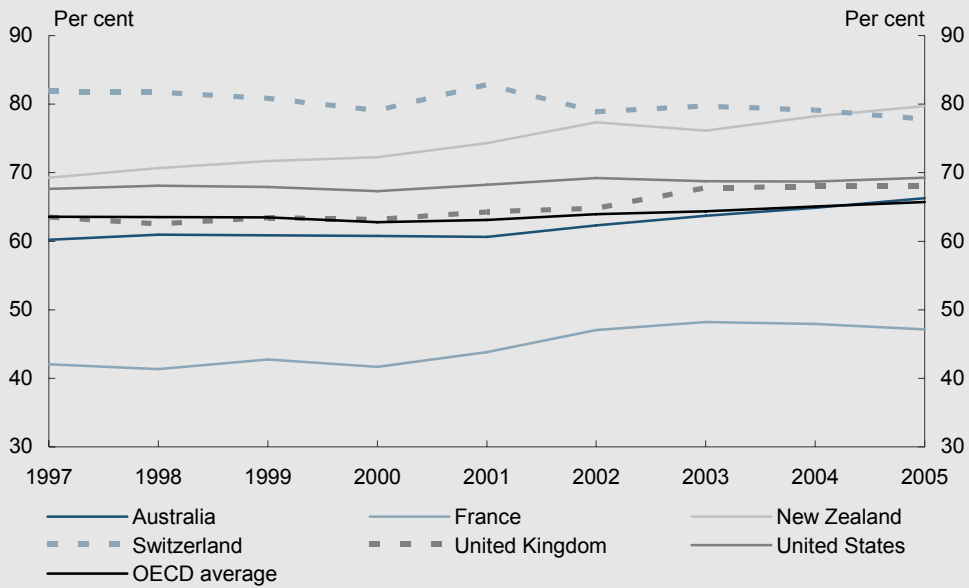
Source: OECD Country Statistical Profiles 2006.

Chart 2.14: Participation rates for women aged 55-64
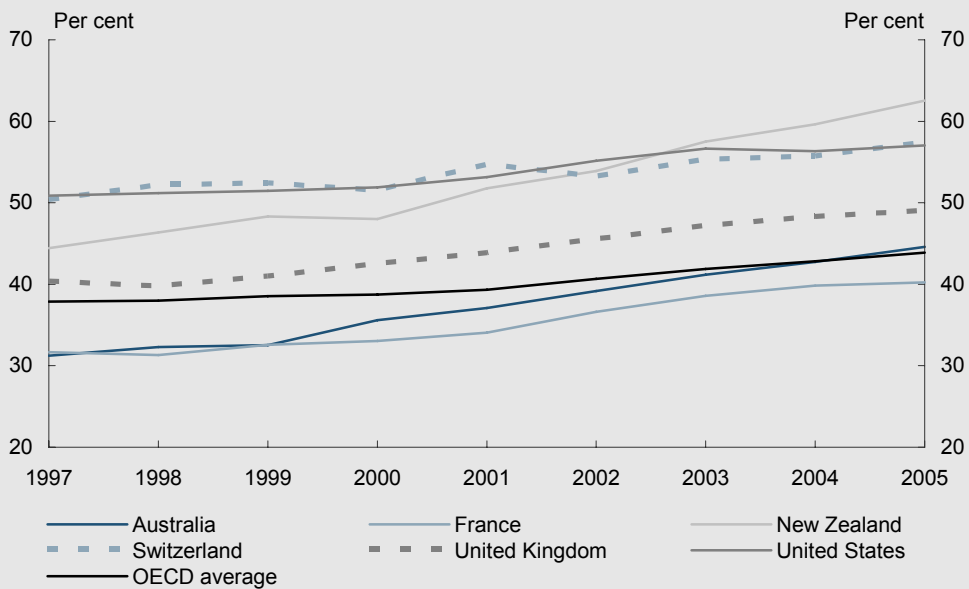
Source: OECD Country Statistical Profiles 2006.

Employment and unemployment

The proportion of people in the labour force who have jobs depends on the unemployment rate. Projections of the unemployment rate are based on the rate that can be sustained without generating upward pressure on inflation, often called the non-accelerating-inflation rate of unemployment (NAIRU).

The NAIRU varies over time for a range of reasons, including changes in the structure of the labour market, the way inflation expectations are formed and demographics. Consequently, estimating the NAIRU is difficult. At the time of IGR1, the unemployment rate was around 6¼ per cent, and projected to fall to a NAIRU of 5 per cent by 2006-07. That projection has turned out to be close to the actual path of unemployment since then, with the unemployment rate falling to below 5 per cent in the middle of 2006 (Chart 2.15). It is also consistent with recent estimates of the NAIRU.[4] This report assumes the same level for the NAIRU as in IGR1.

Chart 2.15: Unemployment rate
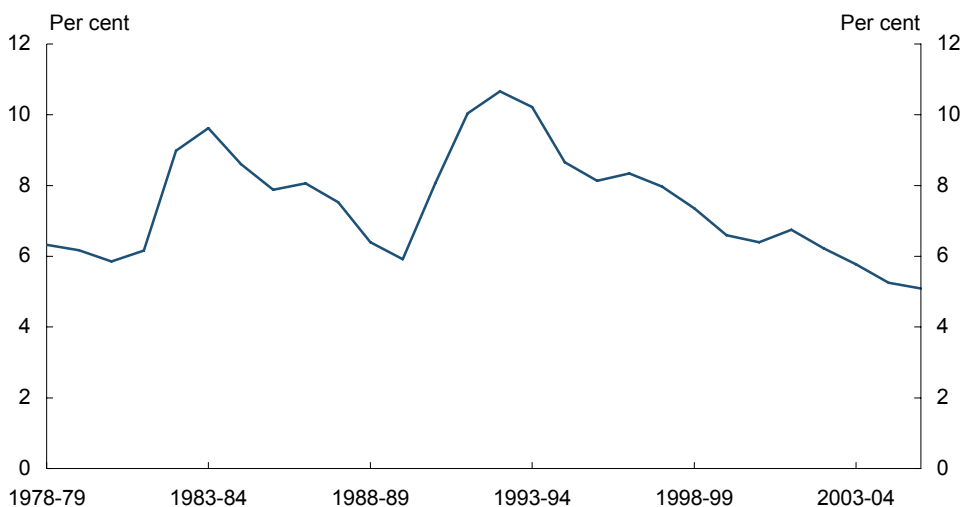
Source: Australian Bureau of Statistics data.

Hours worked

The average number of hours worked per week per worker has fallen from 35.8 in 1996-97 to 34.6 in 2005-06. Beyond the forward estimates, there is a gradual decline in average hours worked to 34.5 by 2046-47 (Chart 2.16). The fall in average hours worked is

---

4   For example, using the latest available data, and following the methodology of Gruen, Pagan and Thompson, 1999, which allows for a time-varying NAIRU, gives an estimated NAIRU of around 5¼ per cent in the September quarter of 2006, while Treasury's TRYM model of the Australian economy gives an estimate of 4¾ per cent.

mainly due to the rising proportions of older workers and women working, with both of these groups more likely to work part time.

Chart 2.16: Average hours worked per worker

Average hours per week

Average hours per week
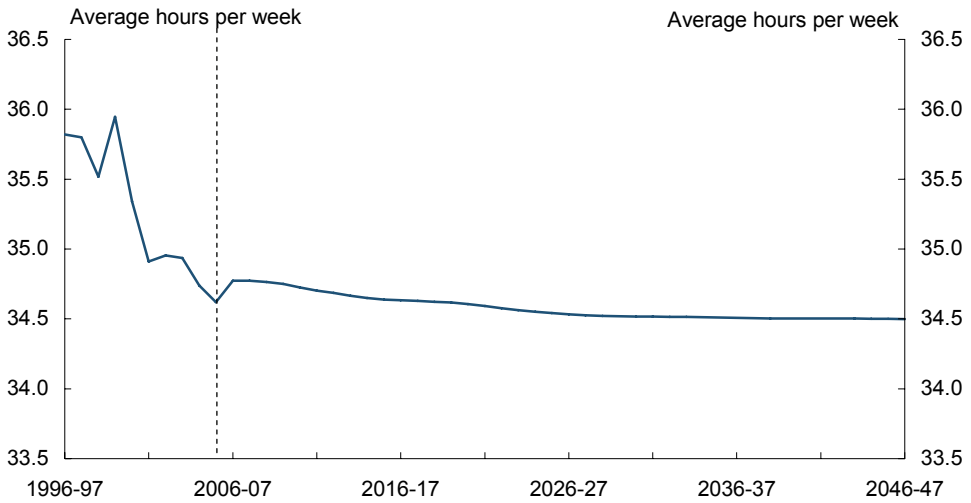
Source: Australian Bureau of Statistics data and Treasury projections.

PRODUCTIVITY

Labour productivity is a measure of the quantity of goods and services produced per hour of work. As labour productivity grows, higher levels of output are produced with given labour inputs. Growth in labour productivity will be the key determinant of real GDP growth in the decades ahead. Faster labour productivity growth would enable higher growth for real GDP, real GDP per person and real wages over the projection period.

Annual labour productivity growth has averaged 1.8 per cent over the past 40 years but has varied considerably from decade to decade (Chart 2.17). It was above its long-term average in the 1970s (2.0 per cent), slowed in the 1980s (1.2 per cent), but picked up again in the 1990s (2.1 per cent), accelerating noticeably from the middle of the decade. From 2000, however, annual labour productivity growth has slowed to around 1.5 per cent.

In principle, labour productivity growth is influenced by many developments in the economy, including changes in capital intensity, and in the composition of the workforce, brought about by changes in age-specific participation rates or the age distribution of the population. In practice, labour productivity growth is difficult to forecast over long horizons. Because of this, productivity in IGR1 was projected to grow at its average rate over the previous 30 years, which at the time was 1¾ per cent. While productivity grew faster in the second half of the 1990s, productivity growth since 2000 has been slower. The experience since IGR1 suggests that the assumption adopted there was reasonable. Using the same methodology as in IGR1, annual productivity growth beyond the forward estimates period is assumed to be 1¾ per cent, which is again its average rate over the past 30 years.

Chart 2.17: Labour productivity growth
(real GDP per hour worked)
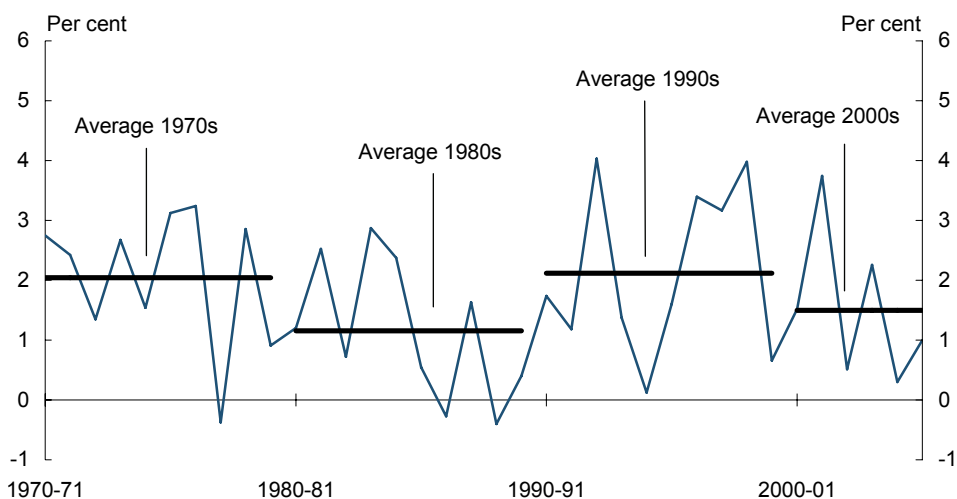
Note: Data prior to 1978-79 are Treasury estimates. Data are annual averages.
Source: Australian Bureau of Statistics Cat. No. 5206.0.

ECONOMIC GROWTH PROJECTIONS

Labour productivity is projected to grow over the next 40 years at around the same rate as in recent decades, but the growth rate of real GDP per person is projected to slow because of the ageing of the population. The growth rates of population, employment and real GDP are projected to slow significantly (Table 2.3). A substantial fall in the proportion of the population of traditional working age is projected with the retirement of the baby boomer generation (born between 1946 and 1964), particularly in the 2020s (Chart 2.5 and Table 2.2). As a result, the rate of growth of real GDP per person in that decade is projected to be particularly low, before picking up slightly in subsequent decades.

Table 2.3: Growth in economic aggregates[(a)]

Decade	Population	Labour productivity	Employment	Real GDP	Real GDP per person
1960s	2.2	2.9	2.6	5.1	2.8
1970s	1.3	2.0	1.7	3.0	2.2
1980s	1.5	1.2	2.4	3.4	1.8
1990s	1.2	2.1	1.2	3.3	2.1
2000s	1.2	1.5	1.9	3.0	1.8
2010s	1.0	1.75	0.8	2.6	1.6
2020s	0.8	1.75	0.5	2.3	1.4
2030s	0.6	1.75	0.4	2.2	1.5
2040s	0.5	1.75	0.3	2.0	1.6

(a) Average annual growth rates (per cent).
Source: Australian Bureau of Statistics data and Treasury projections.

Real GDP per person

Growth in real GDP per person can be decomposed into contributions from the 3Ps of population, participation and productivity (Chart 2.18).[5]

Chart 2.18: The 3Ps of growth in real GDP per person

Percentage contribution   Percentage contribution

Population   Participation   Productivity

	Share of population 15+	Participation rate	Unemployment rate	Average hours worked	Labour productivity	Real GDP per person
Past 40 years	0.4	0.3	-0.1	-0.3	1.8	2.1
Next 40 years	0.1	-0.3	0.0	0.0	1.8	1.6

■ Past 40 years ■ Next 40 years
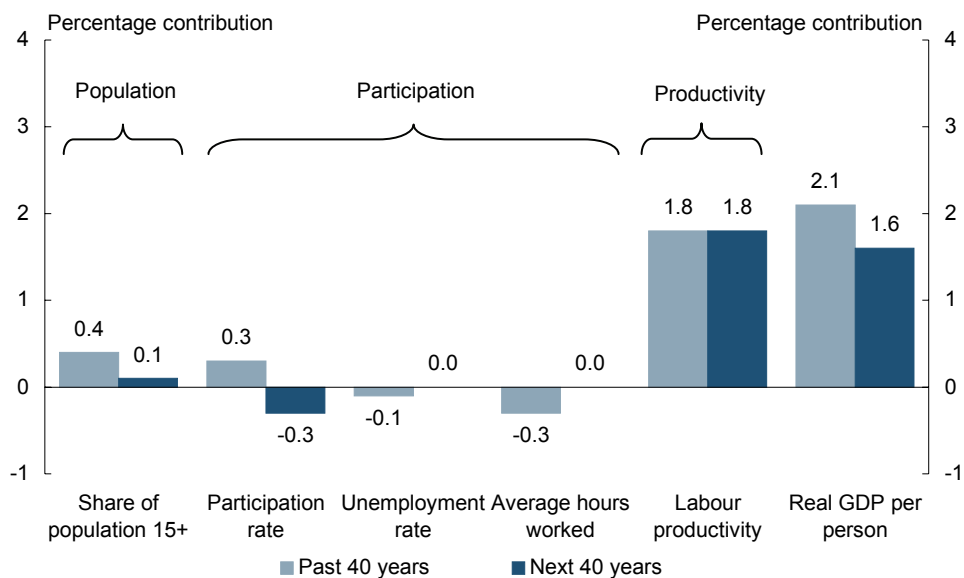
Source: Australian Bureau of Statistics data and Treasury projections.

Over the past 40 years, the proportion of the population aged 15 and over has increased substantially as fertility rates have fallen and life expectancy has risen. Overall, this component has added an average of 0.4 of a percentage point to annual growth in real GDP per person. Over the next 40 years, this component's contribution is projected to be smaller (about 0.1 of a percentage point): life expectancy will continue to rise but the dramatic fall in the fertility rate of the 1970s is not expected to be repeated.

The participation component represents the number of hours worked per adult. This depends on the participation rate, the proportion of the labour force with jobs and average hours per worker.

Despite ageing of the population, the participation rate has increased substantially over the past 40 years with the relatively large baby boomer generation reaching working age and women becoming increasingly active in the labour force. On the other hand, the current

---

5 Real GDP per person can be written as $\alpha \cdot \rho(1-u)h \cdot \pi$ where α is the proportion of the population aged 15 and over, ρ the participation rate, u the unemployment rate, h average hours worked, and π is real GDP per hour worked. Therefore, in a 3Ps decomposition of real GDP per person, α is population, $\rho(1-u)h$ is participation, and π is productivity. See also Henry (2002, 2003).

unemployment rate of below 5 per cent, while the lowest in the past 30 years, is higher than in the 1960s, when it was around 2 per cent. In addition, average hours have fallen because of the increasing prevalence of part-time work. While some of these changes are quite large in absolute terms, the annual impacts averaged over 40 years are relatively small. Overall, participation has subtracted around 0.1 of a percentage point from annual growth in real GDP per person over the past 40 years.

Over the next 40 years, projected changes in the unemployment rate and average hours worked are only small. The participation rate is projected to fall (after an initial rise) as the large baby boomer generation moves from the labour force into retirement. This will be accentuated by further increases in life expectancy. Offsetting this to some extent is an increase in participation rates among older workers and a higher number of migrants, who are disproportionately young adults with high participation rates (Chart 2.3). Because of these mitigating factors, the expected adverse impact of the participation rate (and the participation component overall) on real GDP per person is projected to be smaller than was anticipated in IGR1. Nevertheless, participation is expected to subtract 0.3 of a percentage point from annual growth in real GDP per person over the next 40 years.

Labour productivity has contributed most to growth in real GDP per person over the past 40 years: 1.8 of a total of 2.1 percentage points. Because population and participation are projected to have a small negative impact, real GDP per person is projected to grow a little less quickly than labour productivity, at around 1.6 per cent per year. This is around 0.5 percentage points less than over the past 40 years.

Real GDP

Real GDP is the product of the total population and real GDP per person. Over the past 40 years, the population grew at an average annual rate of 1.4 per cent. When added to growth of real GDP per person of 2.1 per cent, this gave annual average real GDP growth of 3.5 per cent (Chart 2.19). Annual population growth is projected to slow to around 0.8 per cent over the next 40 years. This is largely due to the falls in fertility rates starting in the 1970s — the effects of fertility on population are manifest for a long time — which are only partly offset by increases in life expectancy. As a consequence, annual average real GDP growth is projected to slow to 2.4 per cent.

Chart 2.19: Real GDP and real GDP per person
(average annual growth)

Per cent

Per cent
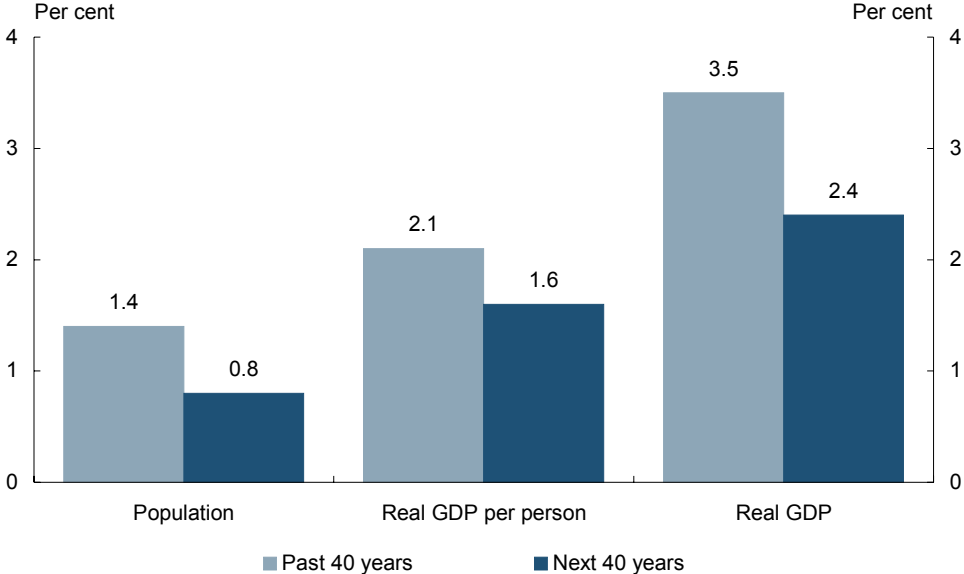
Source: Australian Bureau of Statistics data and Treasury projections.

Box 2.3: International comparisons

OECD country data on labour productivity (GDP per hour worked) and participation (average hours worked per person) in 2005 show a wide range of outcomes (Chart 2.20). For each country, GDP per hour is expressed in Australian dollars at purchasing power parity. The lower line in the chart shows combinations of GDP per hour and hours per person that generate the same GDP per person as in Australia in 2005. For example, the Netherlands has higher productivity and lower average hours but the same GDP per person. Countries above the lower line have higher GDP per person than Australia. The United States has slightly higher average hours and substantially higher productivity. Norway also has high GDP per person despite significantly fewer hours worked, although this is largely the consequence of oil production.

Chart 2.20: Productivity and participation in OECD countries in 2005
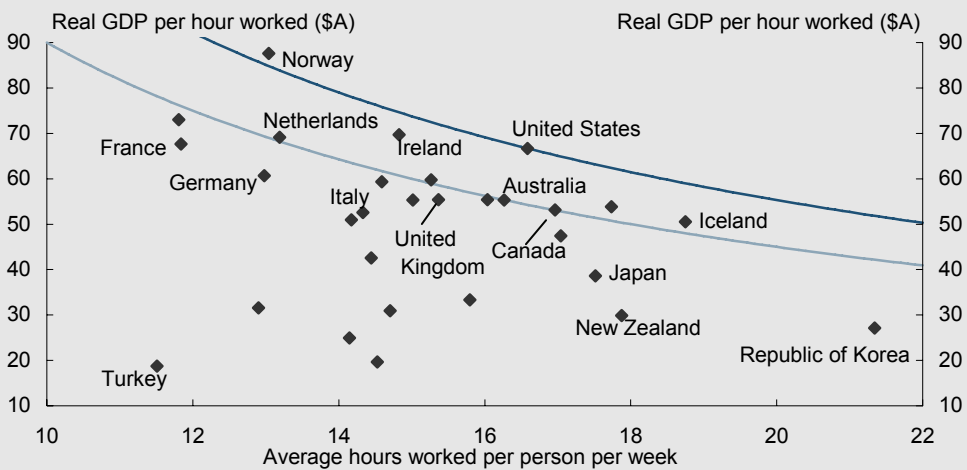
Note: Average hours worked per person are calculated across the whole population, not just those in the labour force. Thus, the horizontal axis combines the population and participation components of the 3Ps.
Source: OECD Productivity Database, September 2006.

In all OECD countries, earlier falls in fertility rates and rising life expectancies are expected to lead to declines in the share of the population of traditional working age and the rate of growth of real GDP in the future (Table 2.4). Australia's average real GDP growth rate is projected to be stronger in the first half of the 2010s (reflecting projected stronger employment growth) than for the United States, the United Kingdom, New Zealand and Japan.

Table 2.4: International projections

Country	Years	Real GDP growth	Labour productivity growth	Unemployment rate
Australia	2010-11 to 2015-16	2¾	1¾	5.1
United States	2011 to 2016	2.6	2.0	5.0
United Kingdom	2011-12 to 2015-16	2.0	1¾	*
New Zealand	2011 to 2020	2.2	1.5	4.5
Japan	2011 to 2015	1.5	*	3.7

Note: Numbers are annual averages (per cent).
Source: Treasury projections; Congressional Budget Office (US Congress), 2007; Her Majesty's Treasury, 2006; The Treasury (New Zealand), 2006; and Japan Center for Economic Research, 2006.

NOMINAL GDP, PRICES AND WAGES

Real GDP measures the level of real economic activity in the economy. However, nominal GDP is used to compare the dollar-value of spending projections relative to the size of the economy. To convert from real to nominal GDP, an estimate of the GDP deflator is required.

Over the projection period beyond the forward estimates, the GDP deflator and the CPI are assumed to grow together. Both measures therefore are assumed to exhibit annual growth of 2½ per cent, consistent with Australia's medium-term inflation target.

Real wages are assumed to grow in line with labour productivity, consistent with unemployment at the NAIRU and a steady inflation rate over the projection period. Nominal wage growth is equal to real wage growth plus growth in prices (either consumer prices or the GDP deflator, since they are projected to grow at the same rate). With real wages and productivity growing at the assumed annual rate of 1¾ per cent, nominal wages therefore are projected to grow at 4¼ per cent (that is, at a rate reflecting inflation of 2½ per cent and real wage growth of 1¾ per cent).

COMPARISON WITH IGR1: GDP AND POPULATION

Differences between the assumptions described in previous sections for IGR2 and those for IGR1 produce significant changes in projected outcomes. Nominal GDP is projected to be more than 16 per cent higher by 2041-42 than was projected in IGR1 and real GDP around 11 per cent higher (Chart 2.21).

Chart 2.21: Nominal and real GDP: Percentage change from IGR1 to IGR2
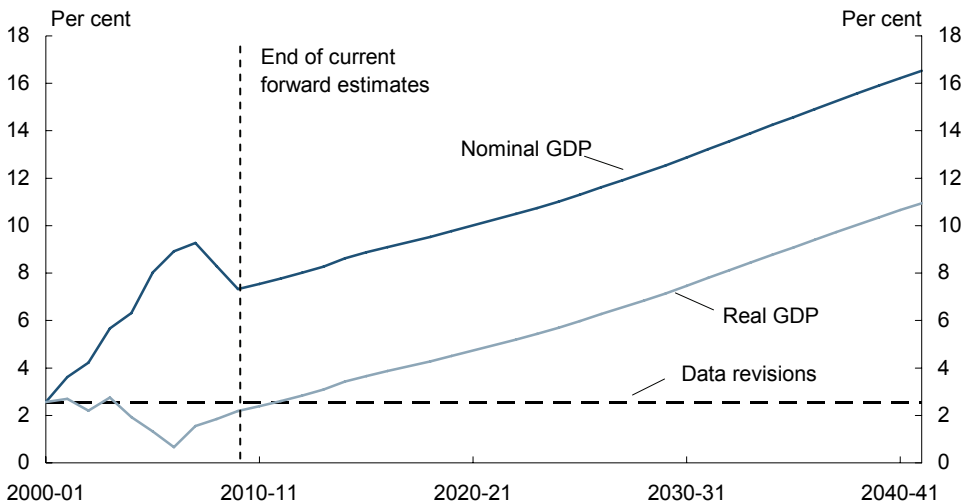
Source: Australian Bureau of Statistics data and Treasury projections.

Differences out to the end of the current forward estimates period in 2009-10 are due to data revisions since IGR1, which have raised the estimated levels of real and nominal GDP in 2000-01, as well as the terms of trade improvement and movements in productivity and participation rates, which are discussed in more detail in the later section on GDP per person.[6]

---

6   Historical levels of nominal and real GDP were revised up by around 3 per cent as a result of updating of the national accounts annual benchmarks in 2005. This was partly offset by other, downward, revisions of around ½ of a per cent made to the estimates of 2000-01 nominal and real GDP in the intervening years. See *2004-05 Australian System of National Accounts*, Australian Bureau of Statistics Cat. No. 5204.0.

Population

Differences in population growth rates are the largest single source of the differences in nominal and real GDP between IGR1 and IGR2 over the next several decades. In IGR1, Australia's population was projected to grow to 25.3 million by June 2042, but in IGR2, this population projection is 27.8 million, around 10 per cent higher. Annual population growth has been greater than 1 per cent in all but one of the past 30 years. In IGR1, annual population growth was projected to fall steadily, to under ¼ of a per cent by 2042. In IGR2, population growth still falls over time, but much less dramatically (Chart 2.22).

Chart 2.22: Annual population growth rates
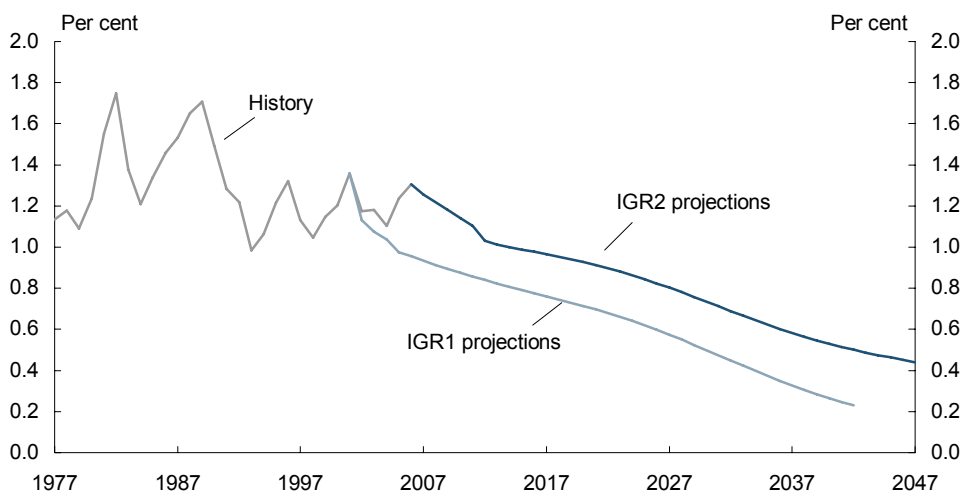
Source: Australian Bureau of Statistics data and Treasury projections.

A small part of the difference in projected population levels — a little less than 1 percentage point — is due to revisions to population estimates and faster population growth between 2001 and 2006 than was projected in IGR1. Most of the difference, however, reflects increased fertility rates, increased migration and declines in mortality, which are anticipated to continue over the projection period (Chart 2.23).

Chart 2.23: Population projections: Percentage change from IGR1 to IGR2
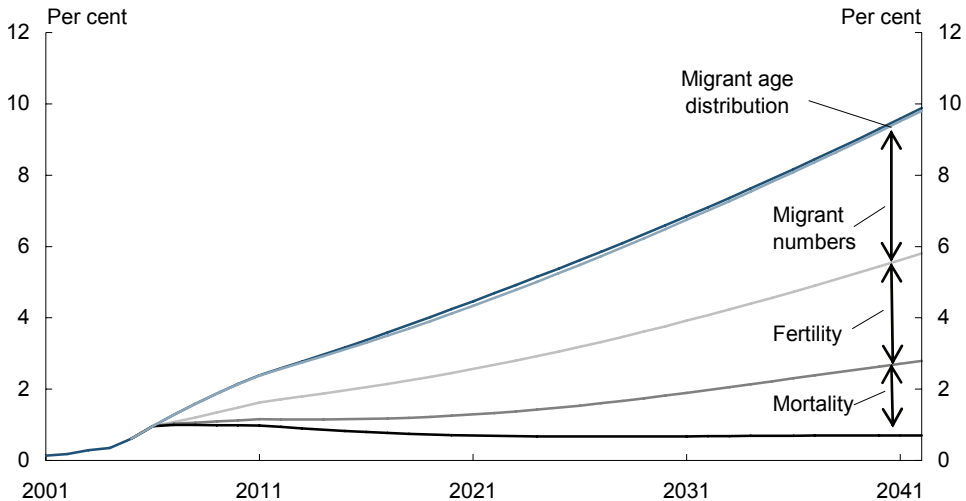
Note: The chart shows the contributions of changes in assumptions about, in turn, mortality, fertility, migrant numbers and migrant age distribution for 2007 to 2042. The impacts shown are cumulative and depend somewhat on the order in which the changes are imposed.

The residual difference represents data revisions and differences between projections in IGR1 and actual outcomes between 2001 and 2006, and interactions between these differences and assumptions for 2007 to 2042.

Source: Australian Bureau of Statistics data and Treasury projections.

Mortality rates have been falling faster than was anticipated in IGR1, so life expectancy at birth is now projected to be higher, especially for men. This change is projected to add around 2 per cent to population by 2042. Fertility rates have been higher over the past five years than expected in IGR1, and projected fertility rates have been raised to reflect this. This revision adds 3 per cent to population by 2042.

Net overseas migration is projected to be 110,000 people per year from the end of the forward estimates period, compared with 90,000 under IGR1. Moreover, migrants are now projected to be slightly younger on average and thus more likely to live for longer after their arrival in Australia. Overall, changes in migration patterns are projected to add around 4 per cent to the population by 2042, with almost all of this from increased migrant numbers.

COMPARISON WITH IGR1: GDP PER PERSON

Developments in government spending and revenue are usefully examined on a per person basis, and it is likewise insightful to examine developments in nominal and real GDP per person. Projections of both nominal and real GDP per person over the next 40 years are higher in IGR2 than they were in IGR1 (Chart 2.24).

Data revisions since IGR1 which raised the estimated levels of nominal and real GDP in 2000-01 (and beyond) also raised the levels of nominal and real GDP per person (since revisions to population estimates were much smaller).

Aside from data revisions, the higher projected level of nominal GDP per person over the next several decades largely reflects higher outcomes between 2001-02 and 2006-07, with the biggest contribution arising from the recent strong rise in the terms of trade (as detailed below).

The higher level of real GDP per person in 2000-01 resulting from data revisions has been offset by slower subsequent growth than projected in IGR1, so that real GDP per person in 2006-07 is forecast to be a little lower than the level projected in IGR1. For the years beyond 2006-07, real GDP per person is projected to grow only slightly faster than in IGR1 (Chart 2.24).

Chart 2.24: Nominal and real GDP per person:
Percentage change from IGR1 to IGR2
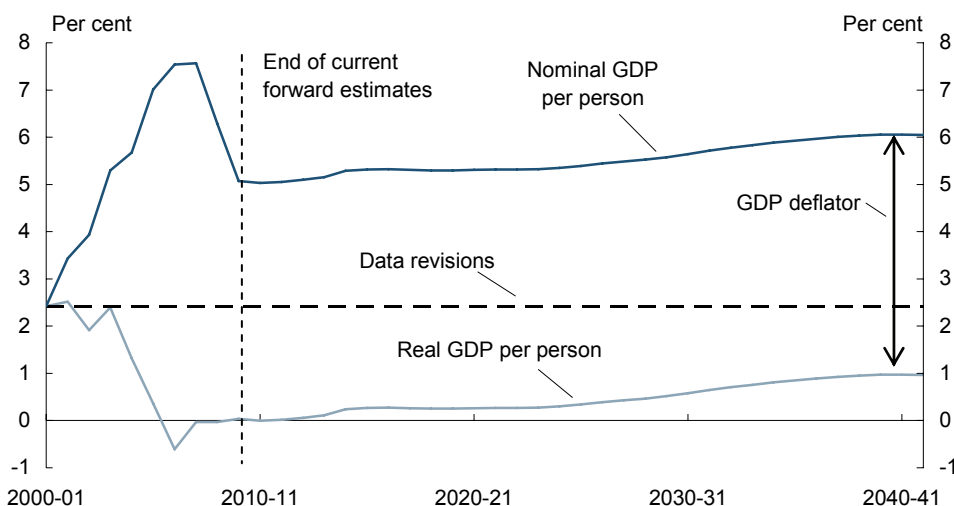
Source: Australian Bureau of Statistics data and Treasury projections.

GDP deflator

Price impacts on government expenditure depend mainly on consumer prices and nominal wages. Nominal GDP and nominal GDP per person, however, depend on a broader set of prices, including prices of consumption goods, investment goods, dwelling construction and exports.

By 2006-07 the GDP deflator (which measures the average level of prices of the various components of GDP) is forecast to have risen by around 8 per cent more than was projected in IGR1. This is predominantly due to the recent boom in the terms of trade and, to a lesser extent, the earlier housing boom. The impact of the terms of trade and housing booms on the level of the CPI, however, has been much more muted (Chart 2.25).

While it is difficult to forecast the future path of the terms of trade, the forward estimates assume that some of the past increases will be reversed, so that the level of the GDP deflator is projected to be around 5 per cent higher by 2009-10 than in IGR1. Since its rate of growth beyond 2010-11 is assumed to be the same as in IGR1 (2½ per cent per year), the 5 per cent level gap is projected to be maintained out to 2041-42.

Chart 2.25: The GDP deflator and the CPI:
Percentage change from IGR1 to IGR2

Source: Australian Bureau of Statistics data and Treasury projections.

Real GDP per person

The level of real GDP per person is projected to be around 1 per cent higher by 2041-42 than in IGR1. This is somewhat less than the impact of data revisions since the release of IGR1, which have added around 2½ per cent to real GDP per person.

Real GDP per person depends on productivity (output per hour worked) and hours worked per person. Growth in real GDP per person has been slower than was anticipated in IGR1 and this is forecast to have offset the impact of data revisions by 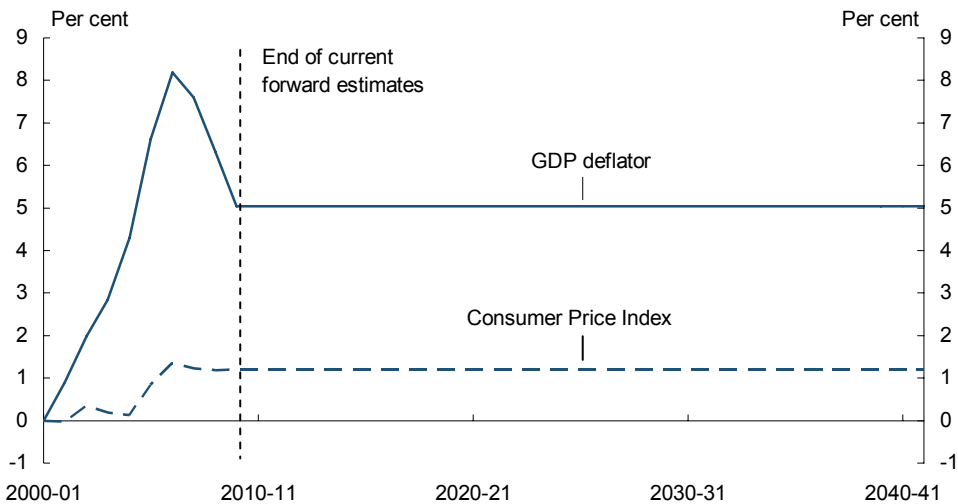2006-07. This slower growth has been due almost entirely to productivity growth over the past few years being slower than assumed in IGR1. Projected productivity growth in the future in IGR2 is 1¾ per cent per annum, unchanged from the IGR1 assumption. By 2041-42 faster growth in hours worked per person is projected to lift real GDP per person by about 1 per cent relative to the outcomes projected in IGR1.

As explained above, changes in hours worked per person are driven by changes in age- and gender-specific participation rates and average hours, and by the impact of demographic changes on the age and gender composition of the population. These factors interact, making it difficult separately to identify their contributions to changes in hours worked per person. Nevertheless, in broad terms, changes in assumptions about participation rates and average hours worked between IGR1 and IGR2 contribute around 1¾ per cent to hours worked per person from 2006-07 to 2041-42 and demographic changes subtract around ¾ per cent. As a result, hours worked per person are projected to rise by about 1 per cent relative to IGR1 over this period.

Trends in participation rates for older workers now are projected to be considerably more favourable than they were in IGR1.[7] This becomes increasingly important in later years with the rising proportion of older workers in the population.

The overall impact of changes in demographic assumptions is small, but individual factors have larger, though offsetting, effects (Chart 2.26). All demographic factors increase population growth relative to IGR1, but they increase real GDP per person only if they have a larger proportional impact on the growth of the traditional working-age population than on the number of children and older people.

---

7   See Kennedy and Da Costa, 2006.

Chart 2.26: Demographic contributions to real GDP per person:
Percentage change from IGR1 to IGR2
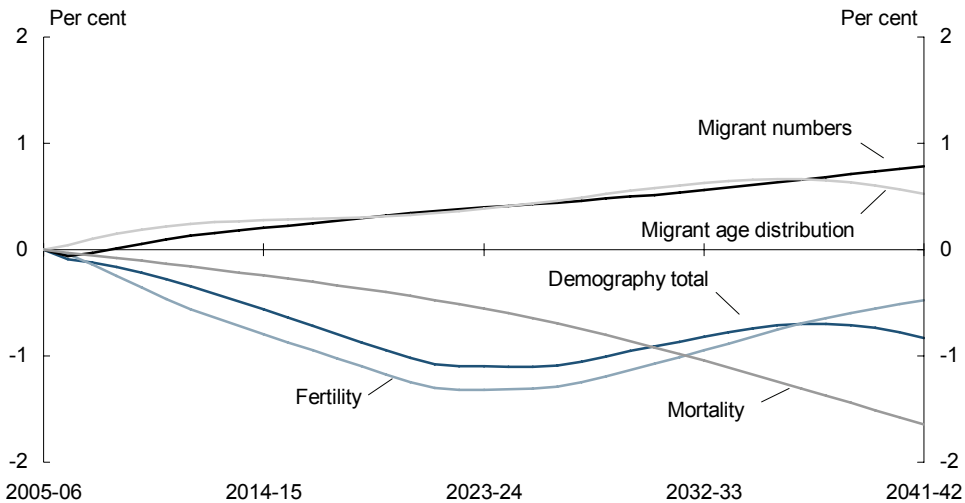
Note: The impacts shown depend somewhat on the order in which the changes are imposed and are affected by interactions with differences between projections in IGR1 and actual outcomes between 2000-01 and 2005-06. Changes in assumptions from IGR1 to IGR2 are imposed in the order: mortality, fertility, migrant numbers and migrant age distribution.
Source: Australian Bureau of Statistics data and Treasury projections.

Changes in assumptions about mortality and fertility have lowered real GDP per person relative to projections in IGR1. Decreases in mortality rates mainly raise the number of people living beyond normal retirement age, and so reduce real GDP per person. Higher fertility does not have an impact on real GDP until children enter the labour force, usually in their late teens or their twenties. Thus, as a result of higher fertility, real GDP per person falls at first, but starts to recover after around 20 years. The positive effects of higher fertility on real GDP per person are not felt until beyond the end of the IGR2 projection period.

The changes in migration assumptions add to real GDP per person. Because the proportion of migrants of prime working age is higher than for the resident population (Chart 2.3), an increase in migrant numbers leads to a rise in real GDP per person. The change in projected migrant numbers between IGR1 and IGR2 — 20,000 per year — leads to a modest rise in real GDP per person. The move to a greater emphasis on young skilled migrants also is projected to have a modest positive impact on real GDP per person, since such migrants disproportionately belong to age groups with higher participation rates and have a tendency to remain in the labour force for longer.

Productivity and labour utilisation

Chart 2.27 shows the effects of population, participation and productivity on real GDP per hour worked and hours worked per person in recent history and their projected effects under IGR1 and IGR2. Vertical movements in the chart show changes in GDP per

hour worked, or labour productivity. Horizontal movements show changes in average weekly hours worked per person. They represent changes in both population and participation.[8] The lines on the chart trace out combinations of real GDP per hour and hours worked per person in successive years.

Chart 2.27: Productivity and labour utilisation
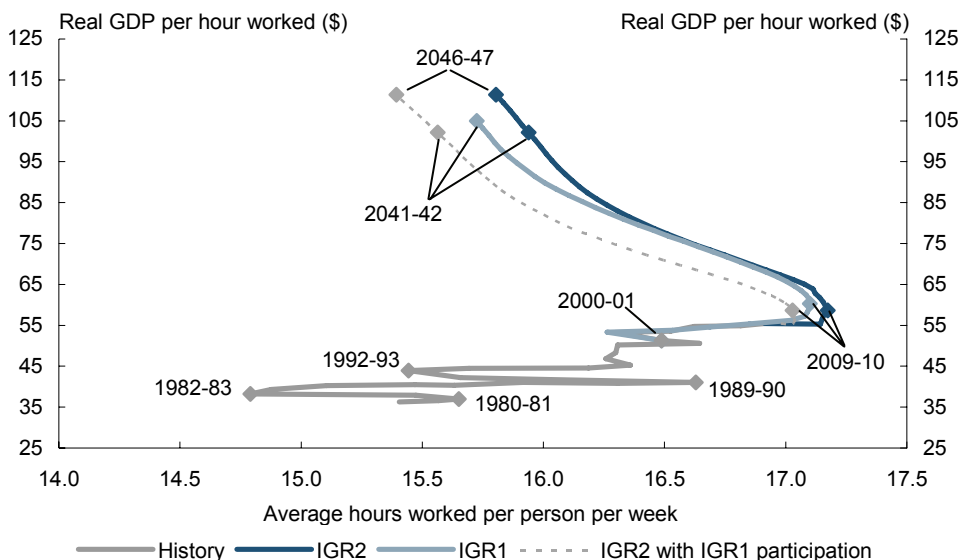
Note: Average hours worked per person are calculated across the whole population, not just those in the labour force. Real GDP per hour worked is in 2006-07 dollars.
The IGR2 with IGR1 participation line shows IGR2 projections assuming participation rates and average hours worked by age and gender at the levels projected in IGR1.
Source: Australian Bureau of Statistics data and Treasury projections.

Up to 2000-01, there was a general north-eastward movement of the line, reflecting increases in the proportion of the population of working age, and in participation and productivity. The substantial side-to-side swings correspond to recessions and subsequent recoveries. In IGR1, hours worked per person were projected to rise to a gentle peak towards the end of the current decade and then, once the baby-boomer generation began to retire, to fall steadily. By 2041-42, the end of the projection period in IGR1, hours worked per person were projected to have fallen to a level last seen around 1993-94, soon after the early 1990s recession, when labour utilisation remained at a relatively low ebb.

In the new projections, hours worked per person are again projected to rise to a gentle peak at the end of the current decade. The peak is somewhat higher and the subsequent fall more gradual than in IGR1, with the improvement due principally to higher projected participation rates for older workers and higher levels of skilled migration. Improvements

---

8　Population ageing leads to generally offsetting effects on the proportion of the population of working age (which tends to rise as the proportion of those under 15 falls) and on the participation rate and average hours worked (which tend to fall). The measure 'hours worked per person' captures these generally offsetting effects.

since IGR1 in participation rates and average hours worked by age and gender have moved the line in Chart 2.27 to the right from the 'IGR2 with IGR1 participation' line to the IGR2 line.

PART 3: LONG-TERM FISCAL PROJECTIONS

OVERVIEW

The Australian Government's current fiscal position is strong, by both historical and international standards. The Government has eliminated net debt and is continuing to strengthen its balance sheet by running budget surpluses and provisioning for unfunded liabilities in the Future Fund. However, demographic and other factors are projected to place significant pressure on government finances over the longer term.

The spending projections in this report suggest that, in the absence of policy adjustments, Australian Government spending will rise by around 4¾ per cent of GDP by 2046-47. Health, age pensions and aged care account for most of the projected rise in spending. While an ageing population is projected to contribute to an increase in spending, a large part of the spending pressure is due to other factors, particularly for health.

Overall, both nominal and real spending per person in IGR2 are projected to increase by slightly less than in IGR1. However, IGR2 projects a higher level of nominal GDP per person. As a result, spending as a proportion of GDP is projected to be lower than in IGR1.

Despite higher nominal GDP per person, governments still will need to make policy adjustments to maintain sound government finances. Under the assumption that revenue remains constant as a proportion of GDP from the end of the current forward estimates period, the projections in this report suggest that spending will exceed revenue by around 3½ per cent of GDP by 2046-47. This is less than projected in IGR1, due to a lower rate of growth of projected spending per person and higher projected nominal GDP per person which is predominantly attributable to the recent strong rise in the terms of trade. Nevertheless, the projections in IGR2 imply a deterioration in the government's balance sheet in the long term, with net debt re-emerging by the mid 2030s, and continuing to rise rapidly thereafter.

Such a path for net debt would not be sustainable. Accordingly, future governments will need to develop new strategies that encourage growth and promote the efficiency and effectiveness of government spending, particularly in areas with a high degree of public provision.

SPENDING PRESSURES

Projections for Australian Government spending over the next 40 years are based on the projections of long-term demographic and economic growth trends outlined in Part 2, as well as other factors which are expected to affect spending. As the future is uncertain, these projections should be read as indicating a possible future path of spending based on reasonable assumptions.

This report emphasises the pressures that demographic and other factors are likely to impose on future government spending.

Over half of Australian Government spending is directed to health and aged care, payments to individuals, and education. This spending is sensitive to demographic change. The projections in this report show that spending on health, aged care and payments to individuals is likely to grow both in real per person terms and as a proportion of GDP over the next 40 years. While spending on education also is projected to rise in real per person terms, it is projected to fall slightly as a per cent of GDP.

Other areas of Australian Government spending, such as defence, climate change, and the environment more generally, do not have a clear link with demographic factors. Further, spending in many of these areas is variable and highly dependent on discretionary government decisions. Consequently, other spending is assumed to grow at the same rate as growth in the economy over the next 40 years. This allows for spending to increase as a proportion of GDP in some areas and decline in others.

Health

Australians' life expectancies are among the highest in the world. In relative terms, Australia's health outcomes are achieved at a moderate cost, with total health spending as a share of GDP currently around the average for OECD countries.

Health care services are funded and provided by both the public and private sectors. The Australian Government provides almost half of the total health spending for Australia, and is the major source of public funds, although State and Territory governments also fund health services and have responsibility for public hospitals.

Major health programmes funded by the Australian Government include the Medicare Benefits Schedule and the Pharmaceutical Benefits Scheme.

The Medicare Benefits Schedule provides patient subsidies for medical practitioner services, optometry, diagnostic imaging and pathology. The Medicare Benefits Schedule forms the core of Medicare — the Australian Government's universal health programme.

Under the Pharmaceutical Benefits Scheme, the Australian Government subsidises a wide range of pharmaceuticals to provide patients with affordable access to necessary and cost-effective medicines. New procedures, tests and pharmaceuticals are added to the list of those which receive subsidies under the Medicare Benefits Schedule and Pharmaceutical Benefits Scheme following government approval of the recommendations of the relevant advisory bodies.

In addition to the Medicare Benefits Schedule and Pharmaceutical Benefits Scheme, the Australian Government:

- makes a major contribution to the funding of public hospital services provided by State governments;

- provides a 30 per cent rebate to subsidise the cost of private health insurance, with higher rebates available for older Australians;

- provides financial support in other areas, including medical research, public health, indigenous health services, health information management and access, health safety and quality, and medical workforce development and infrastructure; and

- provides health care services to veterans via White and Gold Card arrangements.

Key trends and drivers

Since the early 1970s, Australian Government spending on health care has increased from around 1.5 per cent of GDP to around 4 per cent of GDP (Chart 3.1). After fluctuating significantly throughout the 1970s and 1980s, spending has been on a steadily rising path since the early 1990s.

Since IGR1, health spending as a proportion of GDP has grown relatively modestly, with solid increases in nominal health spending being partially offset by unusually strong growth in nominal GDP.

Chart 3.1: Historical Australian Government health spending
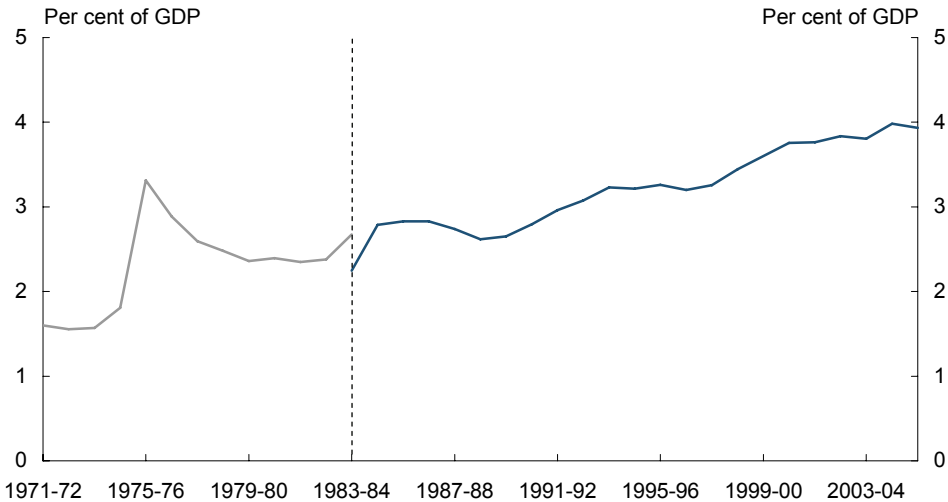
Note: Includes high-level residential care spending until 1983-84.
Source: Australian Institute of Health and Welfare health spending data base, Australian Bureau of Statistics Cat. No. 5204.0. Modelling is based on different data series (see Appendix C).

Non-demographic growth, rather than population growth or changes in the age structure of the population, has been the key driver of real health spending over the past two decades (Table 3.1). Non-demographic factors (such as the listing of new medications on the Pharmaceutical Benefits Scheme and greater use of diagnostic procedures) are likely to continue to generate the greatest cost pressure in the future.

Table 3.1: Real growth rates for Australian Government health spending (per cent)

	1985-86 to 2005-06	1995-96 to 2005-06
Non-demographic (population and age structure removed)	2.91	3.92
Population	1.27	1.19
Age structure	0.53	0.60
Total	**4.76**	**5.78**

Note: Represents average annual growth using data from the start and end of the period. This is different to the calculation of growth rates for the projections, where growth rates are calculated from a fitted trend in the historical data to take account of the information in all data points.
Source: Australian Institute of Health and Welfare health expenditure data (excluding high-level residential care) and Treasury estimates.

Technological change, including the development of new drugs, accounts for a significant proportion of non-demographic growth in health spending per person. As the Australian Government exercises significant controls over whether to adopt new technology in the health system, past increases in spending partly reflect the Australian Government's choice to fund new technologies.

Assumptions and methodology

Projections of health spending over the next 40 years are based on trends in the cost of health services per head of population by age and gender, combined with projected population changes.

Different components of the health system have exhibited different forms and rates of growth in the past. For example, over the last decade real per person growth in Australian Government spending on public hospitals has averaged 2.3 per cent, while real per person growth for medical benefits has averaged 2.7 per cent. Non-demographic growth in both these expenditure areas has followed a largely linear trend. Spending per person on older people is growing faster than for the total population, with the highest growth rates being for those aged 55 and over.

By contrast, while it has slowed in recent years, spending on pharmaceutical benefits has been growing at a rapid rate. Real non-demographic growth for pharmaceutical benefits has averaged 5.4 per cent per year over the last decade.

To capture the effects of these differences, the modelling used in this report separately projects the main components of health spending to allow for different growth rates for medical benefits, pharmaceutical benefits, private health insurance, hospitals and other health spending (see Appendix C).

Since IGR1, refined projection methodologies incorporate new data and modelling approaches. While variation remains across the components, overall the changes result in lower projected health spending. Major changes in methodology include:

- extending the scope of the Pharmaceutical Benefits Scheme model to include all pharmaceutical benefits (including the Highly Specialised Drugs Program), and gradually reducing the non-demographic growth rate for pharmaceutical benefits over the projection period;

- projecting non-demographic growth as a linear trend for medical benefits and hospital spending to align more closely projections with historical trends; and

- applying an historical non-demographic growth rate to private health insurance projections due to greater data availability.

Projections

Australian Government spending on health is projected to increase as a proportion of GDP from 3.8 per cent in 2006-07 to 7.3 per cent in 2046-47.

Of all the components of Australian Government health expenditure, spending on pharmaceutical benefits is projected to grow the fastest. As a proportion of GDP, pharmaceutical benefits are projected to grow, from 0.7 per cent of GDP in 2006-07 to

2.5 per cent of GDP in 2046-47. Spending on hospitals and private health insurance as a proportion of GDP is expected to grow by over 80 per cent, with medical benefits spending growing only marginally as a proportion of GDP (Chart 3.2). Further details on the projections are given in Appendix A.

Chart 3.2: Projected Australian Government health spending
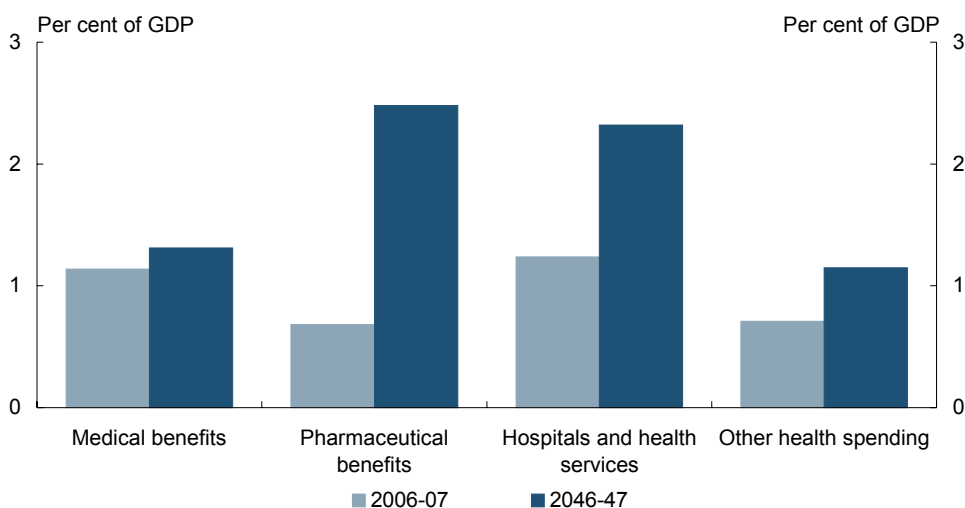
Source: Treasury projections.

Overall, projected health spending is lower than in IGR1 (Chart 3.3). Projected real health spending per person is similar to IGR1 over the next 20 years, while higher projections of nominal GDP per person in IGR2 over this period result in lower projections of health spending as a proportion of GDP. After around 2026-27, lower growth in real spending per person (largely resulting from new data and refinements to modelling methodologies) combined with higher nominal GDP per person further reduces health spending as a proportion of GDP compared with IGR1.

**Chart 3.3: Comparison of IGR1 and IGR2 projections of
Australian Government health spending**
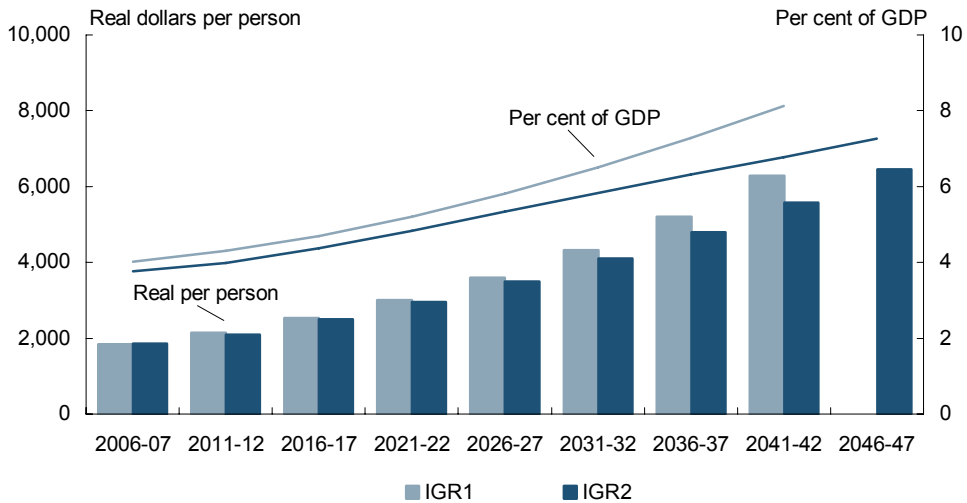
Source: Treasury projections.

The Government has made changes to improve the sustainability of health spending. The 2002-03 Budget proposed an increase in patient co-payments and safety net thresholds to help restore the balance between Government and patient contributions to the PBS and this was included in IGR1 projections, although the legislation was not passed until 2004. Recently announced reforms reduce the costs to the Government of generic medicines while maintaining the price caps to patients. The reforms are estimated to save the PBS $3 billion over 10 years. They will assist in improving the sustainability of the PBS and create 'head room' for financing the provision of new drugs and treatments that emerge in future years.

As noted above, non-demographic growth has been the key driver of real health spending over the past two decades. The projections continue this trend, with ageing contributing only around one quarter of the projected increase in health spending over the next 40 years. Factors other than ageing account for the remaining three-quarters of the projected increase in health spending.

Reflecting the importance of non-demographic factors in the overall result, the projections for health spending are sensitive to the non-demographic growth rate. Alternative modelling scenarios for the health projections are discussed in Appendix C.

Aged care

The Australian Government provides funding for residential aged care and a range of community care services. Australian Government aged care spending is estimated to be 0.8 per cent of GDP in 2006-07. State and Territory governments and individuals receiving care also contribute to the total aged care spending which is currently around 1.1 per cent of GDP.

The major aged care services funded by the Australian Government are:

- residential services, classified as high-care (previously nursing home care) or low-care services (previously hostel care); and

- community care services, which include Home and Community Care (HACC) programme services, the Community Aged Care Package (CACP) programme, the Extended Aged Care at Home (EACH) programme and Veterans' Home Care (VHC).

Key trends and drivers

A dominant influence on future levels of Australian Government aged care spending is the number of people over the age of 80, as this age group are the major users of formal aged care services. The proportion of 80-year-olds in the Australian population is expected to almost treble over the next 40 years, and this substantial increase will exert considerable pressure on aged care spending.

Other factors that impact on future government aged care spending include:

- changes in the average cost of care per person;

- future disability levels within the aged population;

- the mix between residential care and care in the community;

- the government's planning rules specifying the number of aged care places as a proportion of the population aged 70 and over; and

- changes in the proportions funded by government and through private contributions.

Assumptions and methodology

Projections of aged care spending over the next 40 years are based on current expenditure per person for those receiving aged care services (indexed for growth in costs) combined with the projected number of older people. In essence, the projection combines base participation rates by age and gender for the main aged care programmes with projected

population by age and gender. Together with assumed growth in the average (government) cost per participant, this provides a base projection. The model also takes into account the other key factors outlined above, such as changes in the mix between residential and community care and the growing real income and wealth of participants, which increases the private contributions to aged care costs.

The projection method is broadly similar to the one used in IGR1 but extends the range of the factors explicitly modelled. It is an adaptation and extension of the aged care model used in the 2005 Productivity Commission report on ageing. Further details on underlying assumptions for growth in unit costs and factors influencing participation in government aged care programmes are discussed in Appendix C.

Projections

Australian Government spending on aged care is projected to increase as a proportion of GDP from 0.8 per cent in 2006-07 to around 2.0 per cent in 2046-47. This is due largely to increases in spending on residential aged care, which is projected to rise from 0.6 per cent of GDP to around 1.5 per cent in 2046-47 (Chart 3.4). These projections are broadly similar to those obtained by other recent studies of aged care in Australia. Further details on the projections are given in Appendices A and C.

Chart 3.4: Projected Australian Government aged care spending
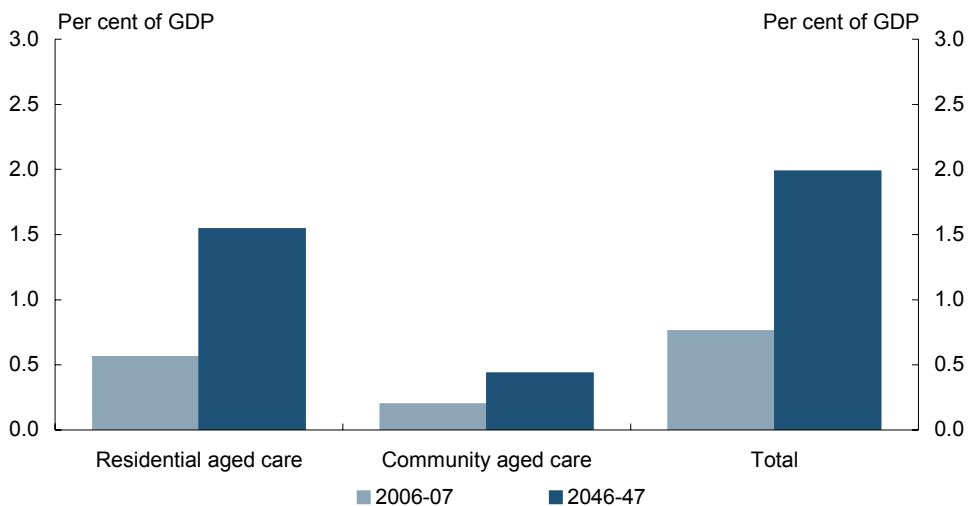
Source: Treasury projections.

Projections of real per person aged care spending in IGR2 are consistently higher than projected in IGR1. This is due to declining mortality which has raised the proportion of the population aged 80 and over higher than anticipated in IGR1, as well as policy changes since IGR1. These projections incorporate the Government's responses to the Hogan Report announced in the 2004-05 Budget and in February 2007 to address long-term issues in the residential aged care sector. The packages included additional spending on community and residential aged care, fairer income testing, additional workforce training,

and measures to ensure that quality care is provided. As GDP per person is also projected to be higher in IGR2, projected aged care spending as a proportion of GDP is only slightly higher than in IGR1 (Chart 3.5).

The current projections of growth in real spending per person can be decomposed into components due to the ageing of the population and all other components causing real spending per person to rise, such as costs being driven by wages rather than CPI and rising expectations and standards (the non-ageing effect). As expected, ageing is the primary driver of aged care spending over the next 40 years accounting for around three-quarters of the projected increase in real spending per person.

Chart 3.5: Comparison of IGR1 and IGR2 projections of Australian Government aged care spending
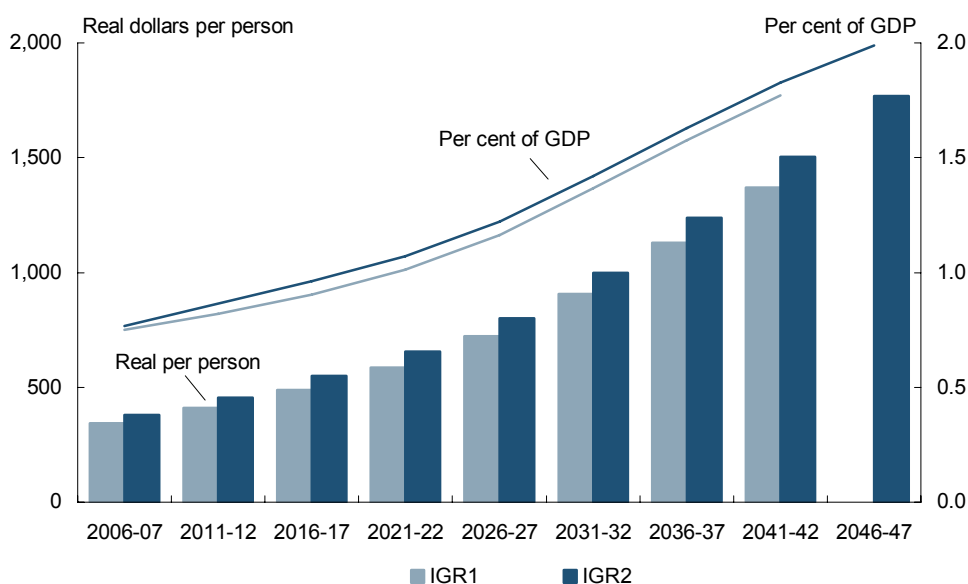
Source: Treasury projections.

Payments to individuals

The Australian Government has in place a range of programmes for individuals requiring support or supplementary assistance. Payments to individuals are estimated to be around 6.7 per cent of GDP in 2006-07 and represent around one-third of total Australian Government spending.

Key trends and drivers

Australian Government payments to individuals fall across three broad groups: assistance to the aged; assistance to those of workforce age; and assistance to families with children. These payments are sensitive to changes in population levels and age structure. Payments are also sensitive to changes in consumer prices or wages depending on indexing arrangements.

Assistance to the aged

Assistance to people older than usual workforce age includes the Age Pension and similar payments to veterans and war widows. These payments are estimated to be around 2.5 per cent of GDP in 2006-07.

The Age Pension currently provides income support to men aged 65 and over and women aged 63 and over. The eligibility age for women is being increased gradually so that by 2013 it will align with that for men. The Age Pension is means-tested on both income and assets and does not depend on previous labour force experience or individual contributions. The age service pension provides a similar income support payment to veterans, and is available five years earlier than the Age Pension.

Between 1980 and 2005, the total number of age pensioners increased from 1.3 million to over 1.9 million (Chart 3.6). This mainly reflects growth in the eligible population, partly offset by an increase in the proportion of the population ineligible to receive a pension because of the means tests and the rising pension age for women. The number of service pensioners and war widow pensioners had been relatively stable at around 300,000 for some time but has started to decline.

Spending on age pensions in the future will continue to be driven by the size of the population in the eligible age range as well as future need. While the proportion of people of eligible age in the total population is projected to double by 2046-47, this is expected to be partly offset by a continued decline in the coverage rate due to the increased value of individuals' superannuation and other private assets and income (see Appendix C). Accordingly, the proportion of pensioners receiving a full age pension is projected to decline, while the proportion with a part age pension will increase significantly; the proportion of the eligible age group not receiving any age pension is projected to rise slightly.

Chart 3.6: Numbers of recipients of major payments to individuals
1980 to 2005
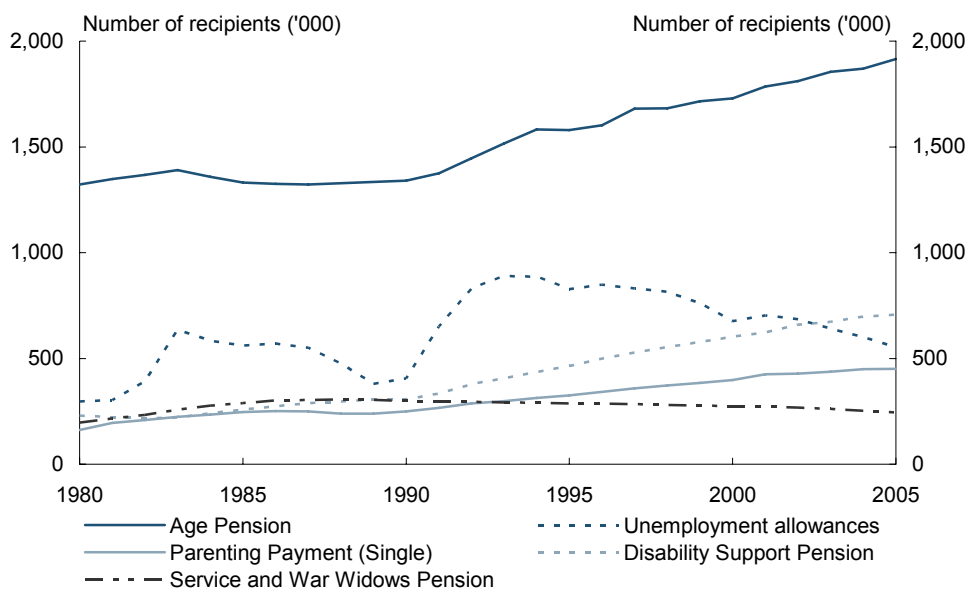
Source: Department of Families, Community Services and Indigenous Affairs, various years and Department of Family and Community Services *Income Support Customers — a Statistical Overview*, various years.

Assistance to those of workforce age

The main payments to people of workforce age are Newstart Allowance, Youth Allowance (YA) for unemployed youths, Disability Support Pension (DSP), and Parenting Payment Single (PPS), previously known as Sole Parents Pension. Projections of these payments were included in IGR1. Parenting Payment Partnered (PPP), Austudy, Youth Allowance (student), Carer Payment and Wife Pension have also been projected for IGR2.

Payments for people of workforce age are means-tested, and are estimated to be around 2.3 per cent of GDP in 2006-07. Where appropriate, people on these payments are required to seek work or undertake training. This report projects the costs of these payments to individuals, but not the cost of job search support or training services.

The Welfare to Work reforms which came into effect on 1 July 2006 introduced changes to the income support system for those of working age. The policy changes are designed to both lift workforce participation and reduce welfare dependency. Under the changes, eligibility requirements for the DSP and Parenting Payment were tightened, recognising that many people have the capability to work part time. These policy changes are likely to have an impact on recipient numbers of Newstart Allowance, Parenting Payment and the DSP over time.

A key determinant of the number of people receiving Newstart Allowance is the state of the economic cycle (as seen in Chart 3.6). Sustained economic growth over many years has

seen the unemployment rate drop, with a corresponding drop in the number of Newstart Allowance customers.

The number of PPS customers has continued to increase since IGR1. Under the Welfare to Work policy changes, new applicants for Parenting Payment will be subject to an obligation, based on their capacity, to seek part-time work when their youngest child turns six. For new customers to be eligible for Parenting Payment they must have a child aged less than six if they are partnered and under eight if single. New customers who have older children will need to apply for a different payment — for most principal carers this will be Newstart Allowance. New Parenting Payment customers will need to change to Newstart Allowance when their youngest child reaches a non-qualifying age, while customers who were granted Parenting Payment prior to 1 July 2006 can remain on Parenting Payment until their youngest child turns 16. Over time, these changes will reduce the number of people on Parenting Payment.

The coverage trend in DSP recipients has flattened out since 2002, except for women aged 60-64 where the rise in female age pension age has had an effect. Under the Welfare to Work reforms eligibility criteria for the DSP have been tightened, and new applicants will be eligible for the DSP only if they are unable to work 15 hours per week at award wages. The previous criterion was based on being unable to work 30 hours per week. Due to the eligibility changes, the number of DSP customers in the future is expected to decrease.

As a consequence of the Welfare to Work initiatives, the number of people on Newstart Allowance is expected to increase; however, this should be offset by reductions in Parenting Payment and DSP customers. A softening in the Newstart Allowance income test is expected also marginally to increase the number of part-rate Newstart allowees. Consistent with the intent of the Welfare to Work changes, the total number of these clients is expected to decrease over time as people move off payments and into employment.

Assistance to families

Family payments provide assistance to families with children, with higher assistance provided to families with lower incomes. The payments modelled in this report include Family Tax Benefit Part A (FTBA) and Family Tax Benefit Part B (FTBB), which were also modelled in IGR1, as well as Child Care Benefit (CCB) and Maternity Payment.

FTBA, FTBB, and CCB have been in existence in their current form only since July 2000. However, the level of assistance for FTBA and FTBB has increased significantly since then. Payment rates and income test thresholds have increased over this period, with tapers being reduced. The key driver for projections of coverage for FTBA and FTBB is assumed to be the number of children aged 15 and under. Maternity Payment is projected using the projected number of births. Two key drivers for CCB are the number of children and the number of women in the labour force. As female labour force participation increases, demand for child care also increases.

Methodology and assumptions

Projections for Newstart Allowance, Youth Allowance, Austudy, PPP, PPS, DSP, Wife Pension and Carer Payment use recent trends in coverage by age and gender for that payment, adjusted for any recent policy initiatives, and project the average cost per customer using the legislated indexation arrangement for that payment.

Projections of age pensions use a more comprehensive methodology using Treasury's RIMGROUP model which incorporates increasing population numbers, changes in labour force experience and the higher retirement incomes of Australian retirees as the superannuation system matures. The projections also incorporate the asset test taper reduction from the Government's new policies to simplify and streamline superannuation. Increases in individual superannuation benefits restrain the growth of Australian Government spending on age pensions over time. More detail on the projection approach is in Appendix C.

Projections

Australian Government payments to individuals are projected to increase as a proportion of GDP from 6.7 per cent in 2006-07 to 7.1 per cent in 2046-47. This is due to an increase in spending on age pensions which is projected to rise by 1.9 per cent of GDP by 2046-47, partially offset by a decrease in other payments to individuals (Chart 3.7).

The projected decrease in other payments to individuals reflects the relatively lower proportions of the population in the relevant age groups, Welfare to Work policy initiatives, and the policy of indexing allowances and some components of family payments to consumer prices. Further details on the projections are given in Appendix A.

Chart 3.7: Projected Australian Government payments to individuals
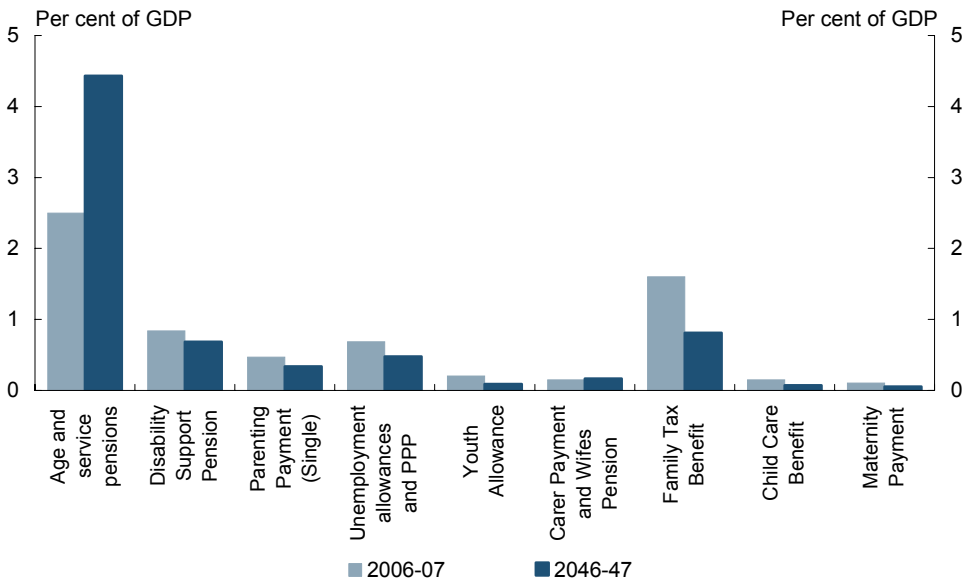
Source: Treasury projections.

While the projected increase in spending on age pensions as a proportion of GDP is substantial, it is relatively low compared with most other OECD countries. Australia is comparatively well placed in relation to age pension spending because the pension is means-tested and targets poverty alleviation. By comparison, many OECD countries pay age pensions according to pre-retirement individual earnings, resulting in greater fiscal pressure as their populations age. In response to such pressures, many OECD countries have moved to indexing pensions by rises in the cost of living rather than linking to wages growth as in Australia. Further, in some OECD countries the normal age for receiving age pensions has increased from the usual age of 65.

Overall, spending on age pensions in real per person terms follows a very similar path to that in IGR1, reflecting similar projections for the population aged 65 and over. The implementation of the new pension assets test initially brings about slightly higher real spending per person, but this gradually reverses over time, due to the higher total population projection in IGR2 and some upwards revision since IGR1 in the projected income and assets of retired Australians.

Since IGR1 there have been increases to Family Tax Benefit rates, and some softening in both the income tests and tapers. In addition, higher projected fertility has led to an increase in the number of children for whom benefits are paid.

The Welfare to Work policy initiatives introduced in July 2006 are responsible for most of the differences in the workforce age payments on a per person basis since IGR1.

The level of spending on payments to individuals as a proportion of GDP (excluding payments that were not modelled in IGR1) is lower than projected in IGR1, primarily reflecting a higher level of nominal GDP both now and in 40 years time (Chart 3.8).

Chart 3.8: Comparison of IGR1 and IGR2 projections of Australian Government income support payments (excluding payments not modelled in IGR1)
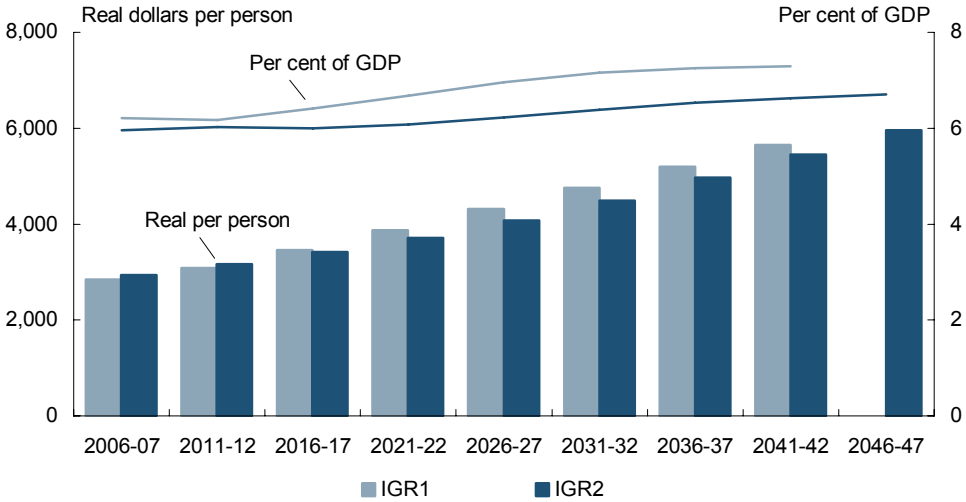
Source: Treasury projections.

However, total real spending per person on Australian Government payments to individuals is greater in IGR2 than in IGR1, reflecting the increased number of payments modelled in IGR2 (Chart 3.9).

Chart 3.9: Comparison of IGR1 and IGR2 projections of total Australian Government income support payments
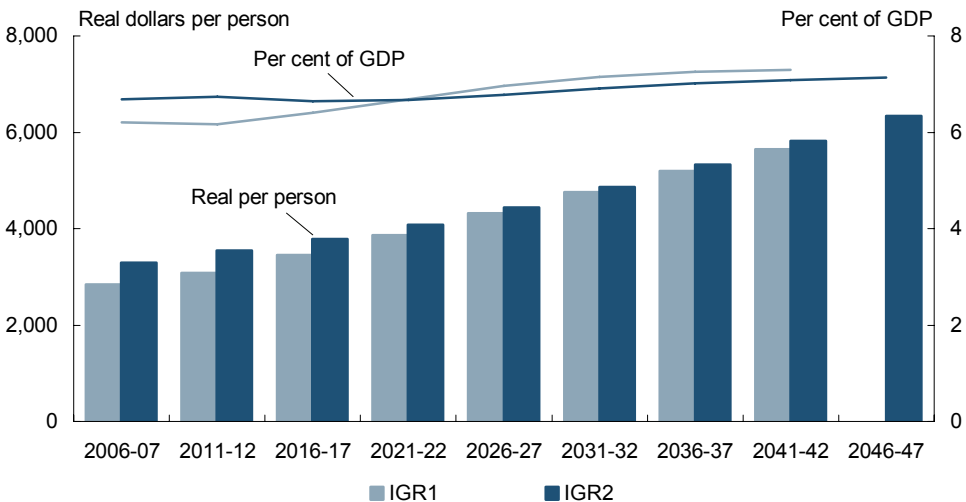
Source: Treasury projections.

The current projections of growth in real spending per person can be decomposed into components due to the ageing of the population and all other components causing real spending per person to rise, such as costs being driven by wages rather than CPI (the non-ageing effect). As expected, an ageing population is the primary driver of the high age pensions, accounting for around three-quarters of the growth in real spending per person to 2046-47. The remaining increase is caused by the indexation of these pensions to wages, which is partially offset by the growing income and wealth of pensioners.

Education and training

Education and training contributes to higher living standards for individuals, by increasing labour productivity and labour force participation. Successive generations of Australians have become more highly educated, reflecting increasing demands for a more skilled labour force and people's desire for education.

Australian Government education spending is estimated to be 1.85 per cent of GDP in 2006-07. Around half of this spending is on government and non-government schools delivered as specific purpose payments to State and Territory governments. The Australian Government is the main government provider of funds for higher education institutions (largely, universities), and allocates around a third of its education spending to this sector. It also provides funding for vocational and technical education providers, some very specific targeted initiatives, student assistance payments and other (mainly administrative) costs.

State and Territory governments primarily fund government school education, as well as vocational and technical education providers. The trend towards privately provided education, both for schools and for tertiary education, is continuing.

Key trends and drivers

A key driver of changes in education spending is the number of students. The proportion of the population in the principal age group for education (5-24 year olds) has decreased from 36 per cent in 1965 to 27 per cent in 2006, while the actual numbers of people in this age group have increased from around 4 million to 5.5 million.

By 2047, the proportion of the population in the principal age group for education is projected to fall to 21 per cent, with the actual number of people in this age group projected to reach 6.0 million.

Participation rates in education are also an important driver of education spending. Participation rates for most age groups in post-secondary education increased from the 1980s to around 2000, but have mostly stabilised or fallen slightly since. School participation rates have been largely constant since the mid-1990s after increasing from the mid-1980s.

For the Australian Government, the proportion of students attending non-government schools is also an important driver of education spending. This proportion has been increasing steadily, at least since 1980 when it was 22 per cent, rising to 33 per cent in 2005. The higher proportion of students in non-government schools has the effect of increasing total costs to the Australian Government.

In higher education, access to university is assisted through the income contingent loans scheme — the Higher Education Loans Programme (HELP). Changes have included allowing increases to the maximum HECS-HELP charge and increasing the FEE-HELP

loan limit. These reforms have seen the main beneficiaries of higher education contributing more towards their education, resulting in the creation of additional university places without excessive increases in public funding.

Assumptions and methodology

Projections of education spending over the next 40 years are based on current Australian Government spending on education combined with projections of total student numbers, incorporating demographic change and economy-wide cost growth. Average costs per student in each education sector have been indexed by wages. Further details on the projection methodology are provided in Appendix C.

School-age participation rates are projected to remain at an average of the annual rates since 1995. Between 2001 and 2005, male and female university participation rates fell for all age groups except for women aged 20-23 and aged 60 and over. These falls reversed a trend of increasing rates for some age groups between 2001 and 2004. Most rates are thus projected to remain at around their 2004 level. For vocational and technical education, participation rates have generally risen somewhat since 1996 for men aged up to 21, women aged up to 18 and some older age groups; accordingly for these groups participation rates are projected to increase slightly. For the remaining age groups, participation rates are projected to remain at around the 2004 or 2005 levels out to 2047.

Projections

Total Australian Government spending on education is projected to grow in real per person terms. However, overall spending is projected to fall slightly as a proportion of GDP, from 1.85 per cent in 2006-07 to 1.78 per cent in 2046-47 (Chart 3.10). The projections are detailed in Appendix A.

Chart 3.10: Projected Australian Government education spending
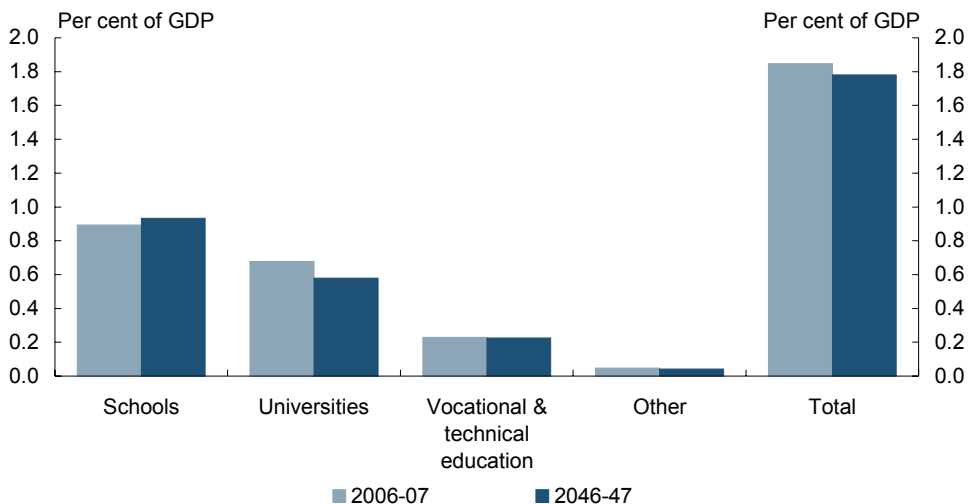
Source: Treasury projections.

Overall, projected real per person education spending is higher than in IGR1 (Chart 3.11). This is due largely to projected increases in Australian Government spending on schools. Two important reasons account for this increase. First, fertility projections are higher than previously anticipated, leading to higher projected numbers of students. Second, real average costs per school student are higher than previously projected, due mainly to the increasing proportion of students projected to attend non-government schools over the next 40 years.

The current projections of growth in real spending per person can be decomposed into components due to the ageing of the population and non-ageing factors. The ageing of the population detracts from growth in real education spending reflecting the decline in the proportion of the population in younger age cohorts. The driver of real per person growth is the assumed indexation of costs per student by wages and educational participation rates, including the increasing proportion of students in non-government schools.

Chart 3.11: Comparison of IGR1 and IGR2 projections of Australian Government education spending
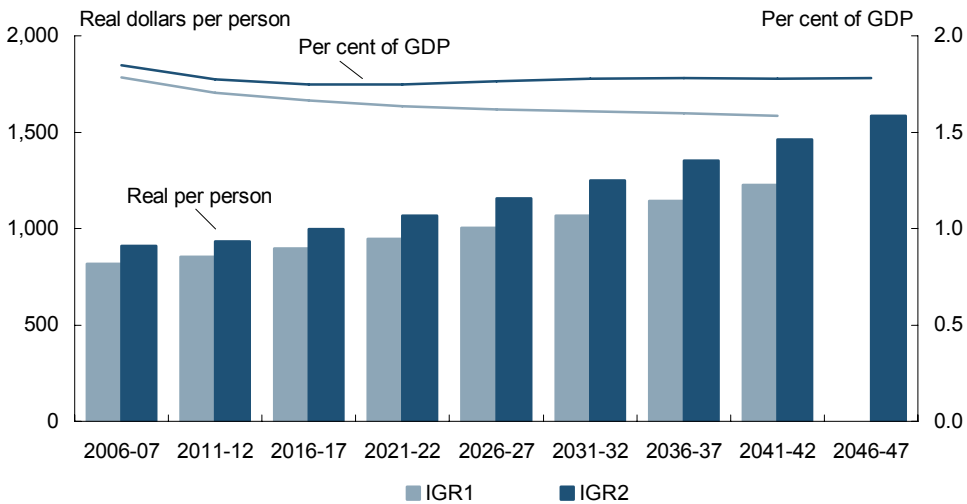
Source: Treasury projections.

Government employee superannuation

The Australian Government sponsors a number of superannuation arrangements for its current and former employees. These arrangements affect future government spending because, up until 2005, only a small proportion of the costs of employee benefits were funded as they accrued, with the majority funded at the time payments fell due. Past governments therefore accumulated a significant liability, which is currently estimated at around $100 billion (or 10 per cent of GDP). Furthermore, most benefits are paid as pensions, so payments may continue for a considerable time after the employment which gave rise to the benefit.

The most significant arrangements, in terms of future spending, are the schemes for Australian Government civilian and military employees. These include the Commonwealth Superannuation Scheme, the Public Sector Superannuation Scheme, the Defence Force Retirement and Death Benefits Scheme and the Military Superannuation and Benefits Scheme. The Public Sector Superannuation Scheme and Military Superannuation and Benefits Scheme are less expensive than the Commonwealth Superannuation Scheme and Defence Force Retirement and Death Benefits Scheme and, in addition, have a lower unfunded component as the Government is meeting a greater portion of the costs for these schemes as they accrue.

The four major defined benefit schemes for civilian and military employees account for almost all of the Australian Government's superannuation liabilities and the following projections relate to only these schemes. Defined benefit superannuation arrangements are also in place for federal politicians, judges, and governors-general. In addition, the Australian Government has commitments in relation to the superannuation entitlements of many current and former tertiary education sector employees.

Key trends and drivers

In 1990 and 1991, the Australian Government closed the Commonwealth Superannuation Scheme and the Defence Force Retirement and Death Benefits Scheme respectively to new members. In 2005, the Government closed the Public Sector Superannuation Scheme to new members. From 2005, the Government began funding the superannuation entitlements for new civilian employees as they accrued, rather than adding to the unfunded liability. The Government also paid out its superannuation liability with respect to Telstra and Australia Post in 2004 and superannuation entitlements of former State Rail employees in 2006. This produces future savings.

Despite these initiatives, the Government's superannuation liability is expected to continue to grow in nominal terms, due largely to growth in the military superannuation liability and further entitlements accruing to existing members of the closed civilian schemes (Chart 3.12). However, the liability is projected to grow more slowly than the economy over the next 40 years and consequently decline as a percentage of GDP (from

around 10.1 per cent of GDP today to around 3.2 per cent of GDP by the end of the projection period).

Chart 3.12: Projected defined benefit superannuation liabilities
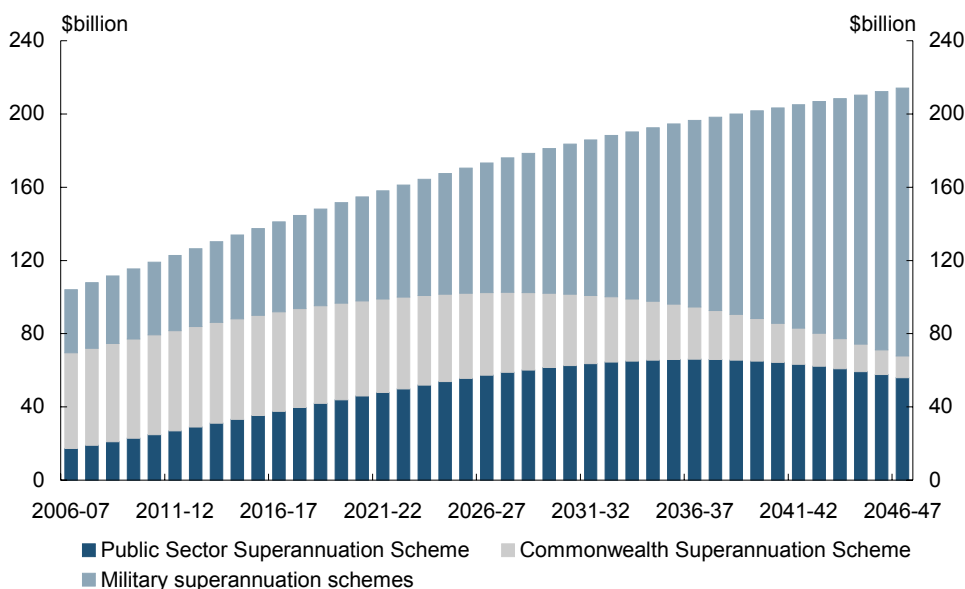
Note: A very small proportion of outstanding liabilities under the Public Sector Superannuation Scheme and Commonwealth Superannuation Scheme are held by other governments. Military superannuation schemes include the Military Superannuation and Benefits Scheme and the Defence Force Retirement and Death Benefits Scheme.
Source: Department of Finance and Administration, PSS and CSS Long Term Cost Report 2005, 2006 and Australian Government Actuary, 2005 Military Superannuation and Benefits Scheme and Defence Force Retirement and Death Benefits Scheme (MSBS and DFRDB), 2006.

The Australian Government established the Future Fund in 2006 to finance its superannuation liabilities. The Future Fund is part of the Government's broader strategy to ensure the long-term sustainability of its finances and ensure it is able to meet the challenges of the future. By provisioning for future superannuation payments — currently the largest liability on the Government's balance sheet — the Government will free up resources in the future, when other fiscal pressures are expected to emerge.

The objective of the Future Fund is to accumulate sufficient financial assets by no later than 2020 to make provision for the Government's unfunded public sector superannuation liability. The Fund will be invested in a broad range of financial assets and is managed by an independent statutory body — the Future Fund Board of Guardians, who are responsible for the investment decisions of the Fund.

In May 2006, the Government transferred $18 billion to the Future Fund as seed capital. Further transfers have been made from the 2005-06 Budget surplus, from the receipts from the first instalment of the Telstra 3 share sale and from the Government's remaining shareholding in Telstra. Further contributions will be made from the 2006-07 Budget outcome and from receipts from the second instalment from the Telstra 3 share sale.

Under the Future Fund Act, the designated actuary specifies for each year a target asset level for the Fund. This is the amount expected in that year to be needed to meet the unfunded liability. If the value of the Fund is less than the target asset level then further contributions can be made to the Fund (up to that level). Once the target asset level is reached, contributions can no longer be made to the Fund.

Methodology and projections

Projections of Australian Government spending on defined benefit superannuation over the next 40 years are based on official actuarial valuations undertaken in 2005-06 using data to 30 June 2005.

Australian Government defined benefit superannuation payments are projected to increase in nominal terms over the next 40 years. However, payments are projected to grow more slowly than the economy, resulting in a steady decline in payments as a proportion of GDP — from around 0.5 per cent of GDP in 2006-07 to 0.2 per cent of GDP in 2046-47 (Table 3.2). The closure of the old schemes, which are more expensive than their replacements, the higher proportion of benefits being funded as they accrue under the new schemes and the declining overall numbers of Australian Government employees as a percentage of the Australian population will all work in the same direction to constrain growth in spending.

The projected decline in spending on superannuation as a proportion of GDP is greater than shown in IGR1. The main reasons for this change are the stronger nominal economic outlook in IGR2 and the closure in 2005 of the defined benefit Public Sector Superannuation Scheme to new members. For the purposes of this report, superannuation spending on civilian employees who are members of the fully funded Public Sector Superannuation Scheme Accumulation Plan is included in 'other' government spending.

Table 3.2: Projected public sector superannuation payments for major defined benefit schemes (per cent of GDP)

	2006-07	2011-12	2016-17	2026-27	2036-37	2046-47
Civilian schemes	0.4	0.3	0.3	0.3	0.2	0.1
Military schemes	0.2	0.2	0.1	0.1	0.1	0.1
Total	**0.5**	**0.5**	**0.4**	**0.4**	**0.3**	**0.2**

Note: Projections for the civilian schemes include the Commonwealth Superannuation Scheme and Public Sector Superannuation Scheme. A very small proportion of payments under these schemes relate to liabilities held by other governments. Projections for the military schemes include the Defence Force Retirement and Death Benefits Scheme (incorporating costs from the previous Defence Forces Retirement Benefits Scheme) and Military Superannuation and Benefits Scheme.
Source: Department of Finance and Administration, PSS and CSS Long Term Cost Report 2005, 2006 and Australian Government Actuary, 2005 Military Superannuation and Benefits Scheme and Defence Force Retirement and Death Benefits Scheme (MSBS and DFRDB), 2006.

Other spending

Other areas of Australian Government spending include defence and national security, the environment, transport and communications infrastructure, public order and safety and core government services such as departmental operating costs. These areas generally do not have a clear link with demographic factors, and given their diverse nature, it is difficult to project spending in these areas with any certainty. Further, spending in many of these areas is highly dependent on government decisions. Consequently, other spending is assumed to grow broadly in line with the economy over the next 40 years. This allows for spending to increase as a proportion of GDP in some areas and decline in others.

The major components of other spending are on defence and the environment. Key trends and drivers of spending in these areas are discussed in more detail below.

Defence

Australian Government defence spending is estimated to be 1.7 per cent of GDP in 2006-07 (excluding spending on military superannuation, which is modelled separately under 'Government Superannuation'). The Government's White Paper, *Defence 2000 — Our Future Defence Force*, provided a funding commitment equivalent to 3 per cent annual real growth for the decade to 2010-11. In the 2006-07 Budget, the Government provided for a further 3 per cent real growth up to 2015-16. Since the White Paper, the Government has also supplemented defence spending further for discrete measures (for example, for military operations).

Key trends and drivers

Over most of the past four decades, defence spending has fallen gradually as a proportion of GDP (Chart 3.13). While defence spending has grown in real terms, the economy has grown faster. The declining trend has levelled out in recent years, with significant growth in defence spending accompanying strong growth in nominal GDP over that period.

Unlike many other government functions, the demand for defence spending has no direct links to demographic factors. An increase in population does not increase the cost of defence directly, but can strengthen the government's capacity to pay for defence.

Future defence spending will depend on a wide range of factors, including the strategic environment, the community's tolerance of risk and the cost of inputs into defence capability. As with all government spending, these factors will be balanced against fiscal constraints. Future trends in the individual factors can be difficult to discern, as can any precise view of how they would interact.

A discussion of various alternative projection methods for future defence spending is in Appendix C.

Chart 3.13: Defence spending as a proportion of GDP
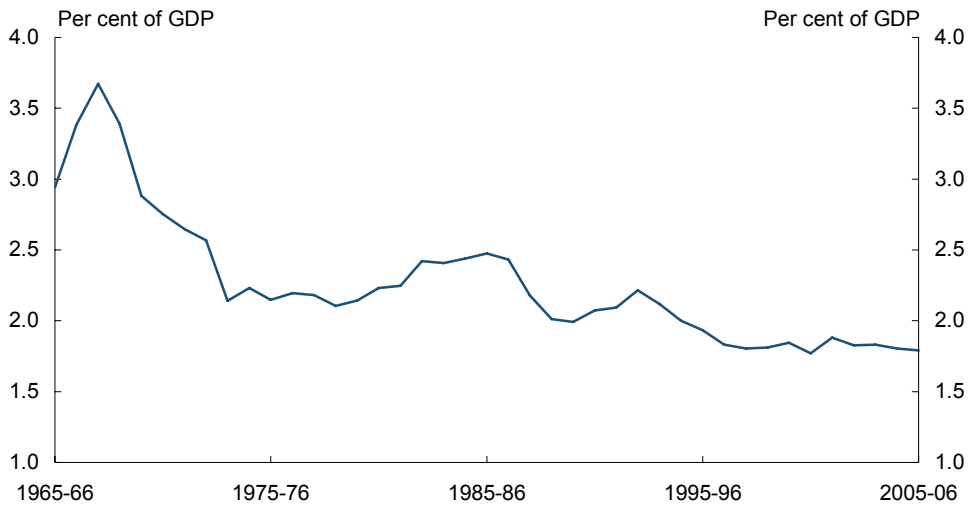
Source: Australian Bureau of Statistics data, Department of Defence annual reports, various years.

Environment

Since IGR1, spending by the Australian Government on protecting and conserving the environment is estimated to have more than doubled, from around $1.8 billion (0.2 per cent of GDP) in 2001-02 to an estimated $3.9 billion (0.4 per cent of GDP) in 2006-07.

Key trends and drivers

Increases in government spending on the environment can be attributed to several key factors. Foremost is the awareness of the importance of Australia's natural environment that has increased as evidence of environmental pressures have emerged in areas such as land degradation, soil erosion and salinity, water use and climate change (Chart 3.14).

Chart 3.14: Indicators of Australian environmental pressures[1]
1951-2006 (Index 1961 = 100)
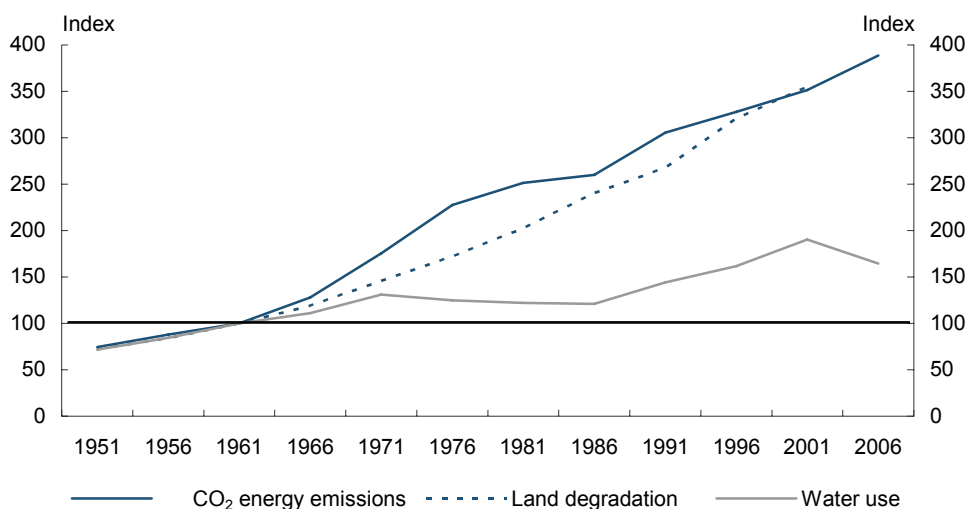
Source: Commonwealth Scientific and Industrial Research Organisation, Australian Stocks and Flows Framework (unpublished); Australian Bureau of Statistics *Water Account, Australia 2000-01, 2004-05* Cat. No. 4610.0 and Australian Greenhouse Office 2006, *Greenhouse Gas Inventory Report 2004 (Revised)*.

A further factor is that greater understanding of environmental problems, resulting from improved knowledge of environmental systems and their interactions, has lead to a greater capacity to address environmental problems. At the same time, increasing real wealth and incomes tend to lead to increased demand for environmental action.

While it is reasonable to expect these factors to exert ongoing (and possibly greater) influence in the future, it is also the case that, at this stage, considerable uncertainty surrounds the ability to estimate, even in reasonably broad quantitative terms, the evolution of future government spending on the environment.

Part of the challenge lies in data limitations. Comprehensive, consistent data on government environment spending is only available for recent years, complicating both comparisons over longer periods of time and the use of past trends as a basis for future projections.

The extent to which environmental pressures are reflected in increased government spending will depend, in large part, on the choices governments make and, most importantly, the policy instruments they choose for dealing with environmental problems.

1　Degraded land is defined as agricultural land whose productive capacity has declined more than 20 per cent. Land degradation data is not available for 2006. Water use data for 2006 is based on 2005 data from Australian Bureau of Statistics, *Water Account, Australia 2004-05*, Cat. No. 4610.0.

Policy choices

Sustainable policy would address the underlying incentives causing environmental degradation. Most often, this will involve making protection of the environment a cost of production and consumption, through instruments such as market-based measures to price externalities, reducing subsidies to environmentally damaging practices, and regulation.

While no single policy instrument is appropriate for all environmental problems, government choices regarding policy instruments will have implications for economic welfare and fiscal sustainability both for current and future generations. Poor choices may prove costly both fiscally and in economic welfare terms, and may even result in ineffective or perverse environmental outcomes.

Historically, governments have relied on regulation to achieve environmental outcomes. Regulatory approaches can be effective but normally require affected parties to achieve specified outcomes irrespective of costs, so there is little incentive to innovate and do more than required. The outcome is unlikely to be economically efficient.

Directly 'purchasing' environmental outcomes can be effective and, in some instances, appropriate. However, applied broadly, it can involve significant fiscal costs. While many consider climate change mitigation is best addressed through market-based mechanisms such as an emissions trading scheme, governments may alternatively elect to purchase abatement activities using budget funding. The potential cost to the budget from adopting the latter approach can rise quite significantly, imposing a substantial tax burden on today's, and future, generations (Box 3.1).

Environment and growth

The environment provides natural resources that are essential inputs into Australia's productive capacity as well as ecosystems that absorb and assimilate the waste generated by people and industry. Therefore, while it may be possible for an economy to extract higher levels of economic growth in the shorter term by choosing to excessively degrade the quality of the environment, over the longer term, such choices will not be sustainable. Sustainable economic growth over time is inextricably linked to environmental sustainability; poor environmental management inevitably adversely affects current and future productive capacity.

Unsustainable use of the environment generally results from the failure of those undertaking economic activities to take into account environmental consequences. Where the use of environmental goods and services is not valued properly, users of these resources have little incentive to recognise the costs of the environmental degradation they impose, or the alternative uses to which these resources could have been put. Instead, the focus inappropriately shifts only to the financial growth foregone from addressing the environmental damage.

Box 3.1: Illustrative fiscal costs of emissions abatement scenarios

The potential fiscal cost of purchasing emissions abatement can be estimated by combining the 'abatement task' with the marginal cost of abatement.

The abatement task can be considered as the difference between projected and desired emissions levels. For the purposes of the exercise below, the assumption is made that emission levels currently targeted (108 per cent of 1990's emissions) are maintained over time. As such, the abatement task can be expected to increase as the economy expands.

The marginal cost of abatement is expected to be low initially but is assumed to rise as the abatement task increases and lower cost opportunities become exhausted. The marginal cost is also influenced by the policies used to achieve the desired level of abatement. The Australian Bureau of Agricultural and Resource Economics has modelled three different scenarios based on the abatement target above, and using varying levels of sectoral coverage and efficiency in purchasing abatement. Combining the abatement task with the marginal cost of abatement, the three scenarios illustrate the potential total annual costs of abatement (Chart 3.15). The results suggest that even where there are abatement policies that have full coverage of the economy and can exploit all known technological potentials, the cost of a fiscal approach to undertaking all such abatement activities climbs from the current near zero cost to around 1¼ per cent of GDP after 40 years. Where less efficient approaches are adopted, with the Government specifically excluding certain sectors or using prescriptive (non-market) policy instruments, the cost rises to between 2 and 2 ½ per cent of GDP after 40 years.

Chart 3.15: Illustrative cost of emissions abatement
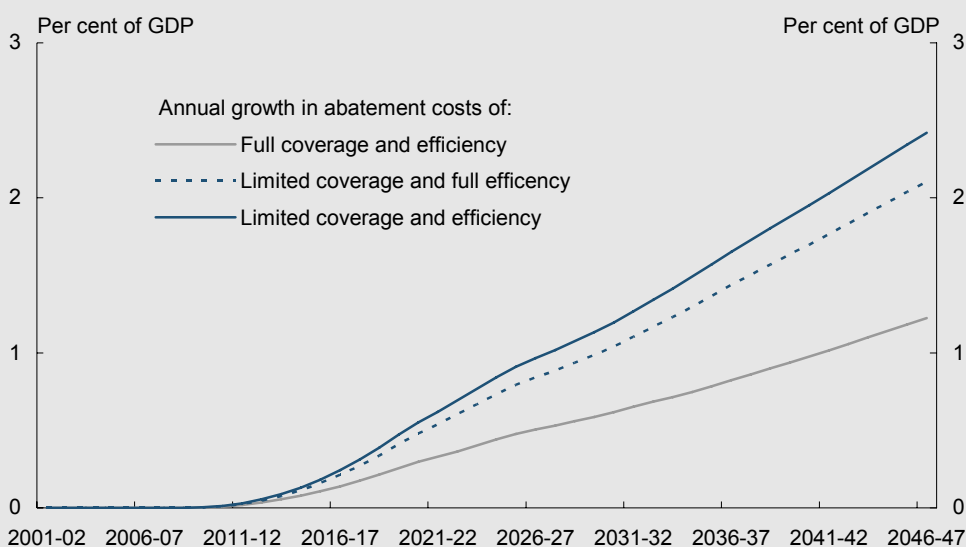
Source: Unpublished modelling by the Australian Bureau of Agricultural and Resource Economics based on their Global Trade and Environment Model and Treasury assumptions.

One topical example is climate change. Scientific evidence indicates that climate change can be expected to affect both Australia's physical and economic environments. The scale of the change, and the way it will manifest is difficult to predict and plan for. Nevertheless, the Commonwealth Scientific and Industrial Research Organisation (CSIRO)[2] has identified a number of possible outcomes, including increased temperatures, declining average rainfall, and greater frequency of severe weather events such as prolonged droughts and storms. All of these can be expected to impact on Australia's future GDP. However, modelling such impacts is very difficult, as evidenced most recently by the Stern Review[3], and emphasised by its critics. Nonetheless, there does seem to be consensus around the fact that significant levels of global warming imply losses in global GDP over the longer term that should be factored into the policy choices made today.[4]

Government actions that ensure environmental consequences are taken into account can provide for both improved economic and environmental outcomes. For example, the presumption that water was in unlimited supply, and its effective treatment as a 'free' resource, led to Australia's water being overallocated, with a significant proportion of Australia's water management areas estimated to be approaching, or beyond, sustainable extraction levels.[5] Moreover, while around 70 per cent of Australia's water is used for agricultural purposes, the relative value created from different productive areas varies significantly. Establishing a clearly defined property rights framework and effective water markets, as envisaged under the National Water Initiative, would provide the price signals needed to encourage the more productive and efficient use of water. The Australian Government's recent announcement of its $10 billion water package aimed at addressing overallocation, returning the Murray-Darling river system to sustainable extraction levels and further progressing market-based reforms, seeks to make progress in these areas.

In some instances, governments may choose environmental outcomes that will imply lower economic growth — even over the longer term. Such choices can be expected to reflect the importance of environmental outcomes in their own right in raising the wellbeing of society, and the decisions elected governments are tasked to make in balancing society's desire for strong economic growth with the value society places on preserving the environment.

---

2   CSIRO 2006 *Climate change impacts on Australia and benefits of early action to reduce global greenhouse gas emissions.*
3   HM Treasury 2007 *The Economics of Climate Change: The Stern Review* Cambridge University Press.
4   The Stern Review sought to model the global economic impacts of climate change. Modelling the economic impacts of climate change at the regional or country level is likely to prove highly complex and speculative at this stage.
5   National Water Commission*, Australian Water Resources 2005.*

REVENUE PROSPECTS

Australian Government revenue is derived from taxation and non-taxation sources.[6] In 2006-07, taxation receipts are expected to amount to $213 billion (20.7 per cent of GDP) and account for 92 per cent of total Australian Government receipts. Income taxes are the predominant source and are expected to account for around 86 per cent of taxation receipts in 2006-07. Indirect taxes are expected to account for the remaining 14 per cent, of which excise on petroleum products is expected to contribute 7 percentage points. Non-taxation receipts include sales of goods and services by the Australian Government, interest and dividends, petroleum royalties and seigniorage from circulation coin production. In 2006-07, non-taxation receipts are expected to amount to $18 billion (1.8 per cent of GDP) and account for 8 per cent of Australian Government receipts.

Australian Government cash receipts account for around 57 per cent of the receipts of all governments in Australia. State government receipts account for around 37 per cent and local government for the remaining 6 per cent. In 2006-07, the States are estimated to receive $39.3 billion in GST revenue, more than 26 per cent of their total receipts. Other important revenue sources for the States are specific purpose payments from the Australian Government, payroll taxes and stamp duties on property conveyances. The majority of local government receipts come from property rates and charges for goods and services.

Historical trends and drivers

Over time, taxation receipts are correlated with nominal economic growth because most of the tax bases from which they are raised correspond broadly to major elements of nominal GDP. Over the last 25 years, the ratio of Australian Government taxation receipts to GDP has fluctuated over a narrow range of between 20 and 24 per cent (Chart 3.16). This contrasts with an earlier trend for the ratio to increase during the early and middle decades of the twentieth century. This shift from rising to broadly level tax ratios has been observed in most OECD countries.

The minor variations around the plateau level in Australia in recent decades reflect a mix of changing economic conditions and adjustments to policy settings over the period: for example, recessions in the early 1980s and 1990s were associated with lower tax-to-GDP ratios; relatively tight fiscal policy settings in the mid to late 1990s played a role in increasing the ratio; and structural reform to the tax system reduced the ratio again from 2000-01.

---

6   Consistent with the approach taken in the rest of the report, figures given in this section are on a cash basis.

Chart 3.16: Total Australian Government taxation receipts, 1979-80 to 2005-06
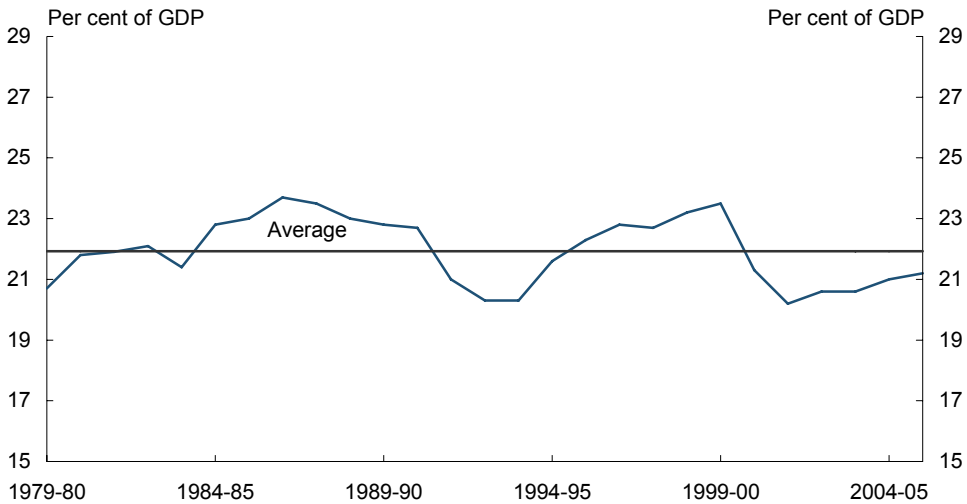
Source: Australian Bureau of Statistics Cat. No. 5206.0 and Australian Government Budget Paper No.1, various years.

The relative overall stability of the tax-to-GDP ratio over the past 25 years reflects the importance of policy adjustments to revenue collections, particularly periodic adjustments to the personal income tax scale. The top line in Chart 3.17 shows that, under a strict no-policy-change assumption (including no change to the personal income tax scales), tax collections would have risen faster than GDP over the period from 1979-80 to 2005-06. This would have resulted in a tax-to-GDP ratio considerably higher than actually obtained — more than 5 percentage points higher in 2005-06. This reflects the progressivity of the personal income tax scale and the fact that the personal income tax thresholds are set in nominal terms.

The strict no-policy-change scenario is unrealistic. For example, if individual taxpayers in 2003-04 (the latest year for which actual data are available) had been taxed under the personal income tax scales of 1979-80, more than 45 per cent would have faced the top marginal tax rate of 61 per cent and 77 per cent would have faced a marginal rate of over 47 per cent, higher than today's highest rate.

In practice, governments make substantial periodic adjustments to the personal income tax scale. The impact of these adjustments is reflected in the difference between the strict no-policy-change scenario and the bottom line of Chart 3.17, which illustrates what the tax-to-GDP ratio would have looked like if the only policy changes since 1979-80 had been those made to the personal tax scales. Policy changes to the personal tax scales have, in aggregate, significantly outweighed the impact of nominal price increases on tax receipts (this is confirmed by micro-simulation data).

While the company tax rate has been cut, governments also have made a number of other discretionary policy changes, including broadening of the personal income, company and

indirect tax bases. The combined value of these other discretionary changes is reflected in the increase from the bottom line to the middle line in the chart — the actual level of taxation receipts over the last 25 years.

Chart 3.17: Impact of policy change on Australian Government tax receipts, 1979-80 to 2005-06
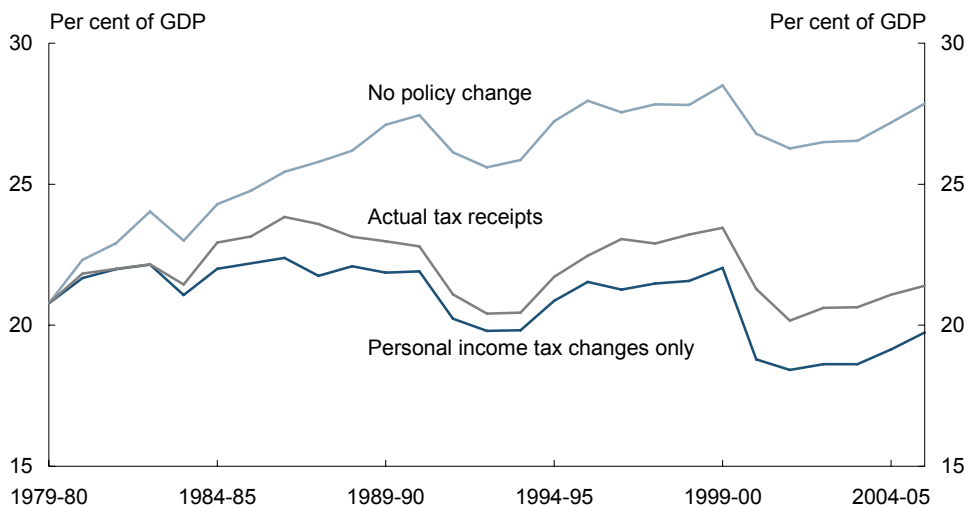
Note: Wholesale Sales Tax (WST) has been included in all three series on the basis of actual collections, as a no-policy-change series for this tax is not available.
Source: Australian Bureau of Statistics Cat. No. 5206.0; Australian Government Budget Paper No. 1, various years and Treasury estimates.

The large impact of discretionary changes in tax policy over even the last 25 years, amounting to over 5 per cent of GDP, makes it difficult to adopt specific assumptions about tax policy over the 40-year projection period. While a strict no-policy-change assumption would be unrealistic, there is no non-arbitrary, alternative benchmark.

The emphasis of the analysis in this report, and in intergenerational fiscal analyses around the world, rests on the pressures that demographic change is likely to impose on future government spending, rather than on the way this spending is financed. In line with that, this report does not present revenue projections based on modelling of particular revenue sources or on an analysis of demographic or economic factors that may influence revenue collections.

OVERALL RESULTS

Long-term spending pressures

Projections in this report for Australian Government spending on health, aged care and income support payments show that these are likely to increase, both in real per person terms and as a proportion of GDP over the next 40 years. While spending on education also is projected to rise in real per person terms, it is projected to fall slightly as a proportion of GDP by the end of the projection period (Chart 3.18). Defence, which is part of other spending, is assumed to grow broadly in line with the economy over the next 40 years.

Chart 3.18: Projections of Australian Government spending by category
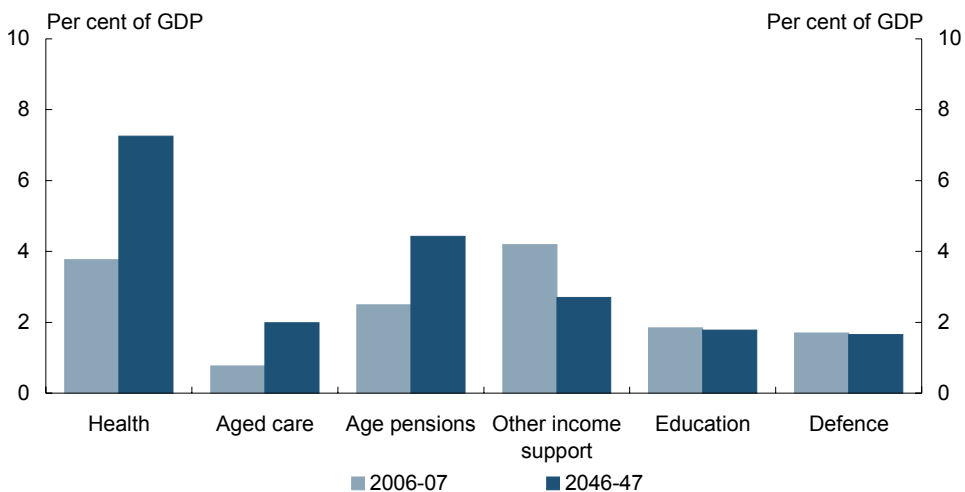
Source: Treasury projections and assumptions.

Australian Government spending on health and aged care is projected to grow significantly over the next 40 years, due mainly to the continued development of improved, but more expensive, drugs and medical technologies, with an ageing population also increasing demand for health and aged care spending.

Total payments to individuals are projected to increase as a proportion of GDP, driven by higher age pensions. However, the projected increase in age pensions is smaller than for most other industrialised countries, reflecting the targeted nature of the Australian Age Pension system and the level of private funding of retirement incomes, which will become increasingly important over time. The increase in age pensions is partially offset by the projected decline in other payments to individuals as a proportion of GDP. This is because some income support payments, such as unemployment allowances and significant components of family payments, are tied to consumer price growth, which is projected to be lower than growth in nominal GDP.

Spending on education is projected to fall slightly as a proportion of GDP as younger people will comprise a smaller proportion of the overall population.

Overall, real Australian Government spending per person is projected to increase by 2 per cent a year on average over the next 40 years (or by around 4½ per cent per person a year on average in nominal terms). Accordingly, Australian Government spending is projected to rise by around 4¾ percentage points of GDP by 2046-47 (Chart 3.19). Health, age pensions and aged care account for most of the projected rise in spending.

Chart 3.19: Projection of spending pressure
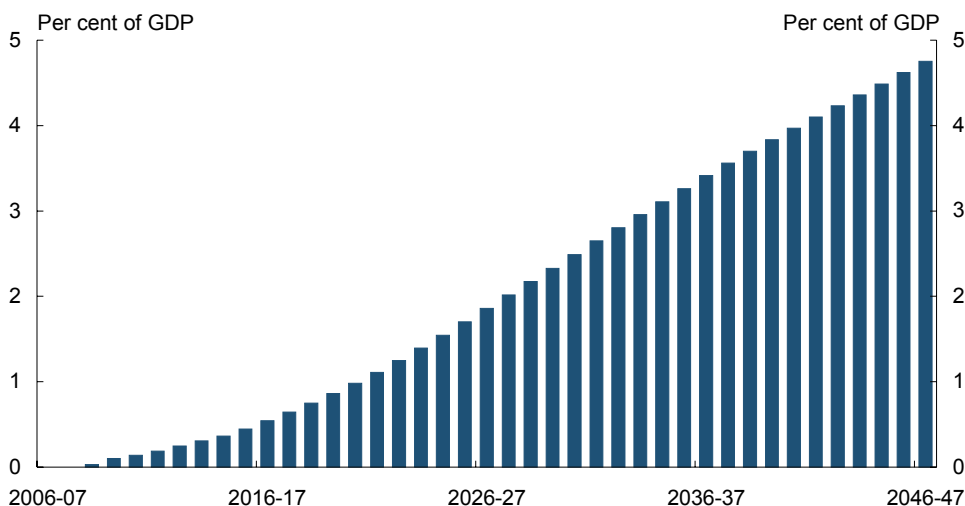
Source: Treasury projections.

While an ageing population is projected to contribute to an increase in spending over the next 40 years, roughly two-thirds of the projected increase in real spending per person is driven by factors other than ageing. This is most notable for health spending, where a significant component of the projected increase is driven by non-demographic factors such as the development of new drugs.

Overall, real spending per person is projected to be slightly less than in IGR1 towards the end of the projection period (Chart 3.20). While projected real spending per person has increased in some areas such as education and aged care since IGR1, this is more than offset by lower projected real spending per person for health and certain payments to individuals.

Consumer price growth in IGR2 is broadly similar to that in IGR1 (Chart 2.25). Therefore, nominal spending per person, which is real spending per person adjusted for consumer price growth, is also projected to be slightly less than in IGR1.

Largely because of the recent improvement in the terms of trade, nominal GDP per person over the projection period is higher in IGR2 than it was in IGR1. As a result, nominal spending as a proportion of nominal GDP (which is equivalent to nominal

spending per person divided by nominal GDP per person) is projected to increase by less than in IGR1.

Chart 3.20: Comparison of IGR1 and IGR2 projections of Australian Government spending
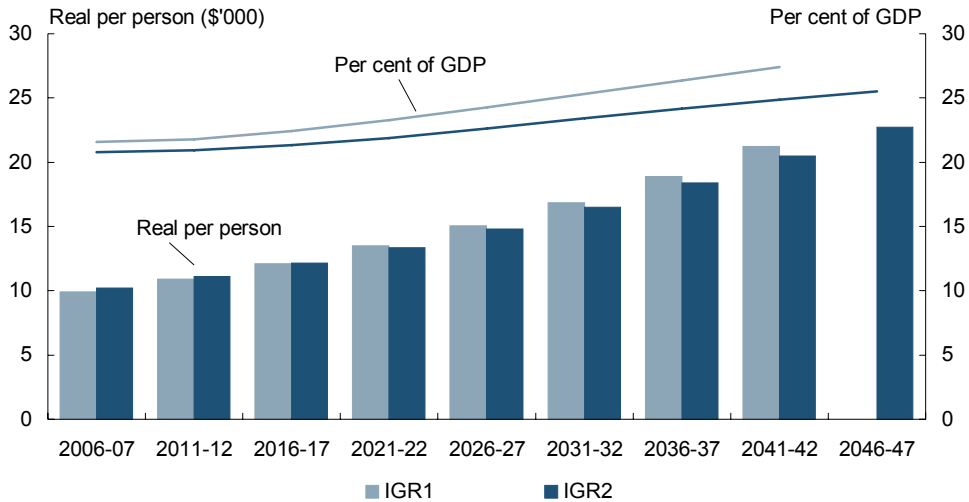
Note: Some of the difference in total real spending per person will reflect changes in GDP projections since a component of spending is linked to GDP. Since IGR1, there have been some changes in projection methodologies incorporating new data and modelling approaches.
Source: Treasury projections.

The spending projections outlined in this report are based on reasonable assumptions of long-term demographic and economic growth trends. Considerable uncertainty surrounds these assumptions and their impact on government finances. In particular, uncertainties around the interaction between factors affect spending and how these may change over time. For example, labour shortages arising from an ageing population may further increase the labour force participation of older workers. This would delay retirement and increase this group's incomes, reducing the fiscal impact of population ageing. Appendix B shows the impact on economic growth and government spending of applying reasonable alternative assumptions to those contained in the report.

Assessment of fiscal sustainability

The Australian Government's current fiscal position is strong, by both historical and international standards. The Government has eliminated net debt and is continuing to strengthen its balance sheet by running budget surpluses and accumulating financial assets in the Future Fund.

While the fiscal outlook over the next decade is favourable, the spending projections in this report suggest that governments will need to continue to make policy adjustments to maintain a sustainable fiscal position over the next 40 years.

To assess the impact of projected spending pressures on Australian Government finances, revenue (excluding interest receipts) is assumed to remain a constant 22.1 per cent of GDP over the next 40 years. Under this assumption, spending is projected to exceed revenue in around 17 years. By 2046-47, the gap between spending and revenue is projected to grow to around 3½ per cent of GDP (Chart 3.21).

Chart 3.21: Projected Australian Government primary balances
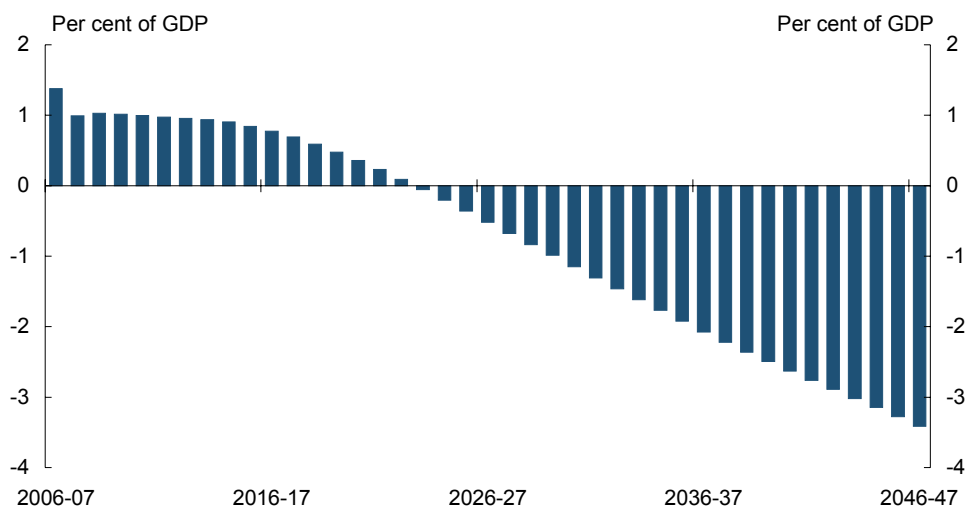
Note: The projections are of the primary balance (which excludes net interest payments and Future Fund earnings). The first four years of the IGR2 projections are primary balances based on the *2006-07 Mid-Year Economic and Fiscal Outlook* adjusted for major government decisions announced since that time.
Source: Treasury projections.

The outcome for IGR2 compares to a projected fiscal gap in IGR1 of 5 per cent of GDP by 2041-42 (Chart 3.22). The improved outcome is due to a lower rate of growth of projected spending per person and higher projected nominal GDP per person. The lower projected spending is mainly in health and certain payments to individuals partly offset by increases in some areas such as education and aged care. The higher projected nominal GDP per person is predominantly attributable to the recent strong rise in the terms of trade. Higher labour force participation and skilled migration also have increased nominal GDP per person.

Chart 3.22: Comparison of IGR1 and IGR2 projected primary balances
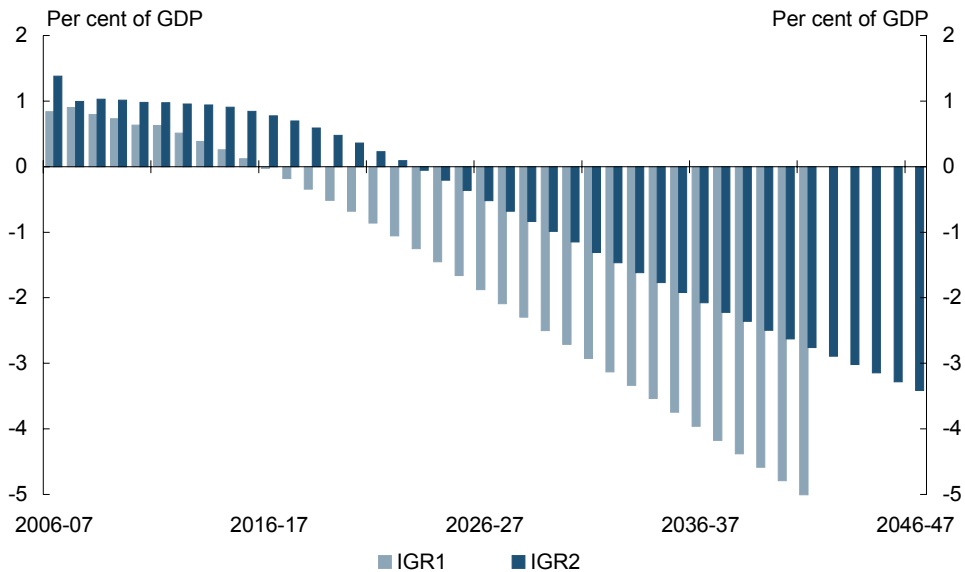
Note: Since IGR1, there have been some changes in projection methodologies incorporating new data and modelling approaches.
Source: Treasury projections.

The projections for IGR2 are on a primary balance basis which excludes net interest payments from the underlying cash balance. By removing financing costs the primary balance provides a measure of underlying fiscal pressures. IGR1 was also prepared on a similar basis but included net interest payments that were contained in the 2002-03 Budget forward estimates. These were held constant as a percentage of GDP over the projection period. Applying the new methodology of IGR2 to IGR1 would have produced a fiscal gap in 2041-42 of 4.7 per cent of GDP compared to the 5.0 per cent of GDP reported in IGR1.

Despite higher nominal GDP per person, governments will still need to make policy adjustments to maintain sound government finances. The Government already has taken steps to address some of the fiscal pressures. By provisioning for unfunded liabilities through the Future Fund, the Government is strengthening its balance sheet now to finance superannuation payments that need to be made in the future. From 2020, or once the liability has been met, superannuation payments can be funded by drawing down on assets in the Future Fund rather than from general revenue. This will ease the fiscal adjustment task associated with other projected fiscal pressures. Chart 3.23 shows projected fiscal pressures after removing Australian Government superannuation payments from 2020-21.

Chart 3.23: Fiscal pressures adjusted for superannuation payments
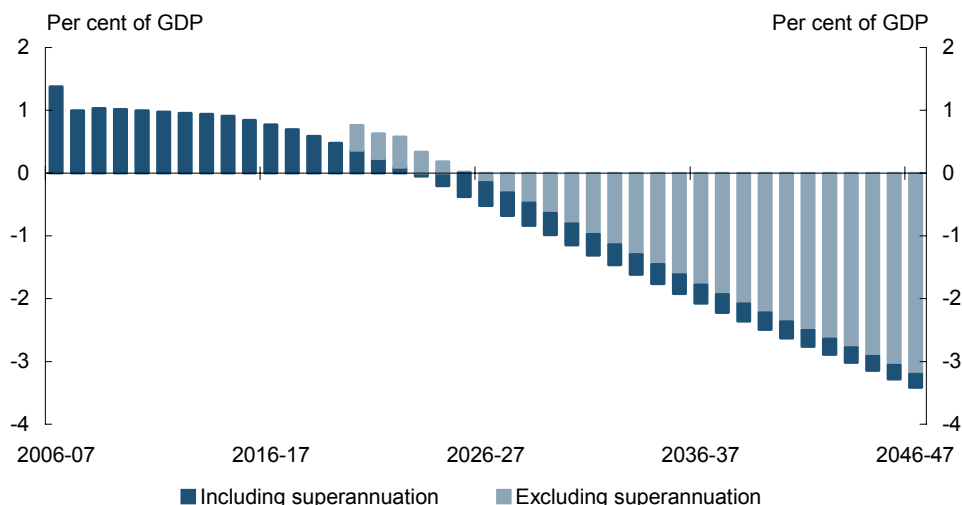
Source: Treasury projections.

Considering future spending pressures in the context of the Government's balance sheet is a more useful guide for assessing the sustainability of government finances. This is because a government can build up assets today to provide for accumulated liabilities, as has been the case with the Future Fund.

The projected spending pressures outlined in this report imply a deterioration in the Government's balance sheet over time. If surpluses are maintained to 2022-23 as projected, then net debt would not re-emerge until the mid-2030s but would rise very quickly to reach around 30 per cent of GDP in 2046-47 and continue to increase after that date (Chart 3.24). Increasing net debt would lead in turn to higher debt-servicing costs, adding to upward pressures on spending.

Such an outcome would not be sustainable. Delaying policy action and accumulating government debt as spending pressures arise means deferring a higher tax burden to future generations of Australians. The Government's medium-term fiscal strategy would not permit such an outcome.

Chart 3.24: Projected path of Australian Government net debt
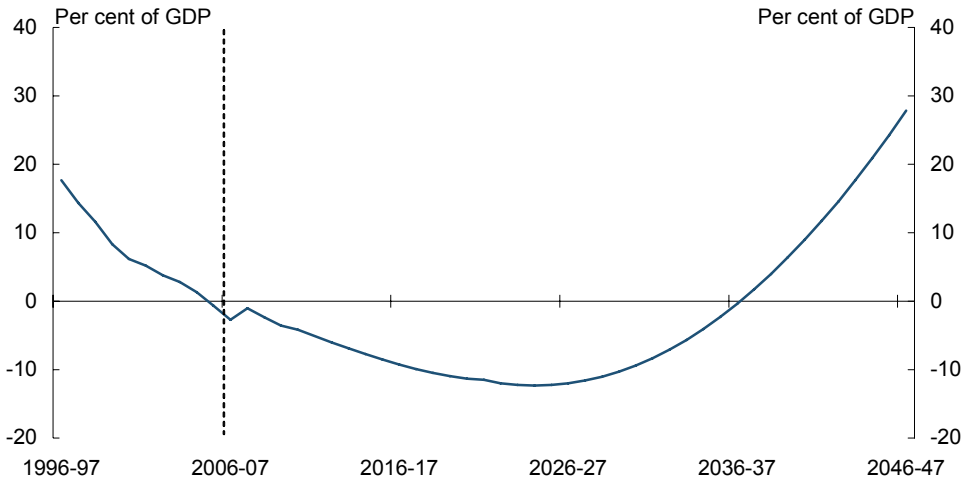
Note: The projections of net debt include net interest payments. The small increase in Australian Government net debt in 2007-08 reflects the expected change to the financial asset composition of the Future Fund as it moves towards a portfolio allocation consistent with the benchmark return specified in the Australian Government's investment mandate.
Source: Treasury projections.

The projected path of government finances shows the magnitude of the fiscal adjustment task that would be needed. Governments will need to take action to prevent a sustained deterioration in government finances. The dynamics associated with running up debt are such that small persistent changes to spending can have very large effects if they accumulate over a long time. By making policy adjustments today, the Government reduces the risk that more significant policy adjustments will need to be made in the future.

PART 4: SUSTAINABILITY — FISCAL POLICY AND ECONOMIC GROWTH

OVERVIEW

The Australian Government's long-term fiscal sustainability has improved since IGR1, although demographic and other factors continue to pose substantial challenges for economic growth and long-term fiscal sustainability.

Ongoing policy reform is needed to manage these pressures and build on the strong foundations of Australian Government economic and fiscal policy frameworks, and the solid economic and fiscal outcomes over recent years.

STRENGTHENING AUSTRALIA'S LONG-TERM FISCAL POSITION

Australia's current fiscal position is strong by both international and historical standards. The Government has eliminated net debt and is continuing to strengthen its balance sheet by running budget surpluses and accumulating financial assets in the Future Fund. However, intergenerational fiscal pressures pose ongoing challenges for government finances over the longer term. By 2046-47, spending is projected to exceed revenue by around 3½ per cent of GDP.

These projections are based on a number of assumptions and the outcomes may vary depending on how events unfold and what policy choices are made. There are also risks which are difficult to quantify and unforeseen events which will have intergenerational consequences, such as pressures to address environmental issues.

The community faces choices in addressing these fiscal pressures:

- governments could run deficits and increase debt;

- taxes could be increased now or in the future;

- policies could be developed that support stronger economic growth; and/or

- spending growth could be reduced and spending made more efficient and effective.

Accumulating debt is not a sustainable long-term solution, particularly in situations where budget deficits are expected to continue for a period of time, since at some point the debt needs to be repaid. In addition, the compounding effect of interest costs would see net debt rise very rapidly, particularly beyond the projection period.

While it is a matter for future generations to decide how much tax they wish to pay, the fact that taxes collected by the Australian Government have been broadly constant as a share of GDP for 30 years suggests that the Australian community is reluctant to bear a higher tax burden. In designing the tax system, governments need to consider both the costs on the economy of imposing extra taxes and the benefits that public revenue can generate to achieve community goals. Increasing tax rates may reduce economic growth by, for example, discouraging people from working or from investing. On the other hand, improving the tax base may allow higher revenue collections without adverse effects on growth; for instance, by removing incentives for people to undertake inefficient activities or by discouraging people from engaging in activities which harm others.

Policies that aim to support higher economic growth represent a preferred alternative. Higher growth per person directly raises the living standards of future generations of Australians. Growth also increases the capacity of the government (and individuals) to meet increasing demands for public services, not only arising from the ageing of the population, but also for better quality health care and other services.

The government can contribute to raising economic growth prospects by ensuring individuals face the right incentives and markets are able to function efficiently.

However, while lifting labour force participation and productivity will improve future economic growth prospects, the impact on the fiscal gap is less certain. In particular, in circumstances where higher incomes lead to rising community expectations for more or higher quality services, raising economic growth may not be sufficient to manage fiscal pressures. Careful consideration needs to be given to the appropriate design of public policy and the efficiency of the provision of services.

Another possible reason for government spending increasing with income could be because the public sector does not share in productivity gains experienced elsewhere in the economy. Both public and private productivity gains are important for addressing future spending pressures.

Future spending risks also may be managed by considering alternative approaches which may handle better implicit intergenerational transfers. Issues arising from environmental stress and pressures on natural resources are complex and spending programmes are only one of the ways to address the issues. Greater consideration can be given to the role that market-based mechanisms can play in the overall policy instrument mix to achieve environmental outcomes which are fiscally and economically sustainable.

Given the uncertainty and risks, a prudent strategy to address intergenerational fiscal pressures is both to promote growth prospects and improve the efficiency and

effectiveness of government spending. Governments also could consider the potential role of market-based mechanisms in managing spending pressures. Steps taken sufficiently early will avoid large adjustments later.

One way to assess the magnitude of the fiscal adjustment task is through its impact on the projected path of net debt. For example, an immediate increase in taxes or reduction in spending of around ¾ of a percentage point of GDP, maintained over the entire projection period, would see the level of net debt at the end of the projection period remain at around current levels (Chart 4.1). Alternatively, a reduction in the rate of growth in government spending of around ⅕ of a percentage point each year would also result in a similar outcome. However, these scenarios do not take into account the fiscal position beyond the projection period which will continue to impact on net debt.

Fiscal sustainability also requires governments to take a broader view of their balance sheets and fiscal risks, including meeting contingent liabilities. An approach to fiscal policy that focuses on improvements in the balance sheet recognises that many of the fiscal pressures governments face will arise decades into the future. The Australian Government is taking steps to strengthen its balance sheet by building up assets in the Future Fund to offset the Government's superannuation liabilities relating to past and current public sector employees. Funding this liability now improves the Australian Government's net worth and helps reduce future pressures on the budget.

Chart 4.1: Projected path of net debt under alternative spending scenarios
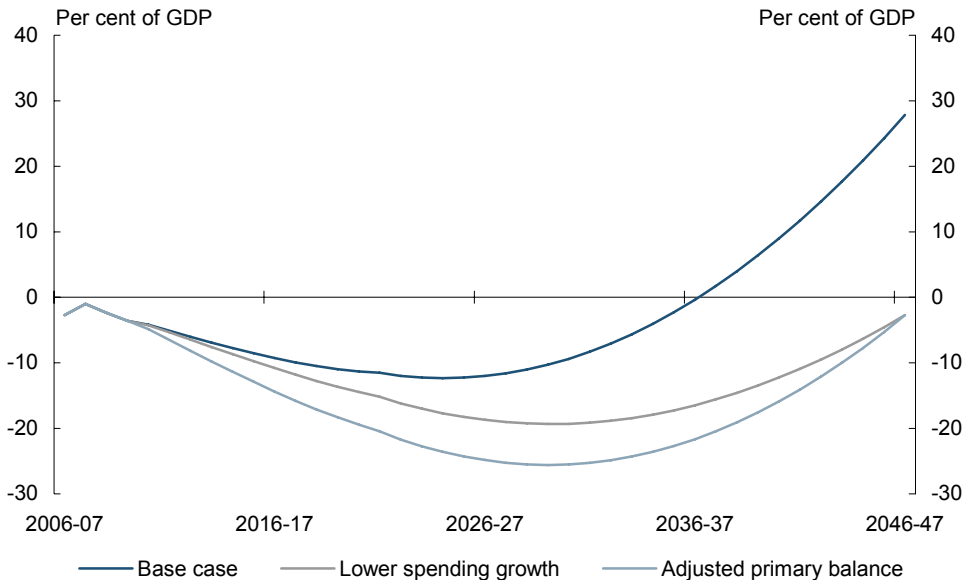
Note: The base case projects average annual spending growth of around 5½ per cent. The lower spending growth scenario assumes that from 2006-07, spending grows each year by around one-fifth of a percentage point less than projected under the base case. The adjusted primary balance scenario assumes an immediate improvement in the primary balance of ¾ of a percentage point of GDP, maintained over the entire projection period.
Source: Treasury projections.

IMPROVING AUSTRALIA'S LONG-TERM ECONOMIC GROWTH PROSPECTS

The economic growth challenge arises directly from the projections of the ageing of the population. Total labour force participation rates are projected to fall reflecting the rapid increase in the proportion of the population aged 65 and over, which will result in lower growth in GDP and GDP per person in the next 40 years than in the past 40 years. Improving the prospects for economic growth is important for raising living standards and wellbeing more broadly, as well as for addressing the fiscal challenge.

Improving prospects for economic growth requires improvements in population, participation and/or productivity — the 3Ps. Changes in these factors affect growth and spending pressures differently. (See the sensitivity analysis in Appendix B.) Increased productivity is most likely to raise GDP per person, although increased labour force participation also could be significant. Increasing the population contributes to increasing GDP, although not necessarily GDP per person, in the projection period. Increasing the birth rate has a positive effect on GDP per person only beyond the projection period when the full benefit for labour force growth takes effect; whereas, increases in skilled migration have a more immediate positive effect on labour force participation and growth in real GDP per person.

An increase in productivity growth of ¼ of a percentage point to 2 per cent per year, for example, could lead to an increase in the level of real GDP per person of around 10 per cent by 2046-47 and would partially offset the projected slowdown in real GDP growth per person over the coming 40 years. In contrast, a return to the average productivity growth in the 1980s of 1.2 per cent per year would reduce the level of GDP per person in 2046-47 by about 20 per cent and lead to an even lower rate of average growth over the coming 40 years. This highlights the importance of further reforms that encourage productivity enhancements.

An increase in labour force participation, say by increasing the total participation rate by 5 per cent by 2046-47, could lead to about a 5 per cent increase in real GDP by 2046-47. Such an increase would bring Australia's participation rates closer to the best in the OECD.

Whether Australia can achieve these higher outcomes over time will depend on the economic conditions at the time, the longer-term forces acting on the economy and the policy choices successive generations make to improve their wellbeing. Many factors will affect these choices.

- Short-term forces affecting the economy and the economic cycle include sectoral risks and opportunities, international economic conditions and unpredictable events such as those associated with security issues.

- Government policy frameworks, including macroeconomic policies, regulatory approaches and the microeconomic incentives arising from tax and spending programmes, influence the behaviour of people and business, and the outcomes achieved.

- Longer-term challenges and opportunities including domestic and international developments in the environment such as natural resource management and climate change (which may have irreversible intergenerational effects) and technology and innovation.

- International developments which are reshaping the world including globalisation of flows of goods, services, and people; trends in policies and regulatory frameworks overseas and in international institutions; and changing political and economic balances, including the rise of China and India.

Policies to improve the prospects for economic growth, mainly productivity and participation, need to be able to handle such changing circumstances and unpredictable events.

In addition, in an intergenerational context, the policy choices made by the current and successive generations need to be sustainable. The wellbeing of successive generations requires sustainable economic, social and environmental conditions. The policy choices made will need to take into account the range of factors which may influence individual and societal wellbeing; balance appropriately all issues so as to manage effectively the conditions now and in the long term; and improve the flexibility, resilience and adaptability of the economy to handle future challenges and opportunities.

Policy directions

A range of government policies affect the three components of growth. It will be important to continue to focus on these over time to address the fiscal and economic sustainability challenges set down in this report.

Decisions by individuals to participate in the labour market are influenced by their capabilities, the incentives in government programmes and the flexibility of the labour market to match job seekers with employment opportunities and pay. Spending programmes which provide income support and the personal tax system need to have appropriate incentives to provide a return for working and to provide support, including in times of unemployment or situations of disability. The capabilities of people can be improved through better health and education. The flexibility of the labour market, the range of jobs, qualifications, hours and rates of pay also influence people's decisions about labour force participation. Continued attention to all of these influences, as well as the maintenance of a strong macroeconomy that maximises employment opportunities, will be necessary.

On the productivity side, the scope for policy influence is more complex and depends on a number of factors. If markets work well, with appropriate regulation, then resources will move to the areas of highest return, and there will be strong incentives for people to build their skills and to invest in better processes and new markets. A range of policies affect the operation of markets: some positively, by addressing market failures such as the lack of information or externalities such as land degradation; and others negatively, by imposing unnecessary costs.

Productivity gains in the past have arisen from policy reforms which have created and opened up markets domestically and internationally in products and services, labour, natural resources and finance. The National Reform Agenda is developing proposals to improve competition in transport, energy and infrastructure, and to reduce the regulatory burdens imposed by the three levels of government. Well-functioning markets will smooth the adjustments in resource allocation for demographic change and other developments. One example is within financial markets where the development of markets and products helps people save for retirement and manage risks while also investing these savings productively.

Further reform is also needed to fully manage pressures on our natural resources and global climate. Well-managed resource use will maintain conditions for future generations and avoid loss of productive capacity from degradation and overuse. A range of policy instruments — spending and taxation programmes, regulation and market-based mechanisms — is needed to manage these issues. International frameworks will also be needed for some issues.

SUMMARY ASSESSMENT OF SUSTAINABILITY AND FUTURE DIRECTIONS

The government's long-term fiscal sustainability has improved since IGR1, although demographic and other factors continue to pose substantial challenges for economic growth and long-term fiscal sustainability. Steps have been taken and ongoing reform will be needed to strengthen Australia's long-term fiscal position and improve the prospects for sustainable economic growth.

Foundations for the future are sound, with good economic growth and stable macroeconomic frameworks. The Australian Government's fiscal position has been strengthened by the creation of the Future Fund and elimination of net debt. Steps have been taken to reform areas of greatest spending pressure, such as health and some income support payments. Reforms of government programmes, such as the Welfare to Work reforms, family support, income tax reductions and superannuation reforms, have been directed to improving the prospects for economic growth.

Further reform processes are in train. The human capital and competition reform streams of the Council of Australian Governments' National Reform Agenda are designed to lift participation and productivity. Further progress is needed to design and effectively deliver reforms, including clarifying appropriate roles for different levels of government.

The full benefits of the reforms recently introduced will emerge over time. Further potential improvements from the reform processes underway can be delivered across all levels of government.

Nevertheless, the fiscal challenges identified in this report will require ongoing attention.

APPENDIX A: SPENDING PROJECTIONS

Table A1: Projections of major components of Australian Government spending in IGR2 (per cent of GDP)

	2006-07	2011-12	2016-17	2026-27	2036-37	2041-42	2046-47
Health							
Medicare Benefits Schedule	1.1	1.2	1.2	1.3	1.3	1.3	1.3
Pharmaceutical Benefits Scheme	0.7	0.8	1.0	1.5	2.0	2.2	2.5
Hospital and health services	1.2	1.2	1.4	1.7	2.0	2.1	2.3
Other	0.7	0.8	0.8	0.9	1.0	1.1	1.1
Total health	**3.8**	**4.0**	**4.4**	**5.3**	**6.3**	**6.8**	**7.3**
Aged care							
Residential care	0.6	0.6	0.7	0.9	1.2	1.4	1.5
Community care	0.2	0.2	0.3	0.3	0.4	0.4	0.4
Total aged care	**0.8**	**0.9**	**1.0**	**1.2**	**1.6**	**1.8**	**2.0**
Payments to individuals							
Age pensions	2.5	2.8	3.0	3.5	4.1	4.3	4.4
Disability Support Pension	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Parenting Payment Single	0.5	0.4	0.3	0.3	0.3	0.3	0.3
Unemployment allowances and Parenting Payment Partnered	0.7	0.8	0.8	0.7	0.6	0.5	0.5
Youth Allowance and Austudy	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Carer Payment and Wife Pension	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Family Tax Benefit	1.6	1.4	1.3	1.1	0.9	0.9	0.8
Child Care Benefit	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Maternity Payment	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total payments to individuals	**6.7**	**6.7**	**6.6**	**6.8**	**7.0**	**7.1**	**7.1**
Education							
Schools	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Higher education	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Vocational education and training	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total education	**1.8**	**1.8**	**1.7**	**1.8**	**1.8**	**1.8**	**1.8**

Source: Treasury projections.

Table A2: Projections of major components of Australian Government spending in IGR1 (per cent of GDP)

	2006-07	2011-12	2016-17	2026-27	2036-37	2041-42(a)
Health						
Medicare Benefits Schedule	1.1	1.2	1.2	1.4	1.7	1.8
Pharmaceutical Benefits Scheme	0.6	0.8	1.0	1.7	2.7	3.4
Hospital and health services(b)	1.5	1.5	1.6	1.9	2.1	2.2
Other(b)	0.8	0.8	0.8	0.8	0.8	0.8
Total health	**4.0**	**4.3**	**4.7**	**5.8**	**7.3**	**8.1**
Aged care						
Residential care	0.6	0.7	0.7	0.9	1.3	1.4
Community care	0.2	0.2	0.2	0.2	0.3	0.3
Total aged care	**0.8**	**0.8**	**0.9**	**1.2**	**1.6**	**1.8**
Payments to individuals						
Age pensions	2.8	2.9	3.2	3.9	4.4	4.6
Disability Support Pension	0.7	0.8	0.8	0.8	0.8	0.9
Parenting Payment (Single)	0.6	0.6	0.6	0.6	0.6	0.6
Unemployment allowances	0.8	0.7	0.6	0.5	0.4	0.4
Family Tax Benefit (Parts A and B)	1.3	1.2	1.1	1.0	1.0	0.9
Total payments to individuals	**6.3**	**6.2**	**6.4**	**7.0**	**7.3**	**7.4**
Education						
Schools	0.8	0.8	0.8	0.7	0.7	0.7
Higher education	0.6	0.6	0.6	0.6	0.6	0.6
Vocational education and training	0.2	0.2	0.2	0.2	0.2	0.2
Administration and other	0.1	0.1	0.1	0.1	0.1	0.1
Total education	**1.8**	**1.7**	**1.7**	**1.6**	**1.6**	**1.6**

(a) In IGR1 the final projection year was 2041-42.
(b) The Private Health Insurance Rebate has been moved from other to hospitals and health services.
Source: Treasury projections.

Table A3: Projections of major components of Australian Government spending in IGR2 (real dollars per person 2006-07)

	2006-07	2011-12	2016-17	2026-27	2036-37	2041-42	2046-47
Health							
Medicare Benefits Schedule	561	624	691	845	1,008	1,087	1,167
Pharmaceutical Benefits Scheme	337	402	557	964	1,495	1,823	2,207
Hospital and health services	611	656	778	1,083	1,504	1,765	2,063
Other	350	412	467	604	791	901	1,021
Total health	**1,858**	**2,093**	**2,493**	**3,496**	**4,798**	**5,576**	**6,458**
Aged care							
Residential care	278	333	400	586	938	1,155	1,378
Community care	100	122	149	215	301	347	391
Total aged care	**378**	**455**	**549**	**800**	**1,239**	**1,502**	**1,769**
Payments to individuals							
Age pensions	1,231	1,460	1,698	2,296	3,093	3,515	3,942
Disability Support Pension	413	391	392	430	507	555	612
Parenting Payment Single	231	200	194	222	258	278	300
Unemployment allowances and							
Parenting Payment Partnered	337	407	436	440	429	427	427
Youth Allowance and Austudy	99	97	92	85	82	81	79
Carer Payment and							
Wife Pension	74	96	101	113	128	138	150
Family Tax Benefit	790	758	743	730	718	717	723
Child Care Benefit	73	76	74	71	67	65	64
Maternity Payment	51	59	57	53	49	48	48
Total payments to individuals	**3,299**	**3,542**	**3,787**	**4,441**	**5,332**	**5,825**	**6,344**
Education							
Schools	440	457	495	591	702	761	830
Higher education	334	331	347	388	446	481	516
Vocational education and training	113	121	129	148	172	186	200
Other	23	24	25	29	33	35	38
Total education	**910**	**933**	**996**	**1,156**	**1,353**	**1,463**	**1,584**

Source: Treasury projections.

Table A4: Projections of major components of Australian Government spending in IGR1 (real dollars per person 2006-07)

	2006-07	2011-12	2016-17	2026-27	2036-37	2041-42(a)
Health						
Medicare Benefits Schedule	503	574	665	894	1,192	1,375
Pharmaceutical Benefits Scheme	287	397	548	1,043	1,928	2,595
Hospital and health services(b)	682	773	882	1,164	1,510	1,697
Other(b)	370	403	435	500	577	624
Total health	**1,841**	**2,147**	**2,530**	**3,600**	**5,207**	**6,291**
Aged care						
Residential care	276	324	387	574	907	1,121
Community care	68	86	100	147	222	250
Total aged care	**344**	**410**	**488**	**721**	**1,129**	**1,371**
Payments to individuals						
Age pensions	1,274	1,425	1,727	2,442	3,145	3,488
Disability Support Pension	329	396	441	520	608	662
Parenting Payment (Single)	273	302	330	378	430	460
Unemployment allowances	356	354	348	331	318	314
Family Tax Benefit (Parts A and B)	613	609	614	645	693	720
Total payments to individuals	**2,845**	**3,085**	**3,459**	**4,317**	**5,194**	**5,644**
Education						
Schools	385	387	400	440	501	533
Higher education	289	313	335	377	430	464
Vocational education and training	100	107	115	131	151	164
Administration and other	44	46	48	54	62	66
Total education	**818**	**853**	**898**	**1,002**	**1,143**	**1,227**

(a) In IGR1 the final projection year was 2041-42.
(b) The Private Health Insurance Rebate has been moved from other to hospitals and health services.
Source: Treasury projections.

APPENDIX B: SENSITIVITY ANALYSIS OF LONG-RUN ECONOMIC AND FISCAL PROJECTIONS

The projections in this report were built using assumptions to form a plausible central case. Significant uncertainties surround these assumptions, and as a result, the projections in the report should not be treated as forecasts. These uncertainties reflect the inherent difficulties in anticipating changes to economic, social and environmental conditions over time.

This appendix explores some variations to the base case projections and assumptions about the drivers of economic growth — population, participation and productivity (Table B.1). The results of the sensitivity analysis (Table B.2) show that the core results identified in IGR2 are reasonably robust to variations in underlying assumptions.

The results can also be used as an indication of the potential impact on fiscal sustainability of policy changes that aim to improve economic growth — including the impact on projected spending pressures, and on projected GDP (which gives an indication of the ability of the government and individuals to meet those spending pressures).

Factors that increase the proportion of the population employed in the workforce at a particular time generally lead to decreased government spending and increased GDP. Lower unemployment, higher migration and higher labour force participation have this immediate effect. For example, the scenario of higher labour force participation across all age groups presented in this appendix would increase the projected annual real GDP growth rate in 2046-47 by 0.03 per cent and lead to a 4.9 per cent increase in the level of real GDP by 2046-47. At the same time, spending as a proportion of GDP would decrease in the areas of health, age pensions, and other payments such as unemployment and family benefits.

As shown in Table B.2, higher productivity has the most significant link to higher GDP growth, with an increase in labour productivity of 0.25 per cent per year from 2010-11 adding 10.1 per cent to GDP by 2046-47. On the spending side, higher productivity growth is assumed to flow through into higher wages across the economy, leading to an automatic increase in government spending on payments to individuals that are indexed by wages. For the purposes of these scenarios, higher productivity is also projected to flow through to increases in spending in areas where wages are a large component of costs, such as aged care and education, though it should be noted that the government has control over the extent to which this flow through into spending occurs.

Higher fertility and higher life expectancy increase government spending because the oldest and youngest people in the population generally benefit from spending programmes and income support, but generally do not participate in the labour force (and therefore do not contribute to GDP growth). The key spending areas of family payments, education, age pensions and aged care are concentrated in these two groups. For example, a higher fertility rate of 1.9 would result in increased spending on education and family benefits (together amounting to 0.16 per cent of GDP in 2046-47), while increased GDP from a larger labour force would, over time, result in a fall in the relative size of health, aged care and age pension spending. It should be noted that the full impact of higher fertility on labour force participation is not seen within the 40-year projections due to the delay before the young reach working age. Similarly, the longer term impact of higher fertility on health, aged care and age pension spending appears beyond the projection period.

Table B1: Assumptions underlying sensitivity analysis

	Base case	Lower	Higher
Participation			
Total labour force participation rates (population aged 15 and over)	57.1% by 2046-47	55% by 2046-47(a)	59.9% by 2046-47(b)
Older workers participation rates (aged 50-69)	58.1% by 2046-47		62.0% by 2046-47(c)
Unemployment rate (per cent)	5.0	4.0	6.0
Productivity			
Labour productivity growth (per cent)	1.75	1.2(d)	2.0
Population			
Net migration (no. of people per year)	110,000	90,000	130,000
Fertility (total fertility rate)	1.7	1.5	1.9
Life expectancy at birth (years)			
Males in 2046-47	86.0	82.9(e)	89.5(f)
Females in 2046-47	89.8	88.0(e)	92.3(f)

(a) Male and female age specific participation rates are held constant at 2006-07 levels from 2010-11.
(b) All male and female age specific participation rates are adjusted to achieve an increase of 5 per cent in total participation rates for population aged 15 and over.
(c) Growth in age specific participation rates is increased by 10 per cent for workers in the age cohorts of 50-54, 55-59, 60-64 and 65-69, giving a total participation rate (15+) of 58.2% in 2046-47.
(d) Represents the average productivity growth rate in the 1980s.
(e) Uses IGR1 life expectancy projections.
(f) All the improvement factors are scaled by 1.625 for men and 1.5 for women.
Source: Treasury projections.

Table B2: Impact of alternative scenarios (percentage point change in 2046-47)

	Participation			Productivity	Population		
	Higher labour force participation		Lower unemployment rate	Higher labour productivity	Higher migration	Higher fertility rate	Higher life expectancy
	Older workers	All ages					
Annual growth rate							
Labour force	0.02	0.03	0	0	0.10	0.12	0.01
Real GDP	0.02	0.03	0	0.25	0.10	0.11	0.01
Real GDP per person	0.02	0.03	0	0.25	0.01	-0.01	-0.05
Level(a)							
Labour force	1.93	5.00	0	0	4.19	1.42	0.67
Real GDP	1.97	4.86	0.83	10.06	4.26	1.26	0.55
Real GDP per person	1.97	4.86	0.83	10.06	0.80	-1.16	-2.05
Dependency ratios							
Aged to working-age ratio	0	0	0	0	-1.24	-0.65	3.72
Child to working-age ratio	0	0	0	0	-0.01	2.12	-0.07
Change in spending **(per cent of GDP)**							
Health	-0.13	-0.29	-0.06	(b)	-0.13	-0.04	0.30
Aged care	-0.04	-0.10	-0.02	0	-0.07	-0.02	0.34
Age and service pensions	-0.16	-0.28	-0.04	0	-0.14	-0.05	0.50
Other payments to individuals	-0.05	-0.11	-0.09	-0.11	-0.01	0.08	0
Education	-0.04	-0.08	-0.02	0	-0.01	0.09	-0.01

	Participation		Productivity	Population		
	Lower labour force participation	Higher unemployment rate	Lower labour productivity	Lower migration	Lower fertility rate	Lower life expectancy
	All ages					
Annual growth rate						
Labour force	-0.02	0	0	-0.10	-0.09	-0.01
Real GDP	-0.01	0	-0.55	-0.10	-0.08	-0.01
Real GDP per person	-0.01	0	-0.55	0	0.03	0.06
Levels(a)						
Labour force	-3.72	0	0	-4.74	-0.67	-0.43
Real GDP	-1.39	-1.16	-19.68	-4.44	-0.54	-0.29
Real GDP per person	-1.39	-1.16	-19.68	-0.49	1.27	1.98
Dependency ratios						
Aged to working-age ratio	0	0	0	1.37	0.34	-3.46
Child to working-age ratio	0	0	0	0.04	-2.04	0.07
Change in spending **(per cent of GDP)**						
Health	0.09	0.07	(b)	0.12	0.01	-0.29
Aged care	0.04	0.02	0	0.07	0.01	-0.26
Age and Service Pensions	0.24	0.05	0	0.13	0.03	-0.44
Other payments to individuals	0.03	0.09	0.30	0	-0.07	0
Education	0.03	0.02	0	0.01	-0.08	0

(a) Represents the percentage point change in the size of the labour force and the level of GDP and GDP per capita by 2046-47 compared to the base scenario.

(b) The potential impact of productivity growth on Australian Government health spending is difficult to quantify and has not been included here.

Source: Treasury projections.

APPENDIX C: DETAILED METHODOLOGY AND ASSUMPTIONS

This appendix outlines the methodology and assumptions used to project the various categories of spending modelled in this report.

HEALTH — PRIMARY MODEL

The primary model for health spending separately projects the components of health spending.

In general, the projections are derived by first applying non-demographic growth to current, age-specific spending rates per person. These estimates then are increased by the projected population and CPI to derive nominal projections of spending.

The non-demographic growth rates for each component are derived from trends in the historical data. This is done by first adjusting historical spending data for the effects of CPI growth and changes in the size and age structure of the population to derive a series of real per person age-adjusted spending.

The non-demographic growth rates then are determined by fitting trends to these series (Table C1). Where possible, non-demographic growth is calculated by age group. For some components, such as medical benefits, a linear trend fits the historical data more closely, so non-demographic growth is projected forward as a constant real dollar increase in spending. For other components, such as pharmaceutical benefits, an exponential trend fits the data more closely, so non-demographic growth is projected forward as a percentage increase in spending each year.

Table C1: Components and modelling approaches for the primary health model

Component	Modelling approach	Non-demographic growth form and rates(a)
Pharmaceutical benefits	Spending per person by gender and age group. Same growth rate for all age groups.	Exponential growth form; 6.3 per cent per year trending down to 3.4 per cent per year.
Medical benefits	Spending per person by gender and age group. Separate growth rates for each age and gender group.	Linear growth form. Age-gender specific growth varies from -$1.00 per year to $38.49 per year.
Hospitals	Spending per person by gender and age group, decedents and non-decedents modelled separately. Separate growth rates for each age and gender group and age group.	Linear growth form. Age-gender specific growth varies from $1.74 per year to $63.45 per year for non-decedents, and -$11.76 per year to $622.62 per year for decedents.
Private health insurance (PHI)	Spending per person by gender and age group. Same growth rate for all age groups.	Exponential growth form; 4.4 per cent per year.
Other health spending(b)	Veterans spending not elsewhere included projected on a per person basis. The remainder of health spending was assumed to grow along a linear trend as a proportion of GDP.	

(a) Per person real age-adjusted.
(b) Other health spending includes population health and safety, workforce initiatives and non-Medicare Benefits Schedule payments to GPs (including for infrastructure, training and the Practice Incentive Program), medical research, veterans' health spending not elsewhere modelled and other.

Different age groups have different relative per person spending rates (Table C2 and Chart C1). For all components of health spending, per person spending rates are higher for older age groups than for younger age groups. This is most notable for pharmaceutical benefits and hospital spending. Spending rates tend to peak at age 75-84 for most spending components, except for hospitals where this peak is for those aged 85 and over.

Table C2: Index of the 2005-06 age profile of health spending per person

Age group	Pharmaceutical benefits	Medical benefits	Hospitals	Private health insurance
0-4	0.07	0.62	0.96	0.27
5-14	0.08	0.32	0.21	0.25
15-24	0.17	0.50	0.47	0.37
25-34	0.32	0.77	0.70	0.62
35-44	0.52	0.85	0.56	0.75
45-54	0.91	1.01	0.62	1.08
55-64	1.81	1.44	1.03	1.72
65-74	3.47	2.14	2.16	2.49
75-84	4.50	2.77	4.34	3.06
85+	3.87	2.52	7.06	2.77
Weighted average of all people	1.00	1.00	1.00	1.00

Source: Treasury estimates based on data from the Department of Health and Ageing, Department of Veterans' Affairs, Medicare Australia, Australian Institute of Health and Welfare, and Private Health Insurance Administration Council.

Chart C1: Index of the age profile of health spending per person
(weighted average of all people = 1)
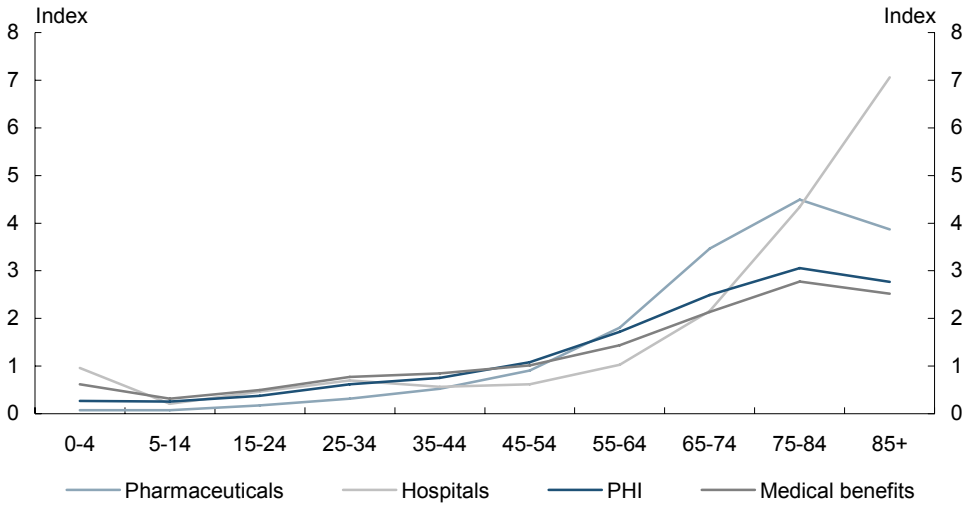


Pharmaceutical benefits

The pharmaceutical benefits model covers spending under the Pharmaceutical Benefits Scheme (including the Highly Specialised Drug Program) and the Repatriation Pharmaceutical Benefits Scheme.

Since IGR1, new data has become available from Medicare Australia to determine a more accurate age-gender profile of spending per person. The annual cost across age and gender cohorts varies from around $20 per person to around $1,500 per person, with spending on women greater than on men.

The nominal total cost of pharmaceutical benefits each year is compiled and the analysis starts from 1983-84. This start date includes 20 years of readily available data with some policy changes.

The total nominal spending series is adjusted for changes in CPI and population size and structure (ageing) to derive a real per person age-adjusted spending series for pharmaceutical benefits. The non-demographic growth rate then is calculated by fitting trends to this series.

Real age-adjusted pharmaceutical spending per person is increasing (Chart C2). An exponential trend more closely fits the historical data than a linear trend and implies an annual non-demographic growth rate of 6.3 per cent. This estimated growth rate is significantly higher than growth observed in other components of health spending.

Chart C2: Real age adjusted pharmaceutical spending per person
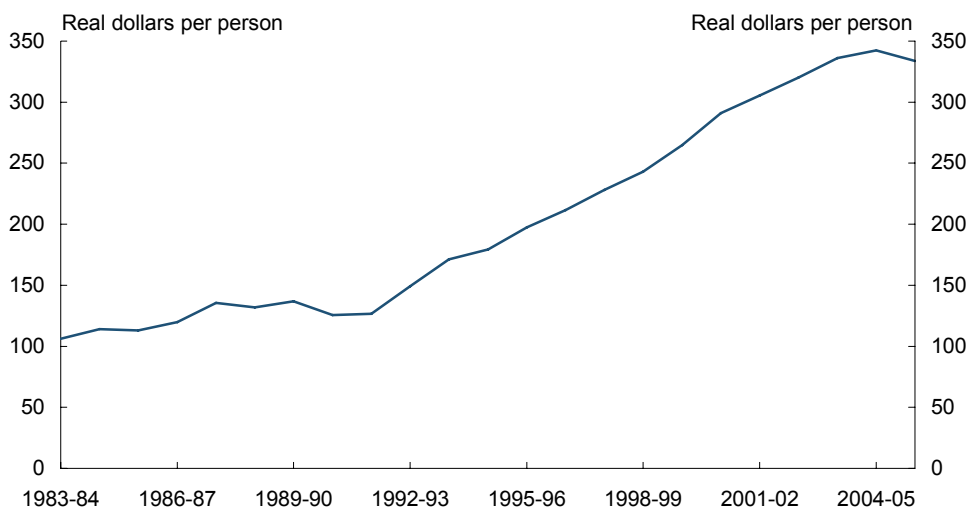
While the exponential trend fits the historical data marginally better than a linear trend, both trends have good explanatory power. However, the implications of applying the different trends to the projections are significant (Chart C3).

While historical trends suggest pharmaceutical benefits will continue to grow strongly and become an increasing share of Australian Government health spending over the next 40 years, over the longer term, constant exponential growth of this magnitude is unlikely to be sustained. This report assumes that over the longer term, growth in pharmaceutical benefits will reflect overall growth in health spending, resulting in a more stable proportion of the health budget being devoted to pharmaceuticals. This is because pharmaceuticals are not consumed in isolation from other health care services, but form part of a broader health care plan for individuals, and government health policy reflects this.

This is modelled by a gradual decline in the non-demographic growth rate over the projection period following an arbitrary logistic curve from 6.3 per cent per year to 3.4 per cent per year, which is the non-demographic growth rate of total Australian Government health spending over the last 20 years.

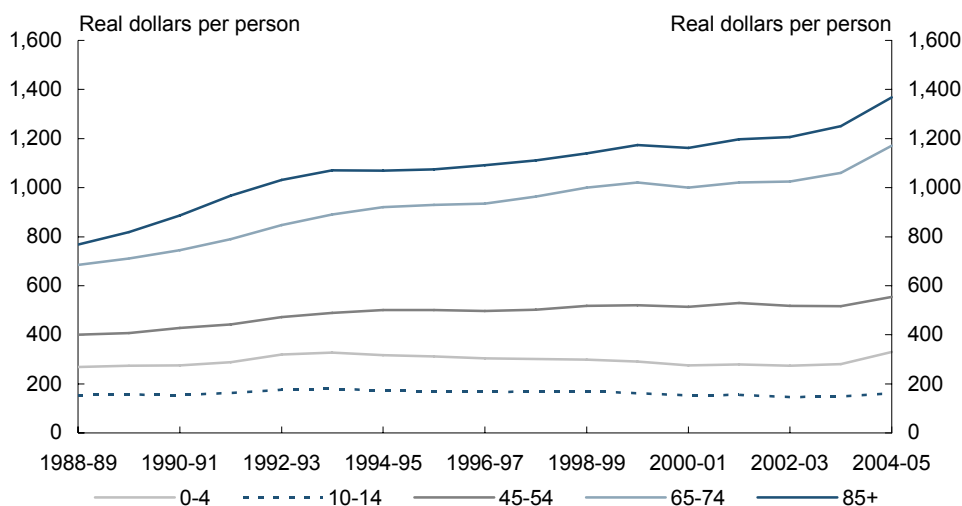**Chart C3: Projected real pharmaceutical spending per person**
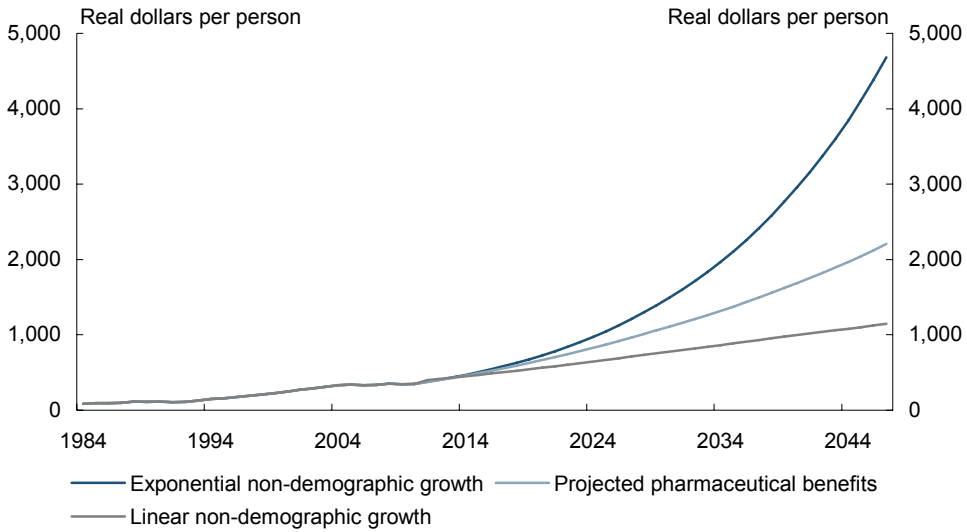
Medical benefits

The medical benefits model includes spending under the Medicare Benefits Schedule and equivalent age- and gender-specific spending rates for veterans.

Greater availability of data on medical benefits allows for the calculation of different non-demographic growth for men and women in a given age range. To calculate accurate real per person spending rates, the historical population series used removes veterans, who receive medical services under separate arrangements to the Medicare Benefits Schedule. Due to limitations in the availability of veteran population data, the historical series used covers 1988-89 to 2005-06 (Chart C4).

Fitting trends to these spending series indicates that non-demographic growth in medical benefits historically has followed a largely linear trend. Forward projections for medical benefits are based on these observed linear trends in non-demographic growth. Calculated growth is very low for age groups below 65 and highest for men aged 75-84 and over 85.

Chart C4: Real medical benefits spending per person
selected age groups

Real dollars per person

Real dollars per person

[Chart showing real medical benefits spending per person for selected age groups from 1988-89 to 2004-05, with values on both vertical axes ranging from 0 to 1,600. Lines represent age groups: 0-4, 10-14, 45-54, 65-74, and 85+.]

Legend: 0-4 ... 10-14 — 45-54 — 65-74 — 85+

Adoption of linear non-demographic growth for medical benefits is a change in methodology from IGR1, which calculated annual percentage growth rates based on data for 1984-85 and 2000-01.

Hospitals

The hospitals model includes spending on the Australian Health Care Agreements, equivalent age- and gender-specific spending rates for veterans and proximity to death spending.

Greater availability of hospital spending data has enabled the calculation of non-demographic growth for both men and women across a larger age range than in IGR1.

To calculate accurate real per person spending rates, the historical population series excludes veterans, who receive hospital services via White and Gold Card arrangements. Decedent and non-decedent hospital spending also are modelled separately to accurately reflect the level of hospital spending incurred in the last year of life.

Decedent spending is calculated using a proximity to death calculation to attribute a portion of hospital spending to the last year of a person's life (decedent) and projects spending forward in line with death rates. Non-decedent spending projects the residual hospital spending (total hospital spending less decedent spending) in line with population growth.

As with the Medicare Benefits Schedule data, fitting trends to the hospital spending series indicates non-demographic growth historically has followed a largely linear trend.

Due to limitations in the availability of hospital spending data, the historical data series covers 1995-96 to 2004-05 (Chart C5).

Chart C5: Real hospital spending per person
selected age groups
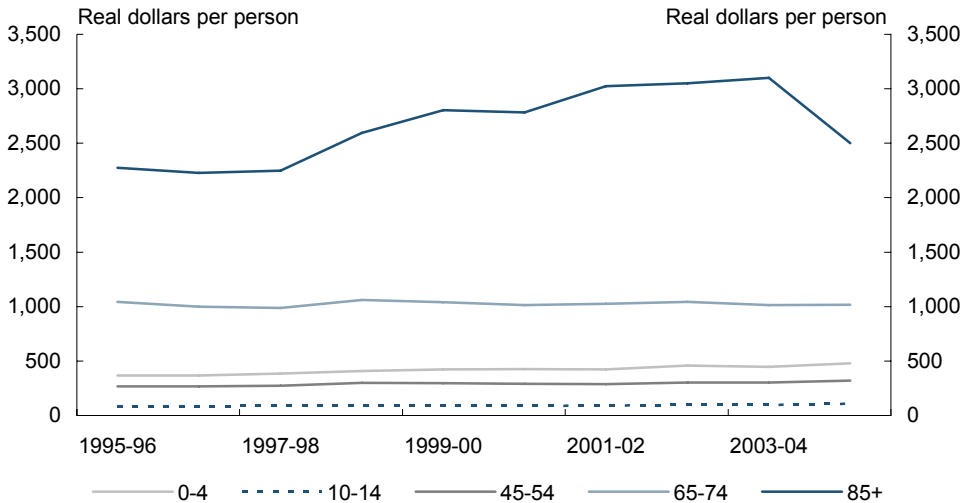
Private health insurance

The private health insurance model incorporates spending on the 30 per cent Private Health Insurance Rebate introduced on 1 January 1999. This rebate is increased to 35 per cent for people aged 65-69, and to 40 per cent for people aged 70 and over from 1 April 2005.

Age- and gender-specific spending rates were calculated by using the age-gender profile of benefits paid out by private health insurers per person. This age profile is used to indicate the impact of ageing on private health insurers' costs which affects premiums and thus the rebate.

Historical information is compiled on the nominal total cost of the rebate each year, with 2000-01 chosen as the start year for the analysis. This start date excludes the rapid growth in spending in 1999-2000 related to the initial uptake of the rebate and effect of the introduction of Lifetime Health Cover on 1 July 2000.

An exponential trend for non-demographic growth was found to provide the greatest explanatory power, and was fitted to the real per person age-adjusted spending series, resulting in a growth rate of 4.4 per cent per year. As the historical spending figures do not fully reflect the recent increase in the rebate for older Australians, this growth rate is likely to be conservative.

Other health spending

The other health spending model includes all other Australian Government health spending but does not include administration expenses. Major components of other health include:

- health workforce programmes, including payments to general practitioners for infrastructure, training and support, and the Practice Incentive Program;

- population health and safety programmes, including funding of essential vaccines;

- health and medical research; and

- spending on veterans' health care.

Spending on veterans' health care included in the other health model represents the additional spending on this group compared to Australian Government spending on other Australians. Projected spending is based on a linear projection of real spending per person derived from a historical series of spending for 1993-94 to 2004-05. These per person spending rates then were combined with population projections from the Department of Veterans' Affairs and CPI assumptions.

The remaining spending in the other health model is projected as a linear trend on historical spending since 1994 expressed as a proportion of GDP. This approach is adopted as other health spending is not directly driven by demographic factors but has grown steadily in the past.

Health spending data sources

Pharmaceutical benefits

Age-cost profiles

Average of age-cost profiles for 2002-03, 2003-04, 2004-05 and 2005-06. Data includes all Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Benefits Scheme spending administered by Medicare Australia sourced from Medicare Australia. An age-cost profile was imputed for some special arrangements pharmaceutical spending which is not administered by Medicare Australia and for which an age-cost profile is unavailable.

Historical programme spending

Pharmaceutical Benefits Scheme data from Table 16(b) Pharmaceutical Benefits Scheme, Government Cost — History, Expenditure and Prescriptions Twelve Months to 30 June 2006, Department of Health and Ageing website. Repatriation Pharmaceutical Benefits Scheme data from Department of Veterans' Affairs annual reports and Medicare Australia website.

Medical benefits

Historical programme spending by age and gender

Data sourced from Table D2 — Benefits Paid, Medicare Statistics, Department of Health and Ageing website. Veterans' population data supplied by the Department of Veterans' Affairs.

Hospitals

Age-cost profiles

Public hospital spending ratios supplied by Australian Institute of Health and Welfare. Cost of death ratios provided by the Productivity Commission. Veterans' population data supplied by the Department of Veterans' Affairs.

Historical programme spending

Public hospital spending data from Department of Health and Ageing and Australian Institute of Health and Welfare.

Private health insurance

Age-cost profiles

Average of Private Health Insurance Advisory Council hospital and ancillary benefits paid data for 2002-03, 2003-04, 2004-05 and 2005-06.

Historical programme spending

Private Health Insurance Rebate spending data from Department of Health and Ageing and Australian Taxation Office annual reports.

Other health

Historical programme spending

Computed from annual report data compiled by the Department of Health and Ageing, covering spending by that department, the Department of Veterans' Affairs and the Australian Taxation Office. Veterans population data supplied by the Department of Veterans' Affairs.

AGED CARE

Projections are based on current spending per person receiving aged care services (indexed for growth in costs) and the projected number of older people. The projection combines base participation rates by age and gender for the main aged care programmes with the projected population by age and gender. Together with assumed growth in the average (government) cost per participant, this provides a base projection. The projection method is broadly similar to the one used in IGR1 and adapts and extends the aged care model used in the 2005 Productivity Commission report.

Decomposition of the projections confirms that the dominant factor in aged care spending is the number of people aged over 80, as the proportional use of formal aged care services increases rapidly for both men and women beyond this age. As noted elsewhere, the proportion of 80-year-olds in the Australian population is expected to almost treble over the projection period. Thus ageing will exert substantial pressure on aged care spending.

The projections directly allow for factors influencing the participation rate by programme (such as disability rates, the trend to increased community care and availability of carers). The model also reduces cost to government by increasing private contributions in line with the growing real income and wealth of participants over the projection period.

Changes in the unit cost of care

Labour costs, which represent around three-quarters of total residential costs and a slightly higher proportion of the cost of community care services, dominate the cost of aged care (Hogan 2004). Upwards pressures on wages in this sector reflect a shortage of nurses in general and aged care workers in particular. Real unit costs have grown and will continue to grow in aged care, reflecting quality improvements, increasing frailty and wage pressures, counterbalanced by improvements in productivity in the sector. In these projections, real unit costs are assumed to grow at 1.75 per cent per annum. IGR1 used this approach and so did the Productivity Commission.

Disability rates

The proportion of the population likely to seek long-term aged care is correlated with the numbers classified as having severe or profound levels of disability. Thus reductions in rates of severe disability among older age groups, and the greater use of technology to allow people to live independently, could partially offset the greater demand for aged care coming from increased numbers of older people.

The Australian Bureau of Statistics surveys of disability suggest a relatively stable prevalence rate of severe disability in the older population. Based on the international

evidence, Hogan (2004) concluded age-specific rates of severe and profound disability are likely to decline moderately in the future. In line with Hogan's view, the Productivity Commission also assumed a 0.25 per cent annual decrease in disability, reflected in participation rates by age. Nonetheless, in line with the approach taken in IGR1, and in the absence of substantial evidence for Australia, the base projections presented here do not assume any change in severe disability. This assumption is an important one and the impact of falling disability at the Hogan rate would reduce the base projections by around 0.2 per cent of GDP.

Change in the care mix and role of informal care

Most older people wish to remain and be cared for in the community for as long as possible. Reflecting current trends and policy, these projections incorporate some change in care mix away from low-level residential care to community care over the medium term.

Planning ratios

Government planning ratios specify the number of aged care places per 1,000 people aged 70 and over, and also the composition of these places. In 2004, the planning ratio was raised from 100 to 108. The February 2007 Government response to the Hogan Report raises this to 113 by 2011. As the projections primarily reflect demand for aged care, they have not been constrained to meet these planning ratios.

Impact of a wealthier aged population

Treasury's RIMGROUP model that underlies the projections of age pensions projects the increasing income and wealth of successive cohorts of retirees. This modelling maps the maturing of the Superannuation Guarantee arrangements and other Government policies, such as the Simpler and Streamlined Superannuation package and the co-contribution. The results extend the established trend of higher private incomes and wealth interacting with means tests to constrain future spending on age pensions. Similarly, means tests apply in aged care, and the projections model the effect on Australian Government costs as the increasing income and wealth of participants generates higher private contributions.

Chart C6 shows that superannuation assets are projected to rise from 100 per cent of GDP to around 180 per cent by 2046-47. Importantly, superannuation assets are not projected to decline as the baby boomers retire and withdraw their assets but their growth relative to GDP is projected to slow. The impact of higher wealth is shown in the projected decline of full rate pensioners and in the projected rise in part-rate pensioners and non-pensioners in the chart.

Chart C6: Superannuation assets and Age Pension coverage projections
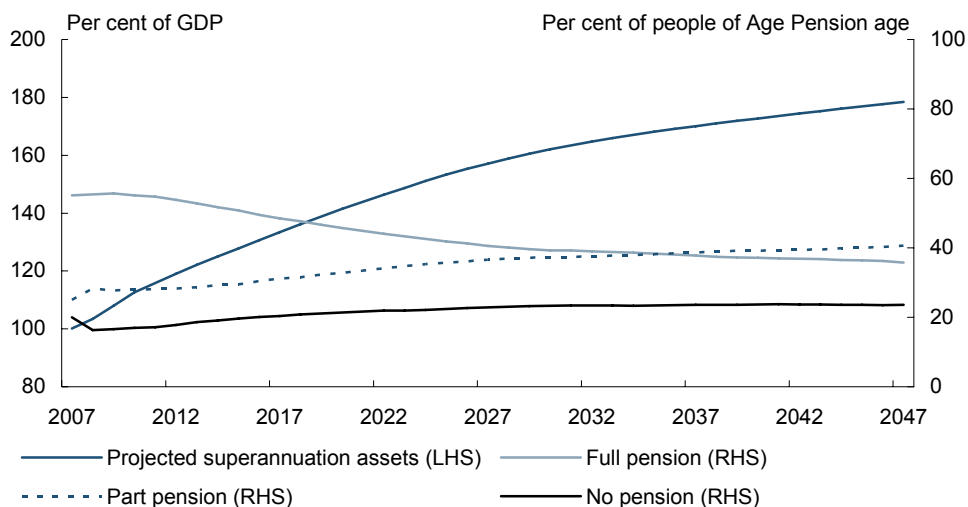

INCOME SUPPORT PAYMENTS

Coverage trend models

Coverage trend models were used when spending was strongly related to participation rates for a payment and the unit cost growth was linked to a price index. These models were used to project spending in Disability Support Pensions, Parenting Payment Single, Parenting Payment Partnered, Newstart Allowance, Mature Age Allowance, Youth Allowance (Student and other), Austudy, Wife Pension, Carers Allowance, Family Tax Benefit, Child Care Benefit and Maternity Payment.

The approach takes historical data on coverage or participation (in a payment or service) and extracts the trend to give a coverage or participation projection for the future, usually by age and gender. This projection is used with the population (or unemployment) projections and a standard unit cost to project the future level of expenses. The standard unit cost is usually independent of age or gender and assumed to grow in the future in line with either wages or CPI growth (or a mixture). The projection of coverage often involves non-linear techniques such as logistic functions.

The modelling for the Disability Support Pension illustrates the process. Disability Support Pension uptake has grown strongly from 220,000 recipients in 1983 to 707,000 recipients in June 2005 (see Chart 3.6). The upward trend in Disability Support Pension recipients has started to flatten out since IGR1, except for women aged 60-64 (Charts C7 and C8).

Chart C7: Historical Disability Support Pension coverage rates
males by age
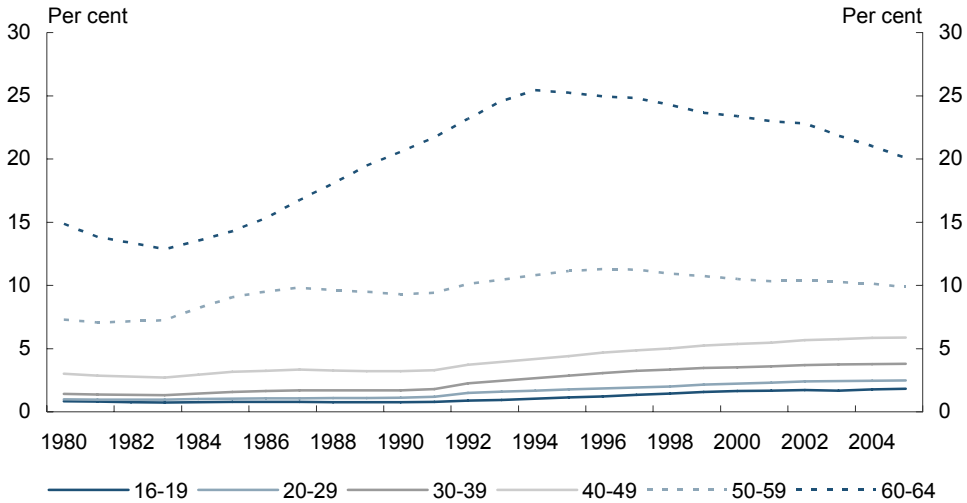
Chart C8: Historical Disability Support Pension coverage rates
females by age
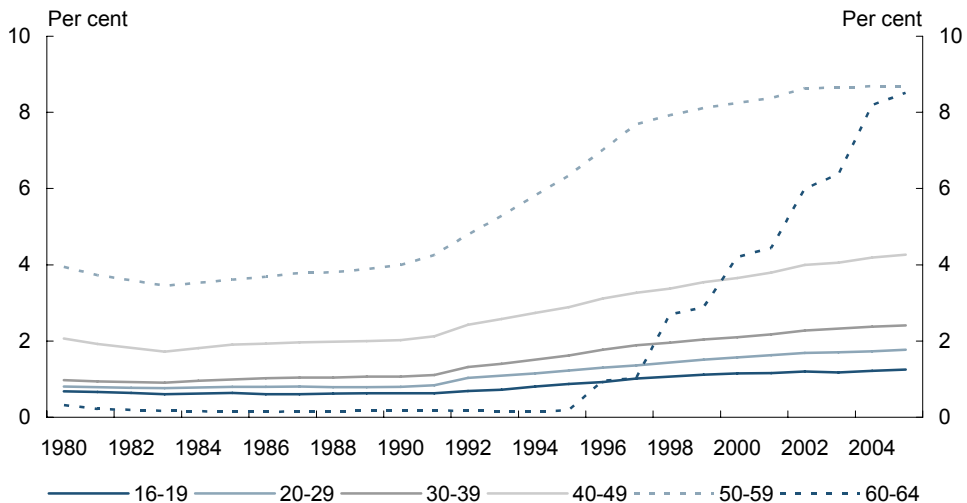
The coverage rates were projected based on historical trends for seven age groups, with growth being gradually slowed. The number of Disability Support Pension customers in the future is expected to decrease with potential new customers being required to go onto Newstart Allowance if they are assessed as able to work 15 hours or more per week at award wages. To project the number of recipients for a given year, these rates were multiplied by the population in each age group. The numbers then were adjusted to allow for a decrease resulting from the Welfare to Work initiatives. An average rate of payment

was calculated for Disability Support Pension and indexed by wages (MTAWE) for future years. Projected nominal spending was derived by multiplying the projected recipient numbers and the indexed rate per recipient, and benchmarked to the forward estimates. Finally, the GDP projection was used to calculate the projections as a proportion of GDP.

	Coverage rates	Future trends	Unit cost growth
Disability Support Pension	Derived for seven age groups for men and women	Logistic curves used to taper growth and numbers adjusted for Welfare to Work.	MTAWE
Parenting Payment Single	Derived for six age groups for men and women	Logistic curves used to taper growth and numbers adjusted for Welfare to Work.	MTAWE
Newstart Allowance	Derived for six age groups	Initial coverage based on recent average then adjusted for Welfare to Work.	CPI
Parenting Payment Partnered	Derived for six age groups for men and women	Initial coverage based on recent average then adjusted for Welfare to Work.	CPI
Carer Payment and Wife Pension	Derived for seven age groups for men and women	Logistic curves used.	MTAWE
Youth Allowance Student	Derived for three age groups for men and women	Coverage based on recent average.	CPI
Family Tax Benefit	Average per child for FTBA and per family for FTBB	Coverage based on recent average then adjusted for budget changes.	MTAWE and CPI
Child Care Benefit	Average per child	Coverage based on female labour force participation.	CPI
Maternity Payment	Average per child	Projected number of babies.	CPI

Comprehensive policy models

RIMGROUP is a comprehensive cohort projection model of the Australian population, which starts with population and labour force models, tracks the accumulation of superannuation, estimates non-superannuation savings, and calculates pension payments and the generation of other retirement incomes (after all taxes). The model is consistent with current policy and includes known future policy changes such as increasing the Age Pension eligibility age for women, increasing the superannuation preservation age, and continuing evolution of the superannuation system, including the major changes taking place from 1 July 2007.

Numbers of pension recipients and the level of payments are calculated by the model, based on population, labour force participation and asset and income projections. Thresholds and withdrawal levels associated with income and assets tests are modelled in detail.

RIMGROUP's ability to estimate improvements in retirement income and assets make it superior to trend projections of age pensions or those using a coverage rate approach. It

projects in detail the higher retirement incomes of Australian retirees as the superannuation system matures and reflects this as a restraining influence on Australian Government spending on age pensions over time.

The usual approach to testing such models is to see how they track history and to check their predictive ability. Testing on RIMGROUP has shown good results in respect of both tracking history and predicting likely outcomes from policy changes. The current projections have been benchmarked to the forward estimates.

EDUCATION

Education projections are done by projecting the total number of students and separately multiplying this by the projected average cost per student for each sector. Then the total costs for the sectors are aggregated to calculate total education spending.

For university education, logistic functions were used to project participation rates for male and female students separately by single year of age for those aged 17-29 (the main group from which university students are drawn), by 10-year age groups for people aged 30-59, and for a single group aged 60 and over. Only students in Australian Government supported places are included in the projections.

For vocational training and education, separate participation rates were projected again for men and women, and use logistic functions for each year of age from 14-29, by 5-year age groups for those aged 30-64 and for a single group aged 65 and over.

For schools, average participation rates for boys and girls for each year of age from 1994 to 2005 were used in the projections. Additionally, the proportion of students attending government and non-government schools was projected. This allowed separate calculation of student numbers attending State government and non-government schools to 2046-47.

The projected total numbers of students in each education sector for a given year were obtained by multiplying projected participation rates by the projected total population in each age group or year of age.

Total spending to 2009-10 reflects forward estimates. From 2010-11, average Australian Government contributions per student in each sector (and for schools by government and non-government schools separately) were calculated. Total Australian Government spending for 2009-10 by sector is divided by the projected total number of participants in each sector; this average cost then is indexed for projected increases in inflation and wages growth. For other education spending, the Australian Government contribution was divided by the total number of all students, as the spending cannot be allocated to any one sector. This cost per student then was similarly indexed.

The indexed Australian Government contributions per student were multiplied by the projected student populations to obtain nominal spending for each sector, and added to obtain projected nominal total Australian Government spending on education. Finally, the GDP projection was used to calculate the projections as a proportion of GDP.

In effect, this methodology projects future Australian Government education funding based on the current Australian Government spending combined with projections based on demographic change and economy-wide cost growth, rather than modelling it as a continuation of current funding arrangements.

DEFENCE

Defence is part of other spending, which is assumed to retain a broadly constant share of GDP as a whole. Defence spending is difficult to project, as it depends largely on unquantifiable variables such as the strategic environment. However, a review of alternative candidates for the projection methodology can help test whether the assumption is reasonable.

A simple method is to extend the long-run (30-year) historical trend real growth rate (around 2.3 per cent per year) beyond the forward estimates. Alternatively, the Government's commitment to 3 per cent real growth in base funding could be assumed to extend beyond its current expiry in 2015-16.[1]

Two further methods focus on particular factors that influence defence spending. 'Maintain force structure' identifies cost trends in broad components of defence spending, such as military equipment and personnel. This follows the approach taken in the Australian Strategic Policy Institute's 2004 report on long-term defence costs.[2]

'Maintain relative capability' uses projections of international economic growth to assess how Australian defence spending might evolve to follow trends in other countries. In this method, each country is assumed to maintain its military spending as a constant share of its GDP, which may overestimate the outcome due to an apparent historical trend for military spending to decline relative to GDP as countries develop. However, as world GDP grows more strongly than Australia's, Australia would need to devote an increasing share of GDP to defence to maintain spending parity.

---

1 These projections apply from the end of the forward estimates (2009-10), consistent with the report. In the 3 per cent real growth scenario, the projections up to 2015-16 are based on existing funding commitments. The other scenarios initially show higher projections because they derive from the level of defence spending in 2009-10, including supplementation for certain short-term measures such as operational deployments.

2 Thomson, M.A., 2004, *Trillion Dollars and Counting: Paying for Defence to 2050*, Australian Strategic Policy Institute, March.

None of these models address the full range of influences on the defence budget, and as such, each alone does not provide a compelling projection methodology. Accordingly for the purposes of IGR2, defence has been included as part of other spending, and assumed to grow broadly in line with the economy over the next 40 years.

REFERENCES

Australian Bureau of Statistics, 2006, *Population by Age and Sex, Australian States and Territories*, Cat. No. 3201.0, ABS, Canberra.

Australian Bureau of Statistics, 2006, *Australian System of National Accounts, 2005-06*, Cat. No. 5204.0, ABS, Canberra.

Australian Bureau of Statistics, 2006, *Australian National Accounts: National Income, Expenditure and Product*, September, Cat. No. 5206.0, ABS, Canberra.

Australian Bureau of Statistics, 2005, *Births Australia*, Cat. No. 3301.0, ABS, Canberra.

Australian Bureau of Statistics, 2005, *Australian Historical Population Statistics,* Cat. No. 3105.0.65.001, ABS, Canberra.

Australian Bureau of Statistics, 2005, *Deaths Australia*, Cat. No. 3302.0, ABS, Canberra.

Australian Bureau of Statistics *Water Account, Australia 2000-01, 2004-05* Cat. No. 4610.0.

Australian Greenhouse Office 2006, *Greenhouse Gas Inventory Report 2004 (Revised).*

Australian Government, various years, Budget papers and related documents, www.budget.gov.au.

Australian Government, 2004, *Australia's Demographic Challenges*, Commonwealth of Australia, Canberra.

Australian Government, 2002, Budget Paper No. 5, Intergenerational Report 2002-03, Commonwealth of Australia, Canberra.

Australian Government Actuary, 2006, *2005 Military Superannuation and Benefits Scheme and Defence Force Retirement and Death Benefits Scheme (MSBS and DFRDB)*, www.aga.gov.au/publications/mil_super.

Australian Institute of Health and Welfare, 2007, Health expenditure database, www.aihw.gov.au/expenditure/datacubes/index.cfm.

Bishop MP, The Hon J., 2004, *Investing in Australia's Aged Care: More Places, Better Care*, Commonwealth of Australia, Canberra

Commonwealth of Australia, 1998, *Charter of Budget Honesty Act 1998*, scaleplus.law.gov.au/html/pasteact/2/3115/top.htm.

Commonwealth Scientific and Industrial Research Organisation, Australian Stocks and Flows Framework (unpublished).

Commonwealth Scientific and Industrial Research Organisation, 2006, *Climate Change Impacts on Australia and Benefits of Early Action to Reduce Global Greenhouse Gas Emissions*, CSIRO, Australia.

Conference Board and Groningen Growth and Development Centre, 2007, Total Economy Database, January, www.ggdc.net.

Congressional Budget Office (US Congress), 2007, *The Budget and Economic Outlook: Fiscal Years 2007 to 2016*, US Government, Washington DC, www.cbo.gov/budget/econproj.shtml.

Council of Australian Governments, 2006, COAG meeting, 10 February 2006, www.coag.gov.au/meetings/100206/index.htm.

Department of Defence, various years, annual report, www.defence.gov.au/annualreports/.

Department of Family and Community Services, various years, annual report, www.facsia.gov.au/internet/facsinternet.nsf/aboutfacs/annualreports.htm.

Department of Family and Community Services, various years, *Income Support Customers – A Statistical Overview*, www.facsia.gov.au/internet/facsinternet.nsf/aboutfacs/publications.htm.

Department of Families, Community Services and Indigenous Affairs, 2007, (Family Assistance and Relationship Services, various documents) www.facsia.gov.au/internet/facsinternet.nsf/family/nav.htm.

Department of Finance and Administration, 2006, *Public Sector Superannuation and Commonwealth Superannuation Scheme Long Term Cost Report 2005*, www.finance.gov.au/super/docs/PSS__CSS_LTCR_2005.pdf.

Department of Finance and Administration, 2005, *Public Sector Superannuation and Commonwealth Superannuation Scheme Long Term Cost Report 2004*, www.finance.gov.au/super/docs/PSS__CSS_LTCR_2005.pdf.

Future Fund, 2007, www.futurefund.gov.au.

Gruen, D., Pagan A. and Thompson C., 1999, 'The Phillips Curve in Australia', *Journal of Monetary Economics*, 44(2), 223-258.

Henry, K., 2003, Address to the Melbourne Institute's Fortieth Anniversary Dinner, Melbourne, www.treasury.gov.au/contentitem.asp?NavId=&ContentID=547.

Henry, K., 2002, 'The Demographic Challenge to our Economic Potential', Chris Higgins Memorial Lecture, Economic Society of Australia, Canberra, www.treasury.gov.au/contentitem.asp?NavId=&ContentID=472.

Her Majesty's Treasury, 2007, *The Economics of Climate Change: The Stern Review*, Cambridge University Press, Cambridge.

Her Majesty's Treasury, 2006, *Budget 2006, Annex A: Illustrative Long-Term Fiscal Projections*, HM Treasury, London, www.hm-treasury.gov.uk/budget/budget_06/budget_report/bud_bud06_repindex.cfm.

Hogan, W., 2004, *Review of Pricing Arrangements in Residential Aged Care*, Canberra, http://www.aodgp.gov.au/internet/wcms/publishing.nsf/content/review%20of%20pricing%20arrangements-1

Japan Center for Economic Research, 2006, *The 32nd Medium-term Forecast of the Japanese Economy: FY2005-2015*, JCER, Tokyo, www.jcer.or.jp/eng/economic/medium.html.

Kennedy, S. and Da Costa, A., 2006, 'Older men bounce back: the re-emergence of older male workers', *Economic Roundup*, Spring, 31-44.

National Water Commission, *Australian Water Resources 2005*, www.water.gov.au/.

Organisation for Economic Co-operation and Development, 2006, *OECD Country Statistical Profiles,* OECD, Paris, www.oecd.org.

Organisation for Economic Co-operation and Development, 2006, *OECD Employment Outlook: Boosting Jobs and Incomes*, OECD, Paris, www.oecd.org.

Organisation for Economic Co-operation and Development, 2006, *OECD Economic Outlook*, 80 preliminary version, www.oecd.org/document/18/0, 2340, en_2649_2011.

Organisation for Economic Co-operation and Development, 2006, Productivity database September, www.oecd.org/topicstatsportal/0,2647,en_2825_30453906_1_1_1_1_1,00.html.

Parkinson, M., 2004, 'Policy Advice and Treasury's Wellbeing Framework', Background paper presented to the Australian Statistics Advisory Council, 25 May,

www.treasury.gov.au/documents/876/RTF/02Policy_advice_Treasury_wellbeing_frame work.rtf.

Productivity Commission, 2005, *Economic Implications of an Ageing Australia*, Productivity Commission, Canberra, www.pc.gov.au/study/ageing/index.html.

Reserve Bank of Australia, 2006, 'Third statement on the conduct of monetary policy', www.rba.gov.au/MonetaryPolicy/third_statement_on_the conduct_of_monetary_policy_2006.html.

Superannuation reform, 2003, www.treasurer.gov.au/atr/content/speeches/.

The Prime Minister's press release, 11 Feb 2007, Securing the Future of Aged Care for Australians, http://pm.gov.au/media/Release/2007/Media_Release23899.cfm

The Treasury (New Zealand), 2006, Budget 2006 Fiscal Strategy Report, The Treasury, Wellington, www.treasury.govt.nz/budget2006/fiscalstrategy/.

Thomson, M.A., 2004, Trillion dollars and Counting: Paying for defence to 2050, Australian Strategic Policy Institute, Canberra.

United Nations, World Population Prospects: The 2006 Revision Population Database, http://esa.un.org/unpp/.