NSW Long-Term Fiscal Pressures Report

NSW Intergenerational Report

2011-12

Budget Paper No. 6

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Executive Summary

With the first of the baby boomers turning 65 in 2011, this year marks the start of 18 years when they will move into traditional retirement age. This ageing trend will have both economic and fiscal consequences. The fiscal pressures imposed by ageing and other growth factors are expected to result in a fiscal gap of 2.8 per cent of gross state product (GSP) by 2050-51.

The fiscal gap is the change in the primary balance of the general government sector as a share of GSP from 2009-10 to 2050-51. The primary balance is revenues less expenditures, including net capital expenditure but not interest.

Under the *Fiscal Responsibility Act 2005*, the Government must assess the long-term fiscal gaps in the general government sector every five years. These gaps arise from spending pressures associated with ageing and other long-term trends. The first report, the *2006-07 Long-Term Fiscal Pressures Report* (the 2006-07 Report), was published with the 2006-07 Budget in June 2006 and identified a fiscal gap of 3.4 per cent of GSP in the 40 years to 2043-44.

This Budget Paper presents the first five-yearly update. It gives an updated calculation of the fiscal gap in the general government or budget sector in 2050-51, based on new projections of the NSW population, economy, and budget revenues and expenditures.

The key findings of the report are:

- population growth will slow
- the population will continue to age
- the aggregate labour force participation rate will decline and so economic growth will slow
- without policy change, budget expenditure growth will outpace revenue growth every year for the next 40 years.

As a result, a fiscal gap of 2.8 per cent of GSP is projected to open up by 2050-51. To put that in context, the gap will be $11.5 billion (or around 20 per cent of budget expenses) based on 2009-10 GSP. If measures are not taken to close this gap, net debt will rise from 2.3 per cent of GSP in 2009-10 to an unsustainable 119 per cent by 2050-51.

The projections in this report are not forecasts. Rather the aim is to highlight future demographic and other fiscal pressures under existing policy settings. The central assumption in the projections is therefore one of ‘no policy change’. The results are intended to inform policy makers and the public of emerging pressures that will affect fiscal sustainability and to highlight possible policy responses.

The modelling in this report uses the 'three Ps' framework to project economic growth: population, participation and productivity. Demographic and economic assumptions are applied to project general government revenues and expenditures to 2050-51.

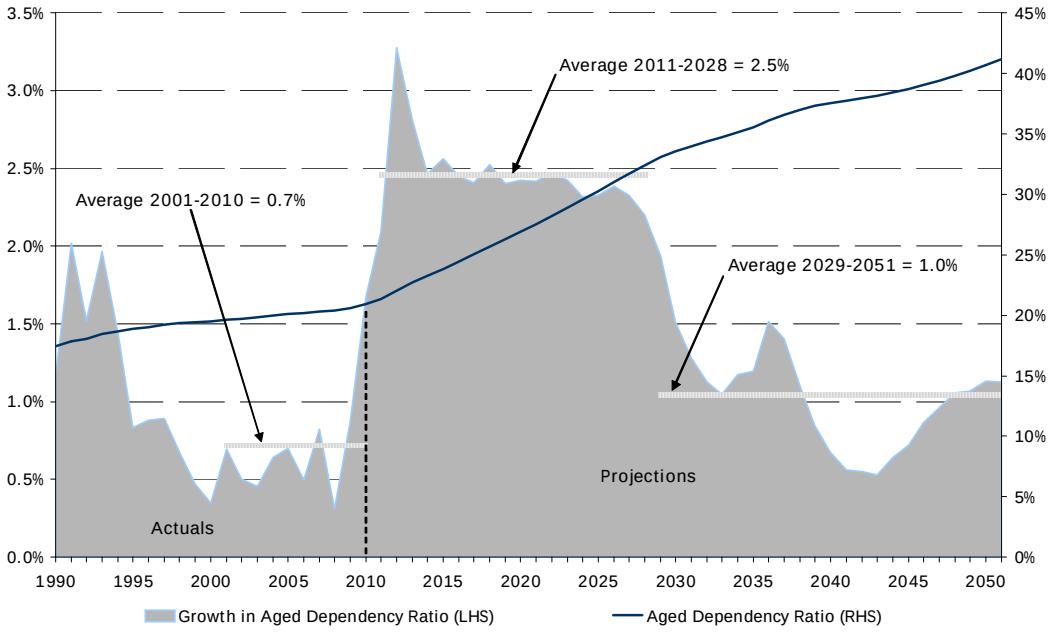
Population

The population of New South Wales is projected to grow from 7.2 million in 2010 to 10.6 million in 2051. However, average annual population growth is expected to slow from 1.1 per cent in the last 30 years to an average of 0.9 per cent over the next 40 years. The projections assume:

- net overseas migration to Australia of 180,000 people a year with 30 per cent settling in New South Wales
- a fertility rate of 1.85 babies per female
- life expectancy at birth of 88.5 years for men and 90.9 years for women by 2051.

The projections indicate that the State's population will continue to age. The chart below shows that the ratio of people aged 65 and over to those between 15 and 64 (the aged dependency ratio) nearly doubles, from 20.9 per cent in 2011 to 41.2 per cent in 2051. More immediately, with the first baby boomers born exactly 65 years ago and now moving into traditional retirement age, 2011 is the beginning of 18 years of accelerated growth in the aged dependency ratio.

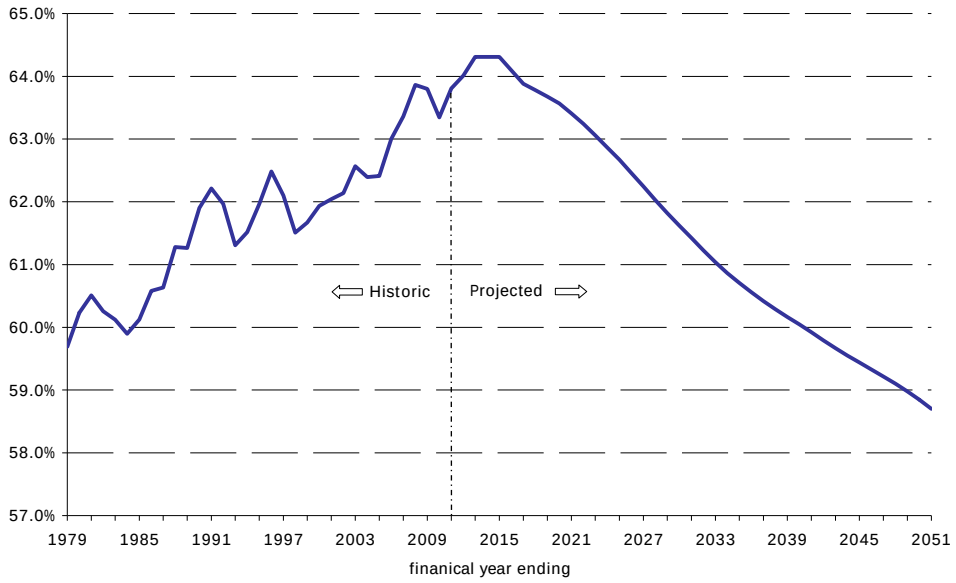
Chart 1: Aged Dependency Ratio for NSW Population to Nearly Double from 2011 to 2051



Participation, Productivity and Output

As the population ages, aggregate participation in the labour force will decline because participation rates are much lower for those aged over 65. Labour participation is expected to peak at 64.3 per cent in 2014-15 and then steadily decline through the projection period, falling to 58.7 per cent by 2050-51 (see Chart 2).

Chart 2: NSW Labour Force Participation Rate to Decline Steadily After 2014-15



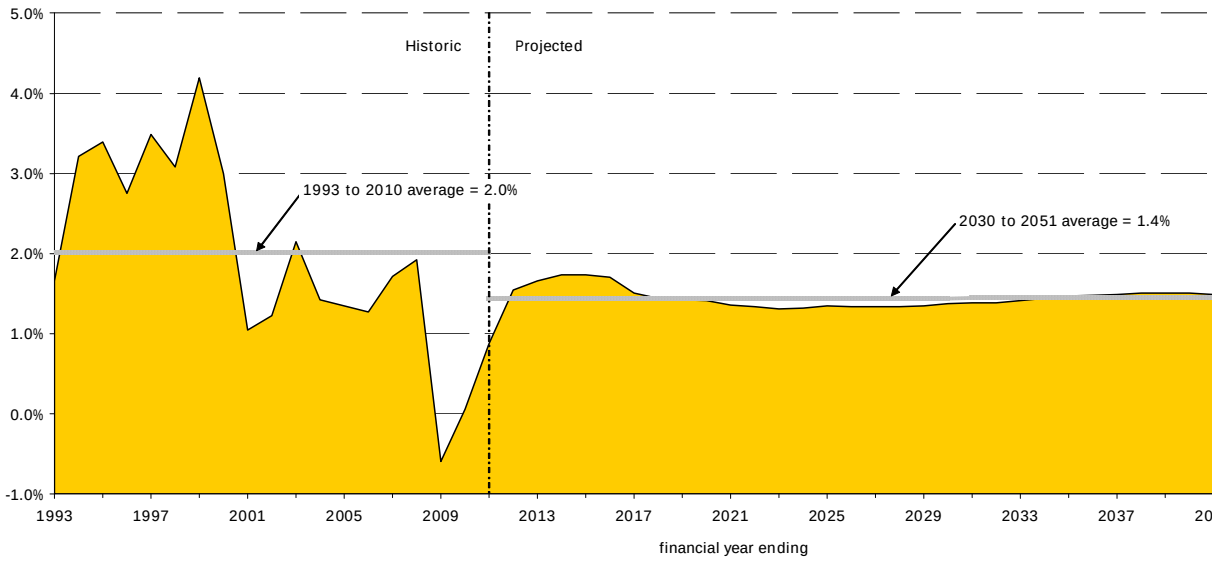
This decline, combined with the assumption that net overseas migration will remain steady at 180,000 a year nationally, means the workforce and employment will grow more slowly than the overall population.

Productivity growth nationally has averaged 1.6 per cent per year over the last 30 years. For the last 20 years of available data, NSW productivity growth has been broadly in line with national rates. It is assumed in this report, as in the Australian Government's *2010 Intergenerational Report*, that productivity will continue to grow at its historic rate of 1.6 per cent a year.

The State's real GSP has grown at an average rate of 3.1 per cent per year since the recession of the early 1990s. Combining the employment projections and the productivity assumption, real GSP growth is expected to slow to 2.6 per cent a year over the next 18 years as the baby boomers reach traditional retirement age, and to an average 2.2 per cent a year over the remaining 22 years of the projection period. Nominal GSP, a key driver of the revenue base and expenses, is expected to grow at an average of 4.9 per cent a year to 2051.

Over the next 40 years, growth in real GSP per capita, a traditional measure of living standards, is expected to be half a percentage point less than over the last 17 years. With the participation rate declining, productivity growth will be the sole driver of real GSP per capita growth.

Chart 3: Growth in Real NSW GSP per Capita to Decline From Historical Rates



Budget Revenues

Budget revenues were modelled from individual revenue sources based on key economic and demographic drivers. The 'no policy change' assumption means that existing tax rates and threshold indexing mechanisms, as well as Commonwealth funding arrangements, remain constant.

Over the 40 years to 2050-51, growth in revenues is expected to average 4.9 per cent a year, which is in line with growth in nominal GSP. This includes projected growth in:

- taxation revenues of 5.2 per cent a year
- goods and services tax (GST) revenues of 4.8 per cent a year
- National Partnerships funding from the Australian Government of 0.3 per cent a year.

The limited growth in National Partnerships funding is due largely to fiscal stimulus being withdrawn and time-limited programs expiring.

Budget Expenses

Expenditure is also projected on a 'no policy change' basis. Over the 40 years to 2050-51, total expenditure, which combines expenses and capital expenditure, is projected to grow at an average rate of 5.3 per cent a year. This exceeds projected growth in both revenue and nominal GSP.

Expense projections are made in 10 functional areas with spending driven by growth in population, GSP per capita, consumer price inflation, ageing and other growth factors (OGFs) in each area.

OGFs are based on a 32-year analysis of historical expenses in each of the functional areas and represent annual growth above (or below) fundamental economic and demographic drivers, after taking into account policy changes. They represent higher (or lower) than average inflation, productivity, income sensitivity or expense control.

Expenses alone are projected to grow at an average of 5.5 per cent a year, which is again more than projected revenue and nominal GSP growth. The average expense growth can be broken down into:

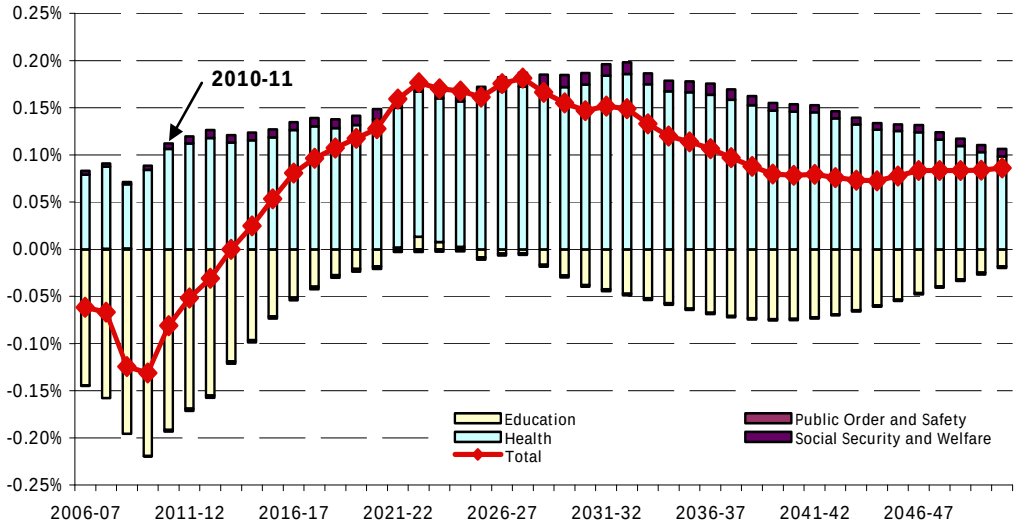
- 2.5 percentage points from consumer price inflation
- 1.4 percentage points from growth in real GSP per capita
- 0.9 percentage points from population growth
- 0.4 percentage points from OGFs
- 0.1 percentage points from ageing.[1]

While ageing increases average annual expense growth by 0.1 percentage points a year over the next 40 years, it increases expense growth by almost 0.2 percentage points a year over the next 18 years as the baby boomers move into traditional retirement age (see Chart 4).

Of the functional areas, Social Security and Welfare has the highest average projected expense growth rate at 6.6 per cent a year, followed by Health at 6.2 per cent. Growth in Social Security and Welfare expenses is driven mainly by OGFs, while growth in Health expenses is driven by both ageing and OGFs. Expense growth in Transport and Education is projected to be more moderate at 5.1 and 4.5 per cent a year, respectively.

[1] Does not sum due to rounding.

Chart 4: Ageing Budget Pressures are Mainly Driven by Health



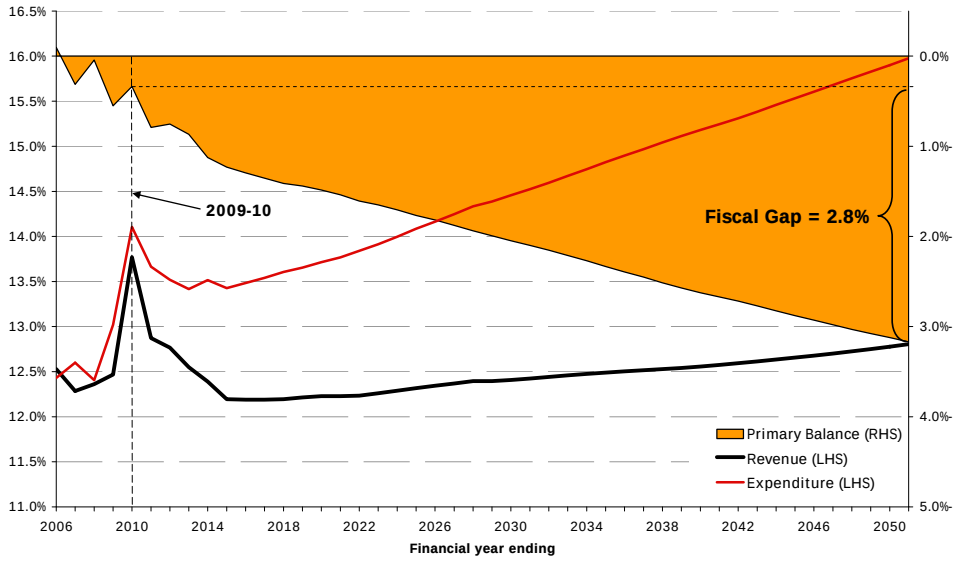
The largest contribution to ageing-related expense growth over the next 40 years is expected to be from Health with a smaller contribution from Social Security and Welfare. These will be partially offset by reduced cost pressures in Education and to a lesser extent, in Public Order and Safety (see Chart 4). Importantly, over the next decade to 2020-21, the balance of ageing cost pressures will reverse, from reducing average annual expense growth to increasing it.

Capital expenditure is modelled by assuming a constant ratio of the capital stock to expenses throughout the projection period. The long-term growth rate of capital expenditure is projected to be 4.8 per cent (excluding the first decade, which will be affected by federal stimulus). This is less than expense growth because capital expenditure is concentrated in slower growing functional areas such as Transport, Education and Recreation and Culture.

The Fiscal Gap

With average expenditure growth of 5.3 per cent a year and average revenue growth in line with average nominal GSP of 4.9 per cent a year, a fiscal gap of 2.8 per cent of GSP opens up by 2050-51.

Chart 5: Fiscal Gap Grows as Budget Expenditure Increases Share of the Economy



The projected gap in this report is less than the 3.4 per cent gap in the 2006-07 Report, mostly due to a reduction in ageing cost pressures with:

- recent higher migration and fertility somewhat improving the demographic outlook
- better data on the age sensitivity of Health expenses suggesting that ageing pressures, while still large, are less than previously used.

Steps have been taken to realign expense and revenue growth in the 2011-12 Budget. The impact of the Government's policy changes are reported in Budget Paper No. 2.

Sensitivity of Results

The fiscal gap's sensitivity to a range of key assumptions is summarised in the table below.

Sensitivity of the Fiscal Gap to Key Assumptions

Assumption	Sensitivity of Fiscal Gap
Economy-wide productivity	Low
Government productivity	High
Participation	Low
Fertility	Low
Net overseas migration	Medium
Community expectations	High

While participation and productivity are important for growing the overall economy and improving standards of living, they do not have a large impact on the fiscal gap. This is because, under the modelling framework, as incomes increase so too does demand for government services. Rises in revenue from economic growth are offset by extra spending.

The fiscal gap is, however, sensitive to productivity improvement in the public sector. It is estimated that if public sector productivity could be increased by 0.5 per cent a year, above the level achieved in the overall economy, the fiscal gap would be entirely closed. Also, the gap would be reduced by 0.2 percentage points if all possible demographically driven savings from education were made.

The fiscal gap has a low sensitivity to the fertility rate, as higher fertility lowers relative Heath expense pressures, but these savings are mostly offset by higher relative pressures in Education.

The fiscal gap is moderately sensitive to net overseas migration as migrants are generally of working age, but do not cause major extra pressures for Health or Education. An increase in national net overseas migration from 180,000 to 240,000 a year would, for example, reduce the gap by 0.5 percentage points.

The fiscal gap is also highly sensitive to the explicit assumption made in the modelling that, as living standards (GSP per capita) rise, government services will rise commensurately. A small reduction in such community expectations has a large impact on the fiscal gap.

State Government Policy Options

The NSW Government is committed to improving living standards and raising economy-wide productivity growth. Given the sensitivities noted above, there are some key areas that the Government can focus on to close the fiscal gap. In particular, it can:

- increase general government sector productivity by restraining the cost of wages and better controlling expenses
- manage community expectations about the rate of government service improvement
- make New South Wales a more attractive destination for migrants, by driving improvements across several portfolio areas, including planning and infrastructure.

Chapter 1: Background to the Report

1.1 Fiscal Sustainability

The Government is committed to ensuring that the State's finances are sustainable over the short, medium and long term.

In the short to medium term, fiscal sustainability means ensuring the continuity of key services, in spite of temporary shocks to the State's financial position such as a cyclical slowing in the economy and thus reduction in state revenues. This requires a strong balance sheet that can absorb temporary shocks and so avoid the need for reducing services or raising taxes. A sustainable fiscal position also allows time for policies to be put in place to respond to shocks, such as the Australian Government no longer funding programs.

Over the longer term, fiscal sustainability means anticipating and managing future structural changes and persistent pressures on public spending and revenue. Possible sources of emerging fiscal pressure include:

- an ageing population
- policies to reduce carbon emissions
- technology-related cost pressures in health
- the demands of an increasingly congested metropolitan area
- changing community expectations of the standard and quantity of public services
- increasing service delivery unit costs caused by lower productivity growth.

Ageing of the population cannot be avoided. This report examines the impact of demographic pressures and other long-term trends on the NSW economy, revenues and expenditures, and the implications they have for ongoing fiscal sustainability.

1.2 The Fiscal Responsibility Act

The New South Wales *Fiscal Responsibility Act 2005* (the Act) set targets and principles for conducting fiscal policy. In reviewing the Act in June 2011, the Treasurer confirmed the objective of 'maintaining financial results that are fiscally sustainable in the medium and long term' and the Government is committed to this objective.

This report primarily addresses the question of long-term fiscal sustainability, which is detailed in section 15 of the Act, Fiscal principle No. 5, as follows.

- …the budget should be framed taking into account the anticipated future fiscal gap likely to develop as a result of increased spending pressures associated with the ageing of the population and other long-term trends.
- An assessment of long-term fiscal gaps is to be presented in the 2006-07 budget papers and is to be updated in the budget papers in conjunction with the 5-yearly review of this Act.
- An assessment of the impact of budget measures in respect of expenses and revenue on long-term fiscal gaps is to be presented in the annual budget papers.

This report is the first updated assessment of the long-term fiscal gap. It has involved developing a Long-Term Fiscal Pressures Model, which contains new demographic projections, revised economic assumptions, and updated revenue and expenditure modelling for the general government sector. This report therefore represents a comprehensive reassessment and forms the new baseline for future reporting.

The assessment of the impact on the fiscal gap of the 2011-12 Budget is contained in Budget Paper No. 2.

1.3 The 2006-07 Report

The *NSW Long-Term Fiscal Pressures Report* was published as Budget Paper No. 6 in the 2006-07 Budget. That report projected a fiscal gap of 3.4 per cent of gross state product (GSP) by 2043-44. The impact of new measures was then reported in each budget until 2010-11. As a result of policy decisions, the fiscal gap in the 2010-11 Budget had risen to 4.9 per cent.

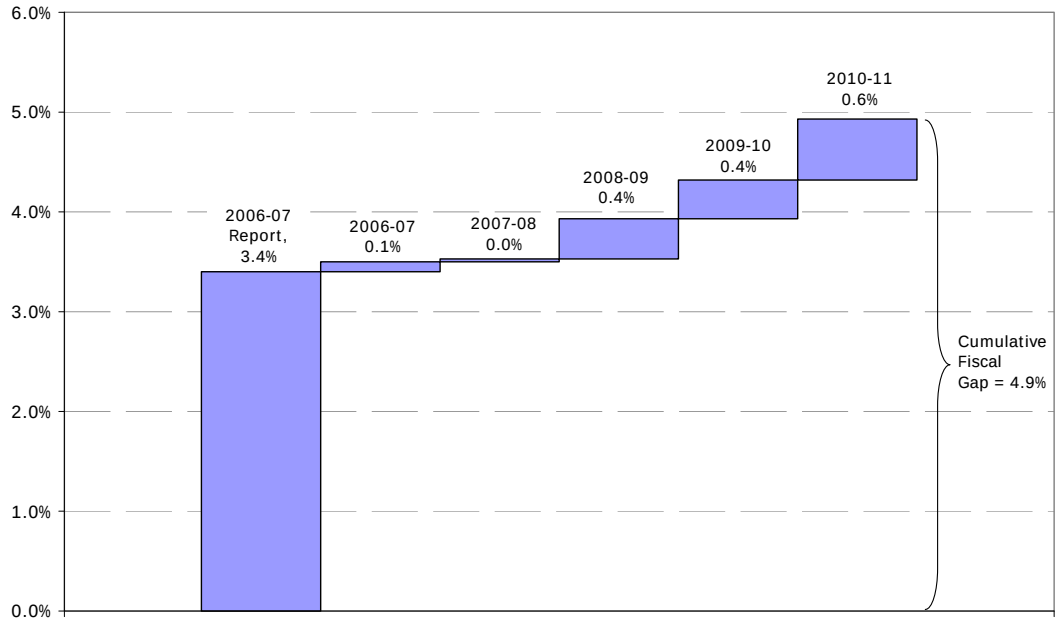
The 2006-07 Report was underpinned by a long-term economic and budget model called the State Intergenerational Model, developed by Access Economics for all the Australian states. This model adopted the 2004 Australian Bureau of Statistics (ABS) population projections[1] for the 'base case'.

The ABS population projections suggested that decreased fertility and the ageing of the baby boomers would bring about significant ageing of the population. Consequently, the share of the population of traditional working age (between 15 and 64) would decline. Combined with an assumption of no change in workforce age-specific participation rates, this led to labour force and employment growth being lower than population growth. The projection was for a slowdown of real GSP growth per capita from 2.1 per cent a year in the 1990s to 1.6 per cent a year in the decade to 2044.

[1] Population Projections, Australia, 2004-2101, Series B (2004), ABS Cat No 3222.0

These demographic and economic trends opened up a fiscal gap of 3.4 per cent of GSP by 2043-44. Around 40 per cent of this gap was attributable to demographic change, while the other 60 per cent was from other factors. Almost the entire fiscal gap was due to expense growth, particularly in Health, with aggregate expenses increasing from 13 per cent of GSP in 2004-05 to 16 per cent in 2043-44. The cumulative impact of policy decisions from the 2006-07 to 2010-11 Budgets has since increased the estimated fiscal gap to 4.9 per cent of GSP by 2043-44 (see Chart 1.1).

Chart 1.1: Changes in the Fiscal Gap since the 2006-07 Report



The 2006-07 Report suggested a number of potential policy responses, including:

- increasing workforce participation, particularly for those aged over 65
- lifting productivity, particularly in the public sector
- improving Commonwealth–State funding arrangements.

The report emphasised that the State would enter this period of ageing-related cost pressures on a better footing if it had a strong balance sheet, but policy adjustment would be necessary to sustain services through the demographic transition.

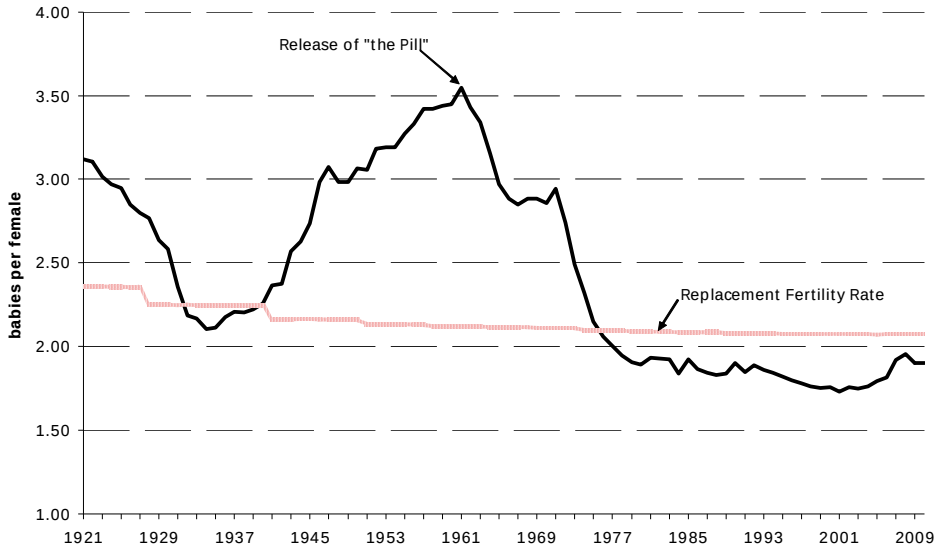
Chapter 2: Demographic Trends and Outlook

2.1 Introduction

It was 65 years ago, after 18 years of diminished fertility spanning the Great Depression and the Second World War, that the 'baby boom' began. The return of service personnel and strong economic growth saw the fertility rate rise through the 1950s.

This trend reversed in 1961 when the oral contraceptive pill was introduced. Fertility rates then fell steeply through the following two decades as more women joined the workforce. The 20 year 'bump' in fertility, extending from 1946 through to the mid-1960s, resulted in a generation known as the baby boomers.

Chart 2.1: Australian Fertility



Source: *Historical Population Statistics, Australia* (2008), ABS Cat No 3105.0.65.001 and *Births, Australia* (2009), ABS Cat No 3301.0

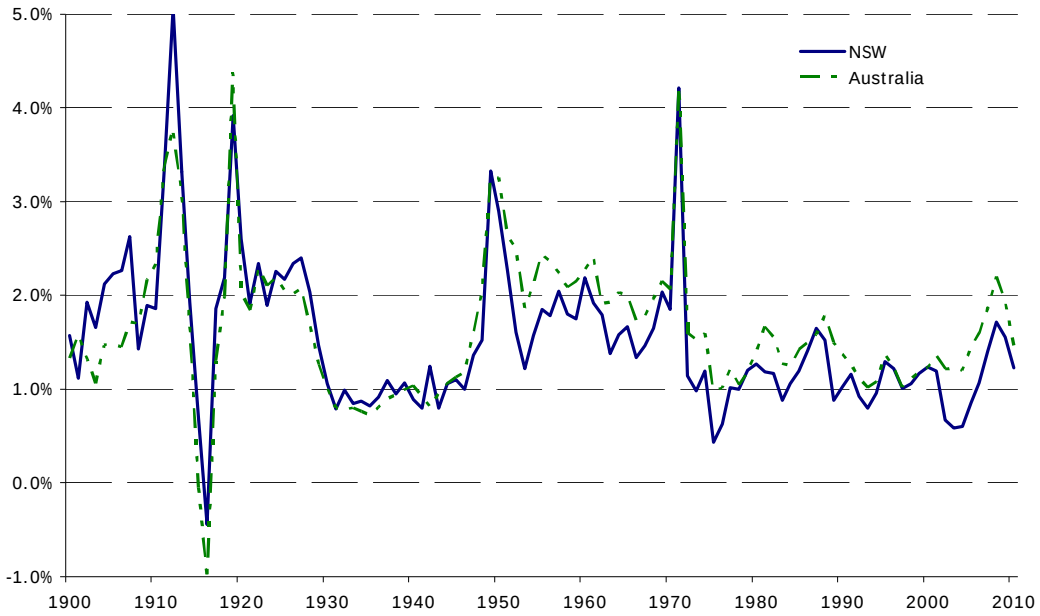
When the baby boomers reached working age in the 1960s and 1970s, the labour force grew strongly. Over the last 40 years, growth in the population of traditional working age (15-64) has exceeded growth in the total population by an average of 0.1 per cent a year.

This trend, however, is about to be reversed as the baby boomers reach traditional retirement age. It is timely to now examine these demographic trends and consider their impact over the period to 2051.

2.2 Historical Demographic Trends

Population growth in New South Wales and Australia were very similar in the first half of the twentieth century. From 1946 to 2001, population growth in New South Wales has almost always been slightly less than the national average. The average difference in the annual rate of population growth over this time has been 0.3 percentage points. From 2002, this gap has widened to an average of 0.5 percentage points.

Chart 2.2: Population Growth – Annual Percentage Change (Year to 31 December)[1]



Source: *Historical Population Statistics, Australia* (2008), ABS Cat No 3105.0.65.001 and *Demographic Statistics, Australia* (Dec 2010) ABS Cat No 3101.0

There are three factors that determine population growth. The first is the fertility rate of the female population which, when combined with the female population of childbearing age, provides the number of births. The second is life expectancy which, given the age and gender profile of the population, yields the number of deaths. More births than deaths leads to 'natural' population growth. The third factor is net migration, which is the number of arrivals, from overseas or other states, less the number of departures.

[1] The spike in population growth in 1971 is due to a change in the ABS method from estimation the population based on the number of people actually present in Australia to the concept of estimated resident population.

Fertility

Age-based fertility rates are the probability that a woman of a specific age will give birth. They are calculated for females of childbearing age (between 15 and 49). The total fertility rate is the sum of the age-based fertility rates at a given point in time. It represents the number of babies that a representative female, who experiences the current age-specific fertility rates through her life, is likely to have over her lifetime.

This is different from the crude birth rate, which is the number of births per head of population and is affected by both the fertility rate and the composition of the population. For a given fertility rate, the higher the proportion of women of childbearing age, the higher the crude birth rate.

The fertility rates for New South Wales and Australia follow each other closely. As shown in Chart 2.1, Australia's fertility rate was above 3 in the early 1920s, but it fell to 2.1 during the Depression in 1934 and did not reach 3 again until the baby boom. The Australian fertility rate peaked at 3.6 in 1961 and then dropped steadily, reaching a low of 1.7 in 2001. There has since been an increase, with the rate now at around 1.9.

This recent modest increase is the result of a rise in the fertility of women of all childbearing ages. There is, however, a longer-term trend towards higher fertility of women in their 30s, which offsets a decline among those in their 20s. As women deferred childbirth until their 30s, the fertility rate was temporarily lowered. Since 2006, this effect has largely 'washed through', as the women who led this trend are now older.

The replacement fertility rate (see Chart 2.1) is the rate needed to maintain the population at its current level without migration. It is a function of the probability that a given birth will be a female who will, in turn, bear another female. As death rates have fallen, so too has the probability that a female will die before giving birth. The current replacement fertility rate has therefore fallen to around 2.1, from as high as 2.4 in the 1920s.

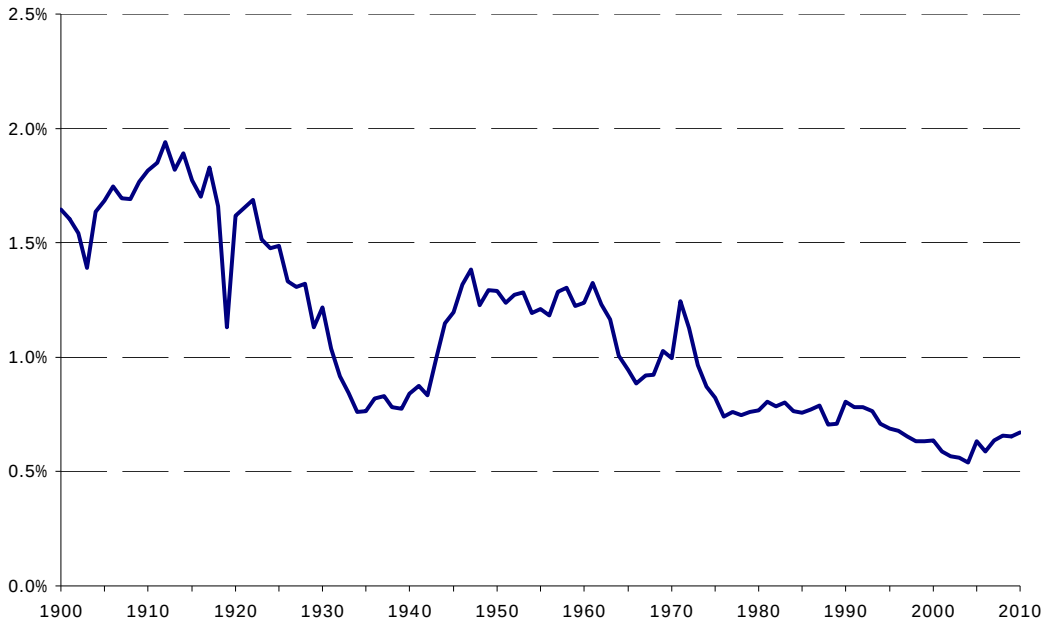
Life Expectancy

Life expectancy at birth is calculated from the probabilities of dying in each year of life. Early in the twentieth century, life expectancy at birth was 55.9 years for men and 59 years for women. By 2010, the State's life expectancy at birth had risen to 80.1 years for men and 84.5 years for women. This increase occurred gradually as age-specific probabilities of death dropped, for example, due to lower infant and child mortality rates and fewer infectious diseases. The upward shift in life expectancy is expected to continue in the long term, albeit at a reduced rate.

Natural Population Growth

Natural population growth is growth in the population based on births and deaths but not migration. It has been slowing in New South Wales and Australia for some time as longer life expectancy has been more than offset by the falling fertility rate.

Chart 2.3: NSW Natural Population Growth (Year to 31 December)



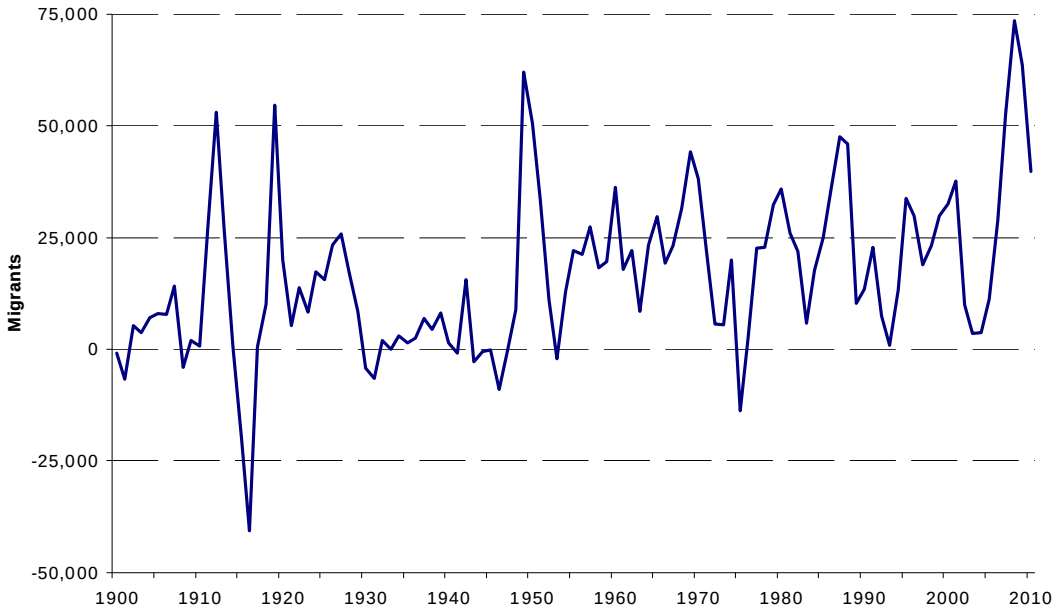
Source: *Historical Population Statistics, Australia* (2008), ABS Cat No 3105.0.65.001 and *Demographic Statistics, Australia* (Dec 2010) ABS Cat No 3101.0

In 1912, natural population growth in New South Wales peaked at 1.9 per cent a year. It then fell to below 1 per cent during the Depression and war years. With the onset of the baby boom, natural population growth peaked again at 1.4 per cent in 1947 and then dropped to a historical low of 0.6 per cent in 2004. The recent rise in fertility has led to a modest increase, with growth reaching 0.7 per cent in 2010.

Migration

Net migration is the sum of net interstate migration and net overseas migration. Since 1947, net migration has contributed to the State's population growth in all but two calendar years—1953 and 1975 (see Chart 2.4). Over the past 30 years, net migration has averaged around 26,000 people per year, although this has ranged from a gain of around 900 people in 1993 to nearly 74,000 people in 2008.

Chart 2.4: NSW Net Migration (Year to 31 December)



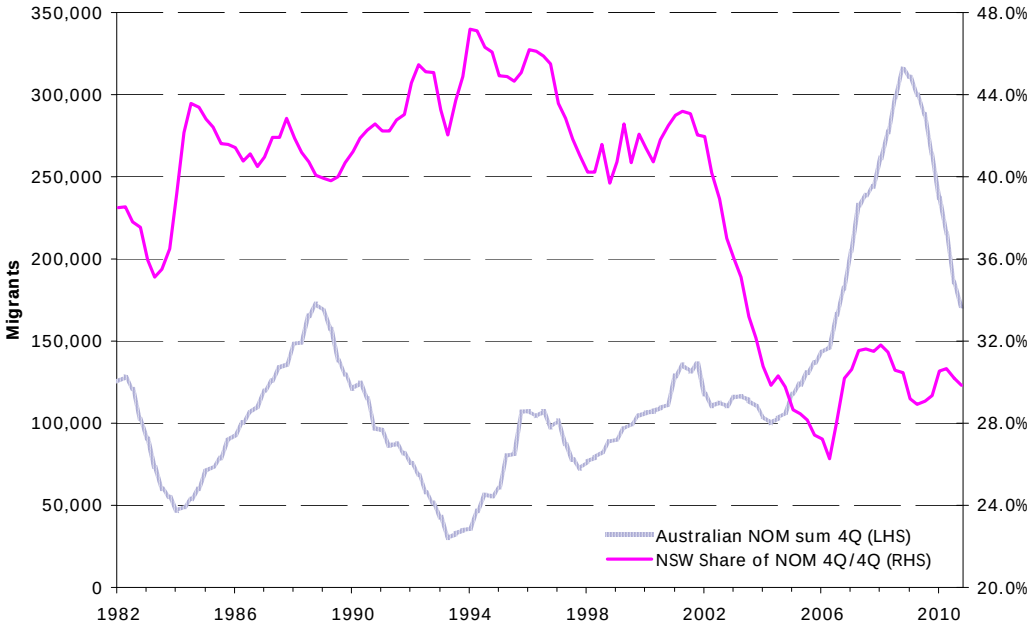
Source: *Historical Population Statistics, Australia* (2008), ABS Cat No 3105.0.65.001 and *Demographic Statistics, Australia* (Dec 2010) ABS Cat No 3101.0

The State's net migration for the last 30 years comprises:

- gains from net overseas migration of around 45,000 people a year
- losses from net interstate migration of around 19,000 people a year.

However, as Chart 2.4 shows, it has varied greatly from year to year.

Chart 2.5: Net Overseas Migration

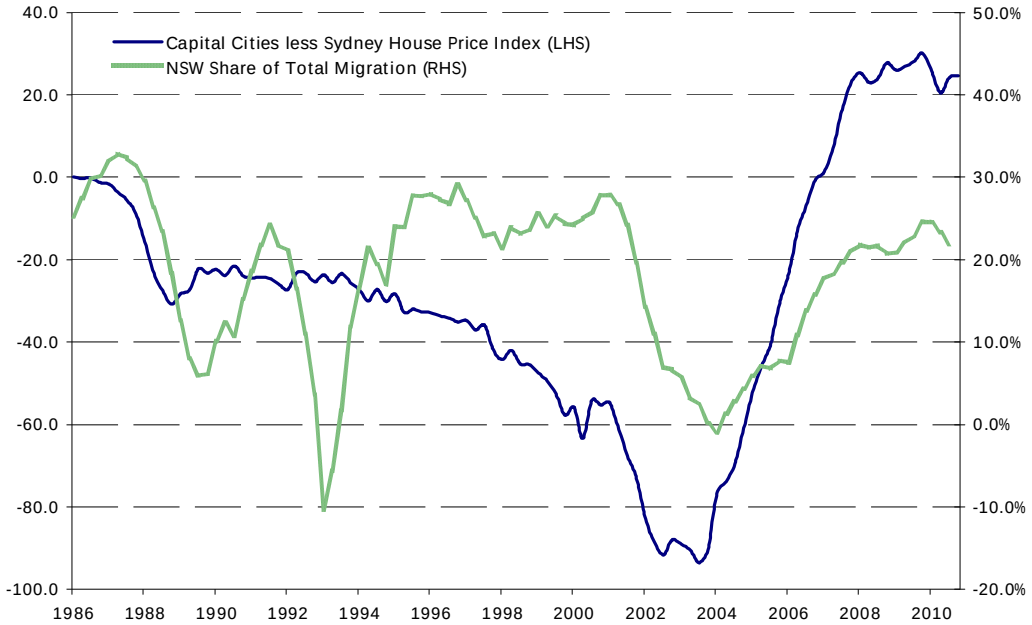


Source: *Demographic Statistics, Australia* (Dec 2010) ABS Cat No 3101.0

From March 2002 to March 2004, as Sydney's relative house prices rose rapidly, the NSW share of net overseas migration fell, from 42 per cent to around 30 per cent, where it has remained. Also during this period, a range of regional migration schemes were introduced, which encouraged migration away from New South Wales.

Chart 2.5 shows that national net overseas migration rose dramatically, from around 100,000 in the year to June 2004 to an historical peak of 316,000 in the year to December 2008. It then fell to 171,000 over the 2010 calendar year. In the five years to December 2010, the loss from interstate migration averaged 20,000 and the gain from net overseas migration averaged 71,000, resulting in average migration to New South Wales of 52,000[2] per year. This is higher than the 30-year average of 26,000 per year.

Chart 2.6: NSW Share of Total Migration and the Difference in House Prices[3]



Source: *Demographic Statistics, Australia* (Dec 2010) ABS Cat No 3101.0 and *House Price Indexes, Eight Capital Cities* (Jun 2011), ABS Cat No 6416.0

[2] Does not sum due to rounding.

[3] The left hand axis shows the difference between the established house price index (ABS 6416) for the weighted average of the eight capital cities and the established house price index for Sydney (set to June 1986 = 100). An increase in this measure shows Sydney houses becoming relatively less expensive. The right hand axis shows the sum of the State's net overseas migration and net interstate migration.

Migration to the State appears to be inversely correlated with relative house prices. Chart 2.6 shows the share of total net migration to New South Wales. It also shows the extent to which the established house price index of the weighted average of the eight capital cities exceeds the Sydney established house price index (June 1986 = 100). Apart from the period between June 1989 and December 1995, when unemployment was high, there is an inverse relationship between relative house prices and the NSW migration share. New South Wales share of migration, for example, was lowest when Sydney house prices were highest relative to other capital cities in late 2003.

2.3 Population Projections

The future population is the sum of the existing population plus births and net migration, less deaths. The rate of population growth will depend on the fertility rate, life expectancy, and the level of overseas and interstate migration.

The key tool demographers use to project population is the cohort-component model. This divides the population into male and female, single-year age cohorts and projects the future population using assumptions about how many give birth, die or migrate at each age.

Fertility

In this report, the fertility rate is assumed to remain at 1.85 over the projection period. This is slightly higher than the current fertility rate of 1.83 in 2009 but slightly lower than the national fertility rate of 1.9 in the Australian Government's 2010 Intergenerational Report[4]. It is also higher than the 1.8 in the 'medium' scenario of the ABS's most recent (2008) projections[5].

The fertility rate assumption of 1.85 is higher than the 1.76 in the 2006-07 Report because of the recently observed rise in fertility. Sensitivity analysis of 'high' and 'low' scenarios, with fertility rates of 1.95 and 1.75 respectively, were also modelled.

[4] Commonwealth of Australia, *Australia to 2050: Future Challenges*, Canberra, 2010, http://www.treasury.gov.au/igr/igr2010/

[5] Australian Bureau of Statistics, *Population Projections, Australia, 2006 to 2101*, Cat No 3222.0, ABS, Canberra, 2008.

Life Expectancy

Life expectancy projections are derived from historical mortality rate trends using the Lee-Carter method [6], adopted by the US Census Bureau. The method employs principle components analysis to project death rates in five-year age cohorts to 2051. The death rates are converted to age-specific probabilities of dying and are then used to calculate the life expectancy at birth in each year of the projection.

In 2010, the life expectancy at birth in New South Wales was estimated at 80.1 years for men and 84.5 years for women. It is assumed to continue to improve, albeit at a slower rate, reaching:

- 85.9 years for men and 88.9 years for women by 2036
- 88.5 years for men and 90.9 years for women by 2051.

Migration

National net overseas migration is assumed to be 180,000 a year, consistent with the 2010 Australian Intergenerational Report and a recent speech by the Secretary of the Department of Immigration and Citizenship.[7] It is also assumed that the share of net overseas migrants who settle in New South Wales will be 30 per cent, less than the 30-year average of 42 per cent, but in line with recent trends.

New South Wales is assumed to lose a net 20,000 residents per year interstate. This is broadly in line with both the average of the last 5 years of 19,500 and the average of the last 30 years of 18,600.

Combining these assumptions, New South Wales will gain 54,000 residents a year from overseas and lose 20,000 interstate, yielding a net gain of 34,000 residents each year over the projection period. This gain is less than the average of 52,000 over the last five years, because the national net overseas migration assumption is lower than the average of last five years of 235,000.

For the purpose of sensitivity testing, alternative scenarios with net overseas migration assumptions of 160,000 and 200,000 per years have been modelled.

[6] Carter, L and Lee, R D. "Modeling and Forecasting U.S. Mortality: Differentials in Life Expectancy by Sex", International Journal of Forecasting Vol. 8, No. 3 (November 1992), pp 393-412.

[7] Metcalfe, A (Secretary, Department of Immigration and Citizenship, Australia), *Perspectives on Australian migration policy and administration*, speech, July 2010, http://www.immi.gov.au/about/speeches-pres/_pdf/2011/2011-07-22-perspectives-australian-migration-policy-admin.pdf

Projection Scenarios

The sensitivity of the projections to fertility and overseas migration are presented in Table 2.1. Life expectancy has been held constant in all three scenarios as the projections are less sensitive to life expectancy and it can be projected more accurately.

Table 2.1: NSW Population Projection Scenarios to 2051

Year	*1961*	*2010*	*2051*		
			Low	Medium	High
Key Assumptions:					
Fertility[(a)]	3.37	1.87	1.75	1.85	1.95
Net Overseas Migration ('000)	65	171	160	180	200
Population ('000)					
Total NSW Population	3,917	7,239	9,937	10,568	11,217
Under 15	1,140	1,355	1,545	1,742	1,950
65 and over	343	1,018	2,550	2,574	2,598
75 and over	113	478	1,494	1,501	1,508
Proportion (%)					
Under 15	29.1	18.7	15.5	16.5	17.4
65 and over	8.8	14.1	25.7	24.4	23.2
75 and over	2.9	6.6	15.0	14.2	13.4
Ratios (%)					
Aged Dependency Ratio[(b)]	14.1	20.9	43.6	41.2	38.9
Youth Dependency Ratio[(c)]	46.8	27.9	26.4	27.9	29.2
Total Dependency Ratio[(d)]	60.9	48.8	70.1	69.0	68.2

(a) The 2010 value has been estimated from the published number of births in 2010
(b) The ratio of people aged 65 and over to those between 15 and 64
(c) The ratio of those under 15 to those between 15 and 64
(d) The ratio of those under 15 and over 64 to those between 15 and 64

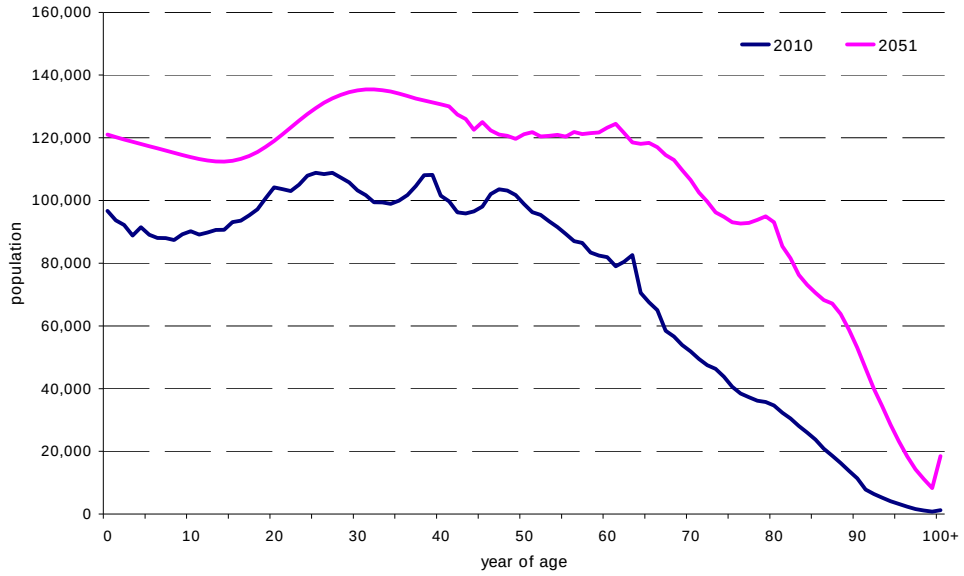
The most striking feature of Table 2.1 is the increase in the aged dependency ratio, from 14.1 per cent in 1961, to 20.9 per cent in 2010 and to 41.2 per cent in 2051 in the 'medium' scenario. But relative to 1961, the total dependency ratio is only 8 percentage points higher in the 2051 'medium' scenario. Importantly, the composition of the total dependency ratio changes dramatically, with the contribution from those aged less than 15 falling by around 40 per cent, while the contribution from those aged 65 and over nearly triples. The total dependency ratio is lower now than in both 1961 and 2051.

Table 2.1 also demonstrates that the future total dependency ratio will inevitably be high, since the ratio remains within a two percentage point range under all three migration and fertility scenarios. This is because, under the higher migration and fertility assumptions, decreases in the aged dependency ratio are partially offset by increases in the youth dependency ratio.

In the 'medium' scenario, or base case, the population of New South Wales is projected to reach 10.6 million by 2051, compared with 7.2 million in 2010. Over the whole projection period (2011 to 2051), the population is expected to grow at an average rate of 0.9 per cent a year, slightly less than the average rate of 1.1 per cent over the last 30 years.

However, the rate of growth declines steadily over the projection period. Between 2005 and 2010, the population grew at an average rate of 1.4 per cent per year. Average growth is projected to slow to 1.1 per cent per year between 2011 and 2030, and then further to 0.8 per cent between 2031 and 2051. This decline reflects lower birth rates (due to an older population) and unchanged immigration levels.

Chart 2.7: NSW Population Structure 2010 and 2051



Source: *Demographic Statistics, Australia* (Dec 2010) ABS Cat No 3101.0 and NSW Treasury

Chart 2.7 compares the structure of the NSW population in 2010 and 2051 for the 'medium' growth projection. In 2051, the population levels are higher across all age groups with a flattening of the age structure compared with 2010. In the later age years, the two curves diverge considerably. This suggests that, as longevity increases, the age at which the population profile begins to decline will shift from around 50 in 2010 to around 60 by 2051.

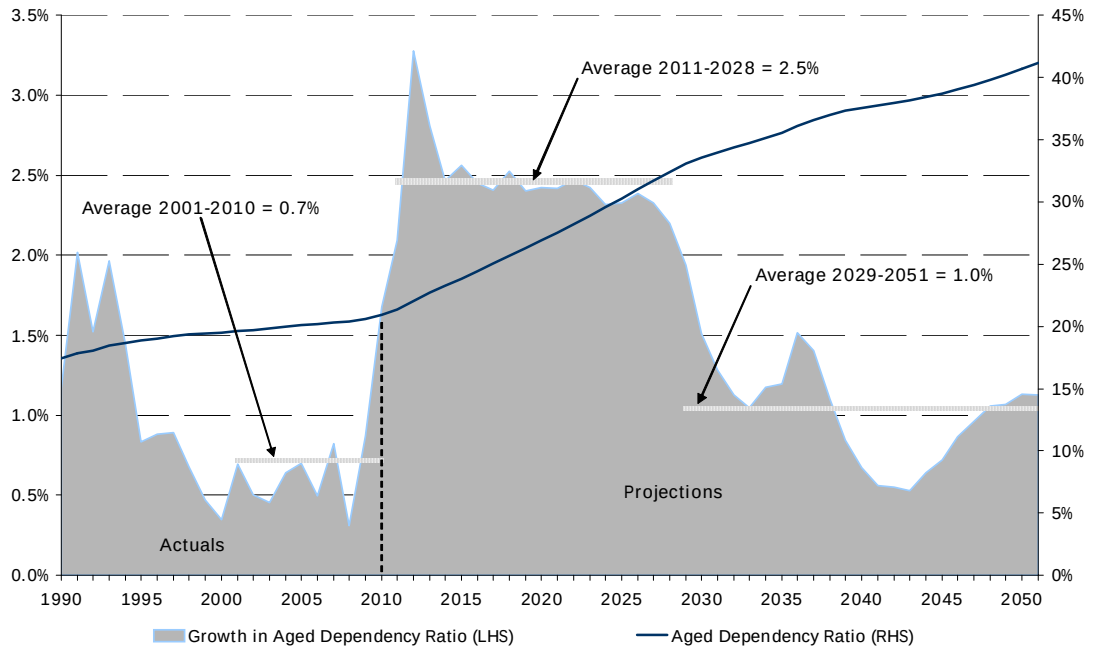
2.4 Ageing of the Population

As 2011 is the 65th anniversary of the onset of the baby boom, it is the start of a period of accelerated growth in the aged dependency ratio, which is expected to last for the next 18 years.

Chart 2.8 shows the aged dependency ratio rising from 20.9 per cent in 2010 to 33.0 per cent by 2029. The period of accelerated growth is the clearly visible 'bump' and echoes the baby boomer fertility 'bump' in Chart 2.1. As the baby boomers retire, growth in the aged dependency ratio will more than triple, from an average of 0.7 per cent a year over the last 10 years, to 2.5 per cent a year over the next 18 years.

The last of the baby boomers will have moved into traditional retirement age by 2029. From then on, the aged dependency ratio will continue to rise but at a slower rate. From 2029 to 2051, the ratio will increase from 33 per cent to 41.2 per cent, with the average growth rate easing to 1 per cent a year. Over the projection period, the aged dependency ratio almost doubles, from 20.9 per cent in 2010 to 41.2 per cent in 2051.

Chart 2.8: Ageing of the NSW Population



In contrast, the youth dependency ratio (the ratio of people aged below 15 years to those between 15 and 64) is expected to remain relatively stable to 2051. In 2010, this ratio was 27.9 per cent. It is expected to peak at 29.1 per cent in 2028, before settling back to 27.9 per cent by 2051.

The total dependency ratio (the ratio of people below 15 or above 64 to those between 15 and 64) rises from 48.8 per cent in 2010 to 69 per cent in 2051. This growth is entirely due to increases in the aged dependency ratio, as the youth dependency ratio is fairly stable. Importantly, the proportion of the population of traditional working age will decline from 67.2 per cent in 2010 to 59.2 per cent in 2051. This is the key factor that will constrain the rate of future workforce growth and hence slow the rate of overall economic growth.

Chapter 3: The Economy

3.1 Introduction

In the long term, economic growth will be determined by the three Ps—population, participation and productivity. The relationships are:

- population growth and age composition determines the future population aged 15 and over
- participation of the population aged 15 and over determines the labour force (employed plus unemployed)
- productivity growth and employment growth determine GSP growth.

This is consistent with the view that, over the long run, economic growth is limited by the capacity of the economy. Capacity is, in turn, determined by the available labour supply and the extent to which that labour can be productively employed to produce outputs.

Over the long run, the economy is assumed to follow a balanced growth path, without economic cycles. The three Ps framework is combined with a further set of assumptions to yield a model of the state economy which is detailed enough to provide inputs for the revenue and expenditure models.

The population projections were described in the previous chapter. This chapter details the modelling methods and assumptions that support the participation and productivity components of economic growth. The consequent economic projections are also reported and discussed.

3.2 Participation

The modelling for the 2006-07 Report assumed that workforce participation rates would remain constant, at then current values through the projection period. That report probably overemphasised the impact of ageing because, since its release, there have been significant increases in participation rates among older workers, particularly men. As a result, detailed workforce participation projections have been developed as a key component of the modelling work for this report.

The modelling of workforce participation rates uses a dynamic cohort approach, which the Productivity Commission used for its 2005 report *Economic Implications of an Ageing Australia*[1]. Cohort analysis uses trends in labour force participation among different age cohorts. These trends reflect the varying labour market behaviours of different groups that are caused by changing social attitudes (for example, the extent to which women are welcomed in the workforce), educational levels and historical events.

For example, members of Generation X (born between 1965 and 1981) have, on average, higher levels of education than previous generations, greater female participation given changes in social attitudes, and face higher costs of housing. Given these educational, social and economic factors, a higher level of workforce participation among that generation would be expected, which is indeed the case. Nationally, the participation rate among Generation X averaged 81.1 per cent between the ages of 25 and 34. Meanwhile, for the baby boomers, the workforce participation rate in the same age range averaged 76.3 per cent. Although the youngest members of Generation X are not yet out of this range, this increased propensity to work can be used to project their participation as they grow older.

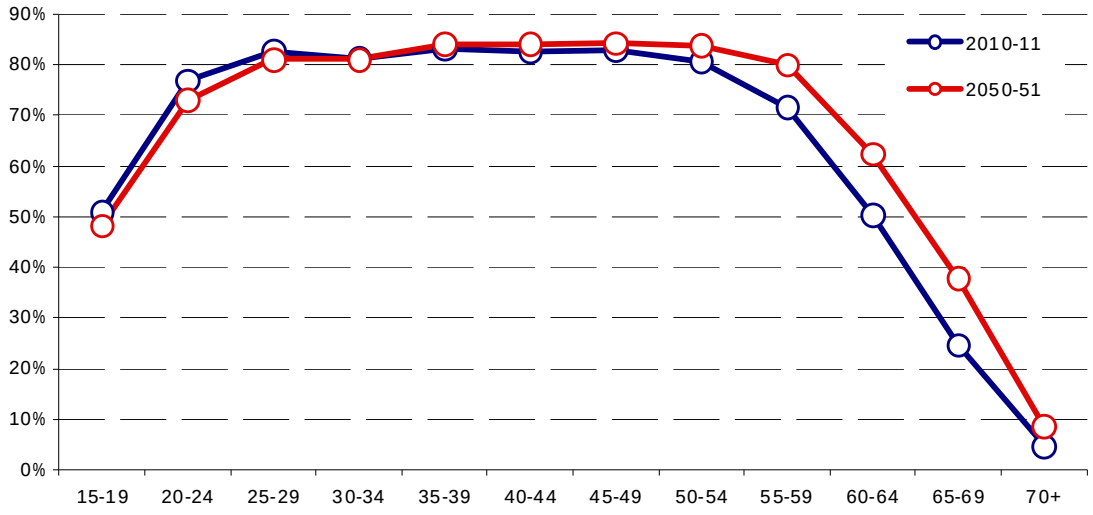
The modelling for this report does not adopt a generational approach, such as baby boomers and Generation X, but breaks the population into five-year age cohorts and calculates their workforce entry and exit rates. Rates are extrapolated by fitting Richards' Curves to the historical data. Richards' Curves are 'S' shaped curves (generalised logistics curves), which are useful because they continue an existing trend for a time, after which they tend towards an asymptotic value and become stable. The participation rates were back-solved from the workforce entry and exit rates.

Chart 3.1 compares the projected NSW labour force participation rates by age cohort for 2010-11 with those for 2050-51. It shows large increases in labour force participation for groups above 50 years of age by 2050-51. Factors contributing to these increases include higher levels of human capital and greater healthy life expectancy. Also evident is a small decline in participation for those under 30, which is consistent with trends towards higher educational attainment among these age groups.

The projected age-specific participation rates are weighted by the projected population to obtain the aggregate participation rate. Chart 3.2 shows aggregate labour force participation rates by gender, both historic and projected. The male participation rate falls from 70.8 per cent in 2010-11 to 63.2 per cent by 2050-51. Over the same period, female participation falls from 57.0 per cent to 55.4 per cent.

[1] Productivity Commission, *Economic Implications of an Ageing Australia*, Research Report, Canberra, 2005. See Technical Papers 2 and 3, http://www.pc.gov.au/projects/study/ageing/docs/finalreport/technicalpapers

Chart 3.1: NSW Participation Rates by Age Cohort – 2011 and 2051

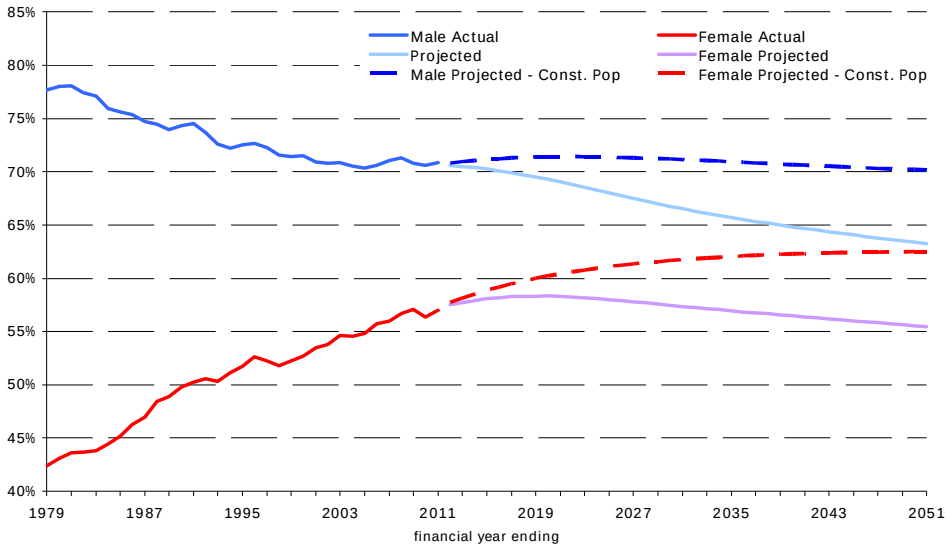


Source: *Labour Force, Australia, Detailed* (Jul 2011), ABS Cat No 6291.0.55.001 and NSW Treasury

The expected decline in the aggregate participation rate is mostly due to the ageing of the population. From around the age of 50, both male and female participation rates begin to decline and, beyond the age of 65, rates fall rapidly. Despite the large increases in participation among both men and women over 50 by 2051 (see Chart 3.1), the decline in overall participation caused by population ageing will not be offset.

Chart 3.2 also shows the projected aggregate NSW participation rates if the age-structure of the population were to remain constant, that is without ageing (dashed lines). Without ageing, workforce participation for men would drop only slightly from 70.8 per cent in 2010-11 to 70.2 by 2050-51, while female participation would rise from 57.0 per cent to 62.5 per cent.

Chart 3.2: NSW Labour Force Participation Projections, by Gender[2]

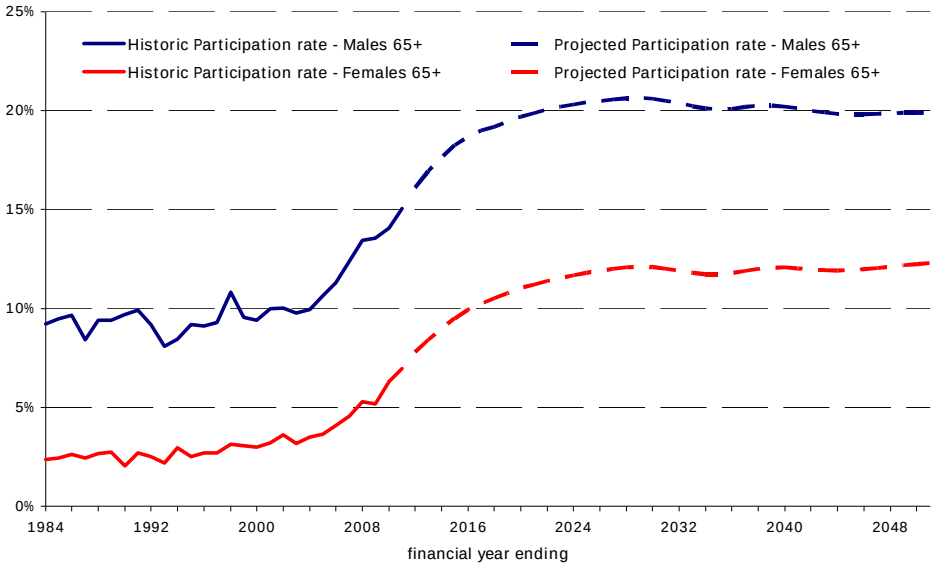


Source: *Labour Force, Australia, Detailed* (Jul 2011), ABS Cat No 6291.0.55.001 and NSW Treasury

Chart 3.3 shows the participation rate for NSW men aged 65 and over has risen from around 10 per cent in the late 1990s to 15.1 per cent in 2010-11. This trend is expected to continue for some time, with participation peaking at 20.6 per cent in 2028 before easing back to 19.9 per cent by 2050-51. For NSW women aged 65 and over, the participation rate has risen from around 3 per cent in the late 1990s to 7 per cent in 2009-10. It is expected to continue to rise to 12.3 per cent by 2050-51. Even with these large increases in workforce participation among the elderly, rates remain low when compared with younger age groups. Therefore, increases in participation among the elderly will not be enough to avert the slowdown in economic growth that is expected to occur because of ageing.

[2] The Constant Population series (shown in the dashed lines) show the projected participation rates for males and females based on the projected age-specific participation rates on the basis that the relative age profile of the population remains constant at current proportions. The solid lines represent the projected participation rates for males and females when the projected age-specific participation rates are combined with the projected population at each age.

Chart 3.3: NSW Participation Rate for the Over 65 Population



Source: *Labour Force, Australia, Detailed* (Jul 2011), ABS Cat No 6291.0.55.001 and NSW Treasury

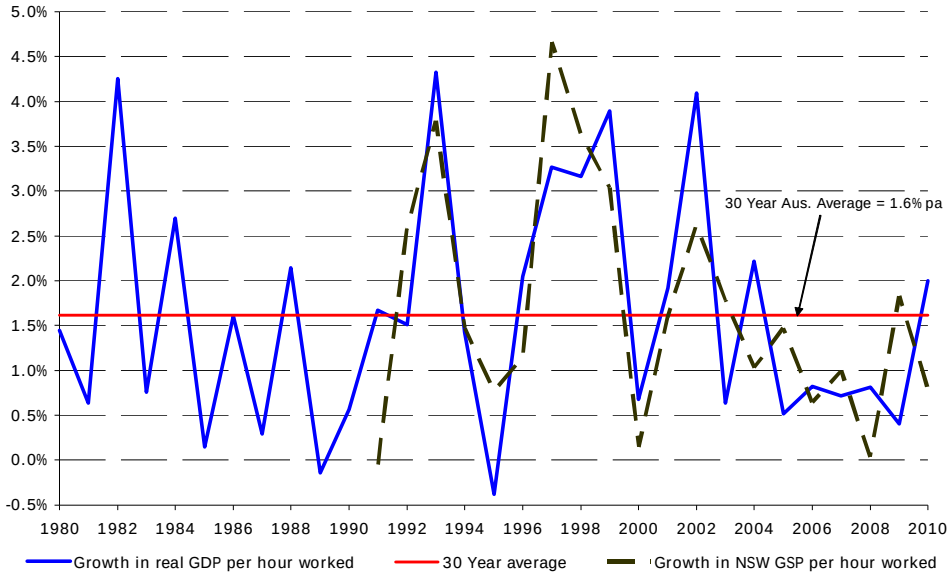
In conjunction with the 2010 Budget, the Australian Government announced that, from 1 July 2017, the qualifying age for the aged pension will increase from 65 to 65.5 years. The qualifying age will then go up by six months every two years, reaching 67 by 1 July 2023. This policy change is likely to increase participation rates for the elderly. While the effect has not been explicitly modelled, the participation rate projections for the over 65s continue the existing upward trend.

3.3 Productivity

Chart 3.4 shows national labour productivity growth over the last 30 years, where productivity growth is defined as the growth in real gross domestic product (GDP) per hour worked. Although there is considerable variation year to year, average annual labour productivity growth over the last 30 years has been 1.6 per cent. A period of low growth through the 1980s was followed by high growth in the 1990s and the early part of the last decade. Over the last six years, productivity growth has slowed to an average of 0.9 per cent a year.

The acceleration in productivity growth from the mid-1990s to the mid-2000s has been attributed to microeconomic reform that began in the 1980s and continued into the 1990s. In particular, tariff reductions, labour market decentralisation, floating of the currency and financial deregulation saw labour and capital move from lower to higher productivity activities.

Chart 3.4: Real GDP and GSP per hour worked



Source: *Australian System of National Accounts*, 2009-10, ABS Cat No 5204.0; *Australian National Accounts: State Accounts*, 2009-10, ABS Cat No 5220.0 and *Labour Force, Australia, Detailed* (Jul 2011), ABS Cat No 6291.0.55.001

The ABS does not publish productivity data for New South Wales, although, given the recent release of 'hours worked' data at a state level, a series can be derived. Chart 3.4 shows that, since 1990-91, NSW and national productivity have grown at similar rates. The State's average annual rate has been 1.7 per cent compared with the national average of 1.8 per cent.

The approach adopted is to assume that NSW productivity growth will remain in line with national productivity growth. An assumption of 1.6 per cent a year, based on the average of the last 30 years nationally, has therefore been used. The 2010 Australian Intergenerational Report used the same productivity assumption.

This assumption is lower than the 1.75 per cent a year in the 2006-07 Report because productivity performance has been lower in recent years and several years of strong performance in the late 1970s have now left the 30-year historical window.

3.4 Other Modelling Assumptions

In projecting the economy 40 years into the future, it is not possible to forecast the timing and extent of economic cycles arising from unforeseen shocks. The projections underpinning this report start with the most recent economic data and apply long-term growth rates consistent with projected growth in population, productivity and participation.

The economy is assumed to follow an equilibrium path through the projection period. An important consideration, therefore, is the extent to which the economy is in equilibrium at the start of the period. If the economy is above (or below) its equilibrium capacity, it is likely to experience a period of slower (or higher) economic growth until it is back on a stable growth path. If this is not taken into account, the level of output will remain above (or below) its equilibrium values throughout the period.

The Global Financial Crisis has recently constrained the State's economic growth and this is expected to continue, with below-trend growth in 2011-12. After a period like this, the economy will generally grow above trend for some time as underused capacity is taken up and the output gap is closed. To capture this, the Budget forecasts (and projects) above-trend growth between 2012-13 and 2014-15, and these have been incorporated into the economic model. It is assumed that the economy will then continue to grow smoothly along its equilibrium path after 2014-15.

Several other key economic assumptions underlie the economic projections, in particular:

- the long-run rate of consumer price inflation (CPI) will be 2.5 per cent a year, at the mid-point of the Reserve Bank of Australia's inflation targeting range of 2-3 per cent a year
- the long-run, non-accelerating inflation rate of unemployment (NAIRU) is 5 per cent a year.

Both these assumptions are consistent with the approach taken in the 2010 Australian Intergenerational Report.

One final assumption, also a feature of the Intergenerational Report, is a gradual decline in the terms of trade from current historically high levels. This is implemented by introducing an assumption of a ¼ per cent a year wedge between the CPI and the GDP deflator from 2014-15 to 2027-28. While the terms of trade decline, nominal GDP and GSP will therefore be ¼ of a percentage point less than the CPI. This assumption has no effect on the quantity of goods and services Australia produces, merely their price.

3.5 Economic Trends and Outlook

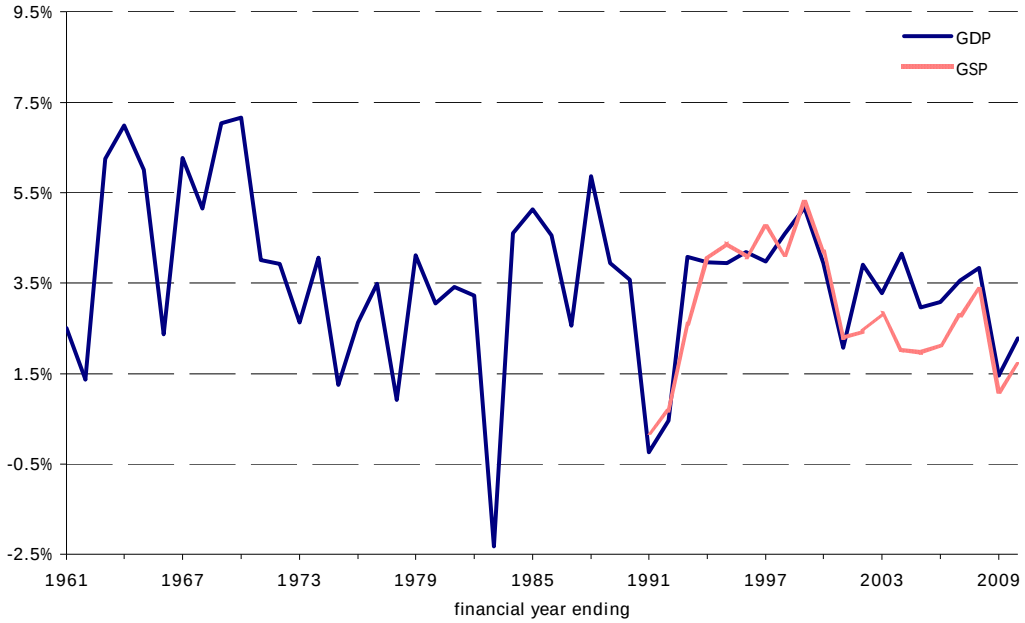
Historic Economic Trends

Between 1960-61 and 2009-10, Australian real GDP growth averaged 3.6 per cent a year. As shown in Chart 3.5, the pace of real GDP growth has varied greatly over time.

Between 1960-61 and 1969-70, average real GDP growth was 5.1 per cent a year, but fell to 3.0 per cent a year in the following decade. Between 1980-81 and 1989-90, it rose again to 3.4 per cent a year, before the early 1990s recession. Between 1992-93 and 2007-08, it was 3.8 per cent a year. Over the last two years, following the Global Financial Crisis, real GDP growth has again slowed to 1.9 per cent a year.

Much of the high growth in real GDP in the 1960s, as compared with the period from 1992-93 to 2007-08, is due to growth in population. From 1960-61 to 1969-70 Australia's population growth averaged 2.0 per cent per annum, whereas from 1992-93 to 2007-08 population growth averaged 1.3 per cent per annum. As a result, real GDP per capita growth was less divergent, averaging 3.0 per cent from 1990-61 to 1969-70 and 2.5 per cent in the latter period.

Chart 3.5: Real GDP (1961-2010) and NSW GSP Growth (1991-2010)



Source: *Australian System of National Accounts*, 2009-10, ABS Cat No 5204.0 and *Australian National Accounts: State Accounts*, 2009-10, ABS Cat No 5220.0

Chart 3.5 also shows growth in real NSW GSP, which is available from 1989-90. Since 1990-91, real GSP growth has averaged 2.8 per cent a year, while real GDP growth has averaged 3.2 per cent a year. Almost all of this difference is due to different rates of population growth. This is highlighted by the fact that, since 1989-90, average growth in Australia's real GDP per capita has been 1.8 per cent a year compared with growth in real NSW GSP per capita of 1.7 per cent a year.

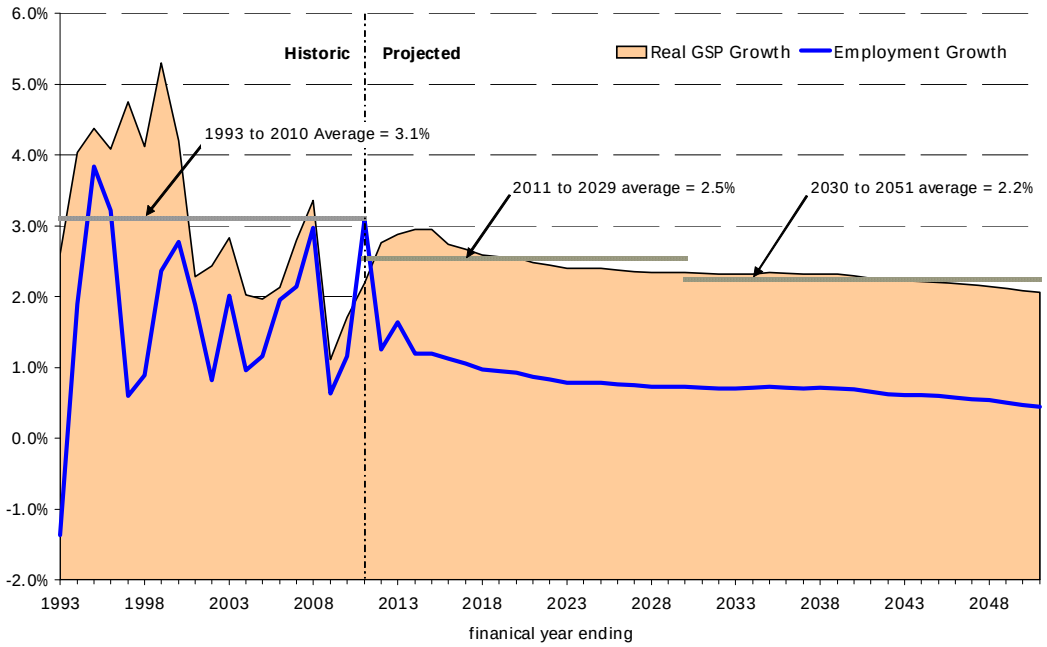
From 2000-01 to 2007-08, a gap opened up between economic growth in New South Wales and Australia. About half of this gap can be accounted for by greater rates of population growth in the rest of Australia compared with New South Wales. The rest reflects slower per capita economic growth in the State during this period. Since 2007-08, this gap appears to have narrowed.

Projected Economic Outlook to 2051

Applying the Budget forecasts from the base year (2009-10) and then the three Ps framework, the equilibrium path of the economy is projected to 2050-51. Over the next 40 years, the real economy is expected to grow at an average annual rate of 2.4 per cent, 0.4 percentage points less than average annual growth over the 20 years to 2009-10.

This reduction in real economic growth is mainly due to slower population growth and ageing. Slower population growth is the result of the assumption that national net overseas migration remains steady at 180,000 people a year. The ageing of the population causes the workforce to grow at a slower rate than the overall population.

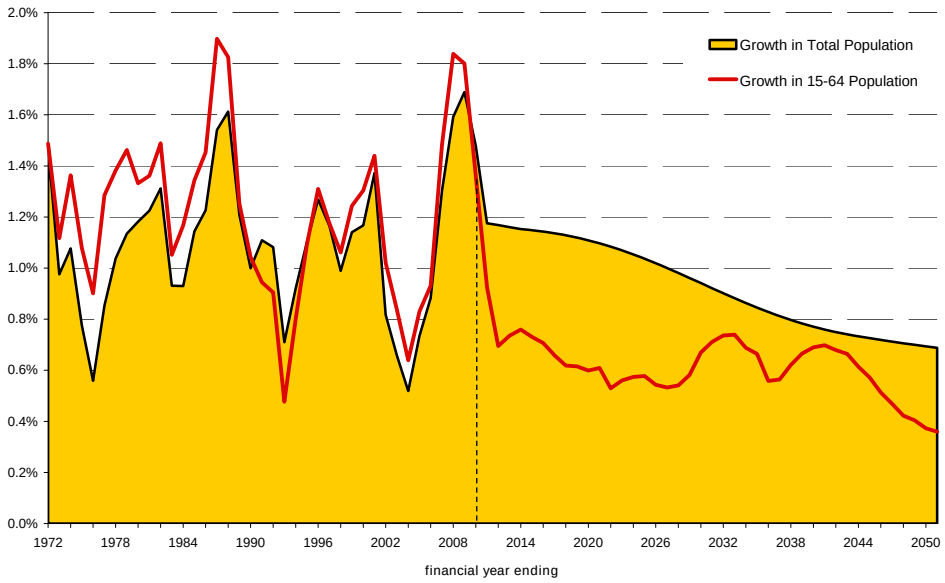
Chart 3.6: NSW Economic and Employment Growth



Source: *Australian National Accounts: State Accounts*, 2009-10, ABS Cat No 5220.0, *Labour Force, Australia*, Jul 2011, ABS Cat No 6202.0 and NSW Treasury

Chart 3.6 shows the historic and projected economic and employment growth in New South Wales. Since 1992-93, when the economy emerged from recession, real GSP growth has averaged 3.1 per cent a year. Projecting over the 18 years between 2010-11 and 2028-29, when the baby boomers will move into traditional retirement, average real GSP growth is expected to slow to 2.5 per cent a year. From 2029-30 to 2050-51, growth will slow further, to 2.2 per cent a year.

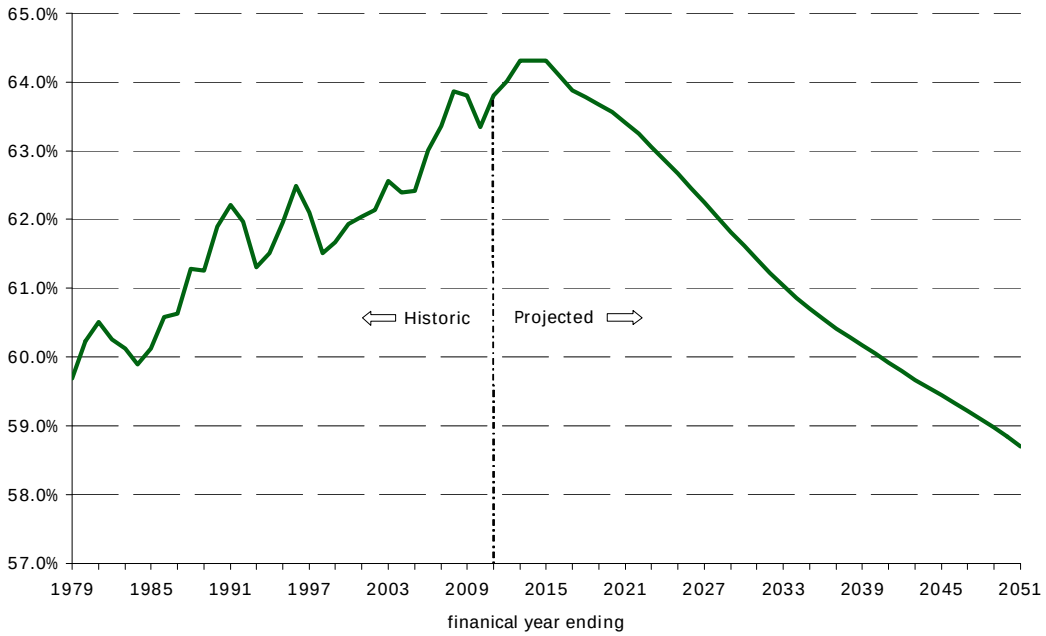
Chart 3.7: Historic and Projected Growth of Total and 15-64 Population



Source: *Australian Demographic Statistics*, Dec 2010, ABS Cat No 3101.0 and NSW Treasury projections

Chart 3.7 shows New South Wales is about to enter a period where the growth in population aged between 15 and 64—the ages most likely to participate in the labour force—will be less than total population growth. Furthermore, growth in the population of 65s and over, who have lower participation rates, will outstrip growth in the traditional working age population, and the total population. This will cause the aggregate labour force participation rate to fall over the projection period (see Chart 3.8).

Chart 3.8: NSW Historic and Projected Aggregate Labour Participation Rate



Source: *Labour Force, Australia*, Jul 2011, ABS Cat No 6202.0 and NSW Treasury

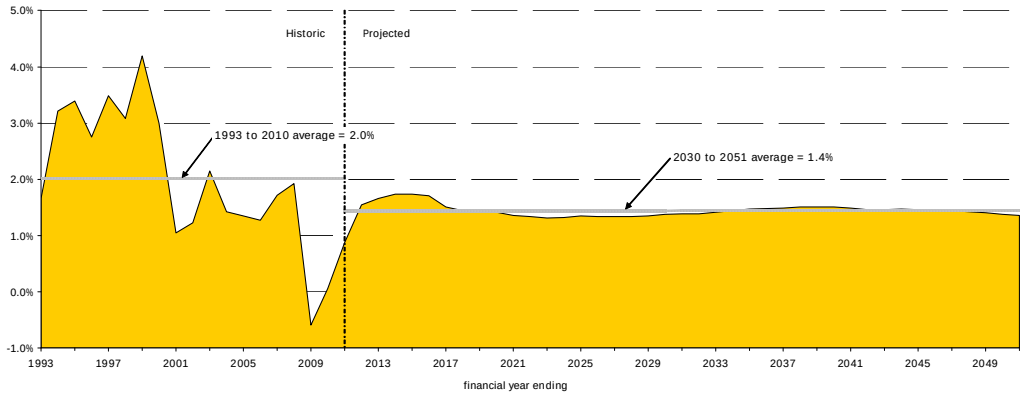
Chart 3.8 combines historic and projected aggregate labour force participation rates. The projection was made by combining population projections with age-specific labour participation rate projections. It shows the aggregate labour participation rate increased from 59.7 per cent in 1978-79, to 63.8 per cent in 2010-11. The most significant trend over this period has been the upward movement in female participation. Looking forward, the participation rate is expected to peak at 64.3 per cent in 2013-14 and then steadily decline throughout the projection period, falling to 58.7 per cent by 2050-51. Over the projection period the dominant trend will be ageing.

The decline in participation will constrain growth in the labour force and employment, which will in turn limit growth in real GSP. It is not assumed, however, that this will result in economy-wide labour supply shortages leading to high wage growth, as this would be unsustainable in the long run. The Reserve Bank would respond by increasing interest rates to slow the economy. It is, therefore, assumed that economic growth over the long run will be effectively constrained to growth in the labour supply and labour productivity[3].

Since real GSP per capita growth comprises growth in both participation and labour productivity, the implication of a declining participation rate is that growth in real GSP per capita will slow. Chart 3.9 shows historic and projected growth in real GSP per capita. In the 18 years after the recession, from 1992-93 to 2009-10, real GSP per capita grew by an average of 2.0 per cent a year.

Over the next 40 years, growth in real GSP per capita is projected to average 1.4 per cent a year. In 2022-23, growth is expected to decline to a low of 1.3 per cent. After this, it will slowly increase to a maximum of 1.5 per cent in 2038-39 before declining to 1.4 per cent a year in 2050-51.

Chart 3.9: Growth in Real NSW GSP per Capita



Source: *Australian National Accounts: State Accounts*, 2009-10, ABS Cat No 5220.0 and NSW Treasury

[3] For a more detailed discussion of this issue, see the Productivity Commission's research report, *Economic Implications of an Ageing Australia*, pp 69-71.

The 1.4 per cent a year average GSP per capita growth expected over the next 40 years is less than the labour productivity assumption of 1.6 per cent. This difference is mostly due to declining labour force participation.

Summary

Over the next 40 years, as compared with the last 18 years, growth in real GSP per capita is expected to be 0.6 percentage points a year lower, principally because of lower workforce growth.

Table 3.1 presents a summary of the key projections for the NSW economy. Despite the lower growth in real GSP per capita, overall living standards are still expected to continue to improve. Between 2010-11 and 2050-51, the level of real GSP per capita is projected to rise by 78 per cent. The main driver will, however, be labour productivity rather than improvements in labour force participation.

Table 3.1: Average Growth Rates of the Key NSW Economic Variables (per cent per annum)

(per cent)	Decade Average						40 year average
	1991-92 to 2000-01	2001-02 to 2010-11	2011-12 to 2020-21	2021-22 to 2030-31	2031-32 to 2040-41	2041-42 to 2050-51	2011-12 to 2050-51
Nominal GSP	5.3	5.8	5.2	4.8	4.9	4.7	4.9
Real GSP	3.6	2.3	2.7	2.4	2.3	2.2	2.4
Productivity	2.3	1.0	1.6	1.6	1.6	1.6	1.6
Population	1.1	1.0	1.1	1.0	0.8	0.7	0.9
Labour Force	1.2	1.6	1.1	0.8	0.7	0.6	0.8
Employment	1.4	1.7	1.1	0.8	0.7	0.6	0.8
Participation	0.0	0.3	-0.1	-0.3	-0.2	-0.2	-0.2
GSP per Capita	2.5	1.1	1.6	1.3	1.5	1.4	1.4

Chapter 4: Revenue

4.1 Introduction

The modelling builds up aggregate revenue from individual sources based on their key economic and demographic drivers. It uses the demographic and economic projections in Chapter 2 and Chapter 3 as inputs.

The revenue sources are aggregated into eight major categories:

- state taxation
- goods and services tax (GST)
- Specific Purpose Payments (SPPs) from the Australian Government
- National Partnership Payments (NPPs) from the Australian Government
- sale of goods and services
- dividends and tax equivalent payments
- fines, regulatory fees and other revenues
- other grants and contributions.

Interest income has been excluded, as this source is not included in the primary balance, which is the key reporting metric for this report. Unless stated otherwise, revenue should be taken to mean general government revenue, excluding interest.

NSW general government revenue is very volatile. The key drivers of this volatility are the property market cycle, the economic cycle and Australian Government policy on grants. Like the economic projections in Chapter 3, the revenue projections follow a long-run equilibrium path over the next 40 years.

Revenues are modelled on a 'no policy change' basis, namely that current policy settings will continue to apply through the projection period. It is assumed that:

- for taxation, current rates and indexing policies for thresholds will remain in place
- for fees and charges, revenue will increase in line with volume and indexation of existing fees and charges.

Where an econometric relationship is established between revenue items and key underlying economic and demographic drivers, this has been done using policy-adjusted time series. If these series were not available for a revenue item, a simpler growth rate assumption linked to the key drivers has been applied.

4.2 State Taxation

Taxation revenue was modelled by deriving historical policy-adjusted time series, and then using econometric analysis to establish long-run relationships between taxation sources and their underlying macroeconomic drivers. The main drivers for state taxes include property prices, employment, population, wages, GDP, GSP and the CPI.

Taxation is expected to grow at an average of 5.2 per cent a year over the projection period. This is higher than projected nominal GSP growth (4.9 per cent) because of the projected growth in transfer duty, land tax and hotel and club gaming duties. The first two taxes are driven by property price growth and gaming revenue is driven by a high elasticity with respect to wages.

The projected growth in taxation revenue is also higher than growth since 2001-02, which was 4.1 per cent. This is mainly because policy changes since the GST was introduced in 2000 have generally reduced taxation income.

Payroll tax is the largest single source of taxation revenue for New South Wales and second to GST for overall government revenue. Payroll tax revenues were $6.1 billion in 2009-10. The tax was modelled using average wages and employment as inputs. Over the projection period, it is expected to grow at an average annual rate of 4.8 per cent, slightly less than nominal GSP growth.

Property prices are the major driver for the next largest sources of tax revenue: transfer duty and land tax. In the model, property prices are proxied by a house price index based on the ABS House Price Index[1] for established Sydney houses. The econometric model links long-run house prices to wages, employment and stock market returns. This results in a 'medium' option for house price growth averaging 5.7 per cent a year over the projection period.

Two other scenarios are examined:

- a 'low' option where house prices increase with wages growth, at 4.1 per cent a year
- a 'high' option where house prices grow at 7.2 per cent a year, equal to the average annual increase in the price of the Sydney established house price index since the ABS House Price series began in June 1986.

Table 4.1 shows the sensitivity of taxes and overall revenues to the different house price scenarios. Taxation revenue is sensitive to the house price growth model and overall government revenue is somewhat sensitive.

[1] House Price Indexes: Eight Capital Cities, ABS Cat No 6416.0

Table 4.1: Revenue Sensitivity to House Price Model

House Price Model	Average Annual House Price Growth (%)	Average Annual Growth in Taxation Revenue (%)	Average Annual Growth in Overall Revenue (%)
Wages ('low')	4.1	4.8	4.7
Econometric ('**base case**')	5.7	5.2	4.9
Historical ('high')	7.2	5.7	5.1

4.3 Federal Funding

Goods and Services Tax

The goods and services tax (GST) is a 10 per cent levy on the sale of goods and services, which the Australian Government collects and distributes to the states according to a formula recommended by the Commonwealth Grants Commission (CGC). The CGC formula is designed to achieve fiscal equalisation. This means GST revenue is redistributed above or below state population shares, to recognise differences between the revenue raising capacity and expenditure needs of the states[2].

A state's share of GST revenue equals the population share multiplied by the state relativity. The CGC recommends state relativities based on a formula using social, fiscal and economic data. The modelling of the GST distribution means both the total national GST pool and the NSW relativity need to be estimated.

The CGC relativity for New South Wales is currently at a historical high of 0.96. This high relativity is largely the result of strong relative economic growth in some other states from current high commodity prices as well as recent weakness in the NSW housing sector. It has therefore been assumed that the NSW GST relativity will stay constant at 0.96 to 2014-15 when, to match the assumed decline in the terms of trade, it will linearly decline. By 2028-29, the relativity reaches 0.91, where it remains for the rest of the projection period.

[2] For further information on fiscal equalisation, please see http://www.cgc.gov.au/fiscal_equalisation/key_information

As the population ages, it would be reasonable to expect that a higher proportion of household consumption would be directed towards health, which is free from GST. Is also likely that a lower proportion would be directed towards education, which is also GST-free. It is not clear which of these effects would dominate. The national GST pool is therefore modelled by breaking down aggregate consumption by age cohort. Each cohort's consumption is then subdivided into GST and GST-free categories, based on spending weights from the ABS Household Expenditure Survey[3]. A rate of 10 per cent is applied to the GST items to determine the total GST pool.

The national GST pool is expected to grow at an average annual rate of 5.2 per cent, in line with projected average annual nominal GDP growth. This implies a more or less constant share of GST revenues to GDP, consistent with projections contained in the Australian Government's 2010 Intergenerational Report.

This outcome differs from the 2006-07 Report, which showed GST revenues falling as a share of nominal GDP because it was expected that ageing would drive a higher share of consumption on health services. Detailed analysis of consumption patterns by age suggest that higher spending on health is offset by lower spending on education.

The state share of GST revenues is projected to grow at an average of 4.8 per cent a year, slower than the national pool. This is the result of lower projected population growth for New South Wales relative to other states and the impact of the terms of trade on the CGC relativity.

If it was assumed that the NSW relativity were to remain at 0.96, the average GST revenue growth would increase to 5.0 per cent over the projection period. However, the average projected growth rate of total revenue would be unaffected at 4.9 per cent a year.

Specific Purpose Payments

Commonwealth Specific Purpose Payments (SPPs) are modelled using the agreed escalation formulae provided in the Commonwealth funding agreements. Economic parameters feed in directly from the demographic and economic sections of the model. In certain cases, other parameters, such as the minimum rates adjustment awarded by Fair Work Australia and a health cost deflator, have been modelled. It has also been assumed that the current agreed escalation factors will remain in place when national agreements are reviewed.

[3] Household Expenditure Survey, Australia, 2003-04, ABS Cat No 6530.0

The projections suggest that SPPs will grow at an average of around 5.6 per cent a year over the projection period. The aggregate SPP funding is made up of the following SPPs growing at annual average rates in:

- Health at 6.2 per cent
- Education at 4.7 per cent
- Skills and Workforce Development at 1.0 per cent
- Disability Services at 5.1 per cent
- Housing at 1.0 per cent.

SPP funding growing at above nominal GSP growth is primarily driven by the Health SPP, which is determined by casemix-adjusted population growth and health cost inflation. It should be noted that the 2010 Australian Intergenerational Report suggested that the national Health SPP funding pool would grow at around 7 per cent a year, whereas this report models the growth over the next decade at 6.5 per cent a year. The difference may be the result of an assumption that health costs increase with wages, whereas this report assumes that health cost inflation is approximated by an index with a fifty-fifty weighting of wage costs and CPI. This gives a reasonable match with historical movements in the Australian Institute of Health and Welfare health price deflator[4].

The Schools SPP model depends on the share of students attending public schools in New South Wales and Australia. There has been a fairly consistent trend away from public schools in Australia, although recently it has shown signs of slowing, particularly in New South Wales. For this report, it has been assumed that the current rates of decline will diminish in the medium term and, in the long run, the public school share will stabilise. In New South Wales, it is projected to fall from 66.3 per cent in 2008-09 to 63.1 per cent in 2050-51 (see Chart 5.5).

It should be noted that the very low rise in the Skills and Workforce Development and Housing SPPs, averaging around 1.0 per cent a year, is because of their link to the Australian Department of Finance and Deregulation's Wage Cost Index. This index is constructed by taking the quantum of minimum wage adjustments awarded by Fair Work Australia as a percentage of the average wage—rather than the minimum wage. As a result average growth in the index is less than CPI, because the increase in the federal minimum wage is generally set to retain the purchasing power of those on the minimum wage, not on the average wage (which in level terms is nearly double the minimum). Furthermore, in its Annual Wage Review of 2010, Fair Work Australia awarded a 3.4 per cent rise to all rates of pay, not just the minimum. It is projected that this index will grow at an average of only 0.7 per cent a year over the long term and will therefore not keep pace with real wage pressures.

[4] Australian Institute of Health and Welfare, *Health expenditure Australia 2007–08.* Health and welfare expenditure series no. 37. Cat no HWE 46. AIHW, Canberra, 2009.

A National Health Reform Agreement was signed in August 2011, which replaces the Health SPP from 2014-15 by an Australian Government commitment to fund 45 per cent of efficient growth in public hospital activity. This commitment will rise to 50 per cent from 2017-18. The agreement will link the growth of federal public hospital funding to growth in activity and the efficient price. This recent policy change could not be included in the modelling for this report. Budget Paper No. 2 contains details of the impact of the agreement (and the 2011-12 Budget measures) on the fiscal gap.

National Partnerships

National Partnerships are those Australian Government grants tied to specific programs outside the SPP framework. They include programs that are specific and time-limited as well as programs that are long-standing and likely to continue. Short-term economic stimulus measures, such as the Building the Education Revolution program, were funded as National Partnerships.

Each National Partnership program has been projected by assessing its timeframe and escalation mechanism to 2022-23. Beyond 2022-23, National Partnerships revenue has been indexed by CPI and population growth.

National Partnerships funding is expected to grow at a subdued average annual rate of 0.3 per cent a year over the 40 years to 2050-51, due to the:

- withdrawal of the economic stimulus measures
- tailing out of payments for specific Australian Government-funded infrastructure projects
- expiry of time-limited programs that the Australian Government has not confirmed will continue.

Alternative approaches have been modelled for sensitivity testing and the results are shown in Table 4.2. The 'base case' represents programs individually assessed to 2022-23 and thereafter escalated by CPI plus population growth. The second scenario is that, after the stimulus programs have expired, National Partnerships funding will grow at CPI plus population growth over the projection period. The third scenario involves maintaining National Partnership funding as a proportion of nominal GSP after the expiry of the stimulus programs.

Table 4.2: National Partnerships Funding — Alternative Scenarios

Funding Model	Average Annual Growth in NP Funding (% a year)	Average Annual Growth in Total Revenue (% a year)
Base case	0.3	4.9
Growth with CPI and population	1.1	4.9
Growth with nominal GSP	2.3	4.9

Depending on the assumptions made about the renewal and escalation of programs, there is major variation in the growth rate of National Partnerships funding. Yet there is little impact on total revenue growth over the projection period because, once the economic stimulus funding ends, National Partnerships make up only a small proportion of overall revenues. It should be noted, however, that National Partnerships have a large impact on revenue growth over the forward estimates period because of the withdrawal of fiscal stimulus and the expiry of time-limited programs.

For many of the programs funded under National Partnerships, the income is tied to specific expenditures. If funding was discontinued, there would be a matching reduction in spending. Likewise, if more revenue was made available, it would be tied to additional expenditures. The fiscal gap, which is the change in the primary balance over the projection period, is therefore not considered sensitive to assumptions about National Partnerships revenue.

4.4 Other Revenue

Sale of Goods and Services

This revenue item contains a mix of income, including rents, entry fees, tolls and hospital patient fees. In the past, successive governments have decided to increase the range of government services that attract charges and some existing fees have been escalated at rates above CPI.

The introduction of new fees and charges, or increases of existing fees above their usual indexation factor, is considered a policy change. These policy changes have had a very small impact on overall government revenue, and there are too many to consider individually. It is therefore not feasible to construct a policy-adjusted time series for these revenue items, and hence no econometric analysis was performed.

Given that the revenue projections are based on 'no policy change', user charges (or fees) have generally been escalated to take account of volume and price. In most cases, this has meant annual growth set to CPI plus population growth. However, if more appropriate volume or price indicators were available, these have been used. For example, tolls and entry fees are escalated by CPI and population growth, while patient fees are escalated with private insurance coverage and the health cost index. In total, this revenue source is expected to grow at an average rate of 4.5 per cent a year over the next 40 years.

Dividends and Tax Equivalents

Dividends and tax equivalent payments from the NSW public trading enterprise (PTE) sector are taken from the business data to 2020-21, beyond which they are escalated in line with real GSP plus CPI. Nominal GSP has not been used so the assumed reduction in the terms of trade does not affect modelled income from state-owned businesses.

The expected PTE revenues take into account the sales of NSW Lotteries, energy retailers and the two Gentrader contracts, but do not assume any further asset sales.

The introduction of the carbon tax will have an impact on dividend and tax equivalent revenue from the PTE sector as the electricity generators are expected to be adversely affected. The carbon tax's impacts on the dividends and tax equivalent payments are in the first 10 years of the revenue modelling, after which revenues are assumed to continue to increase with real GSP plus CPI. Uncertainties around the impact of the carbon tax on electricity generation over the longer term means that PTE revenue growth may not keep up with real GSP plus CPI.

Over the next 40 years dividends and tax equivalent revenues are projected to grow at an average rate of 4.6 per cent a year.

The carbon tax reduces the average growth of dividend and tax equivalent revenues by 0.3 percentage points a year over the projection period. Without the carbon tax, the long-term growth in PTE revenue would be 4.9 per cent a year.

Fines, Regulatory Fees and Other Revenues

It has not been feasible to construct a policy-adjusted time series for fines, fees and other revenues. Each revenue stream was instead examined and modelled on macroeconomic drivers.

Mining royalty revenues, which make up around half of the revenue in this category, were projected by adopting the forward estimates assumptions for price and tonnage. Beyond the forward estimates, it is assumed that volume will increase at the long-term rate of 1.8 per cent a year, in line with ABARES estimates.

Price should increase in line with long-term inflation of 2.5 per cent. The assumption that the terms of trade will unwind from 2014-15 to 2027-28 by 0.25 per cent a year has, however, been maintained by escalating annual price growth by only 2.25 per cent during this period. While lower price growth may be offset to some degree by exchange rate effects, the overall results are not sensitive to this assumption. Mining royalties are therefore expected to grow by 5.0 per cent a year over the projection period.

Overall, revenue from fines, regulatory fees and other sources is expected to grow at an annual average rate of 4.5 per cent over the next 40 years.

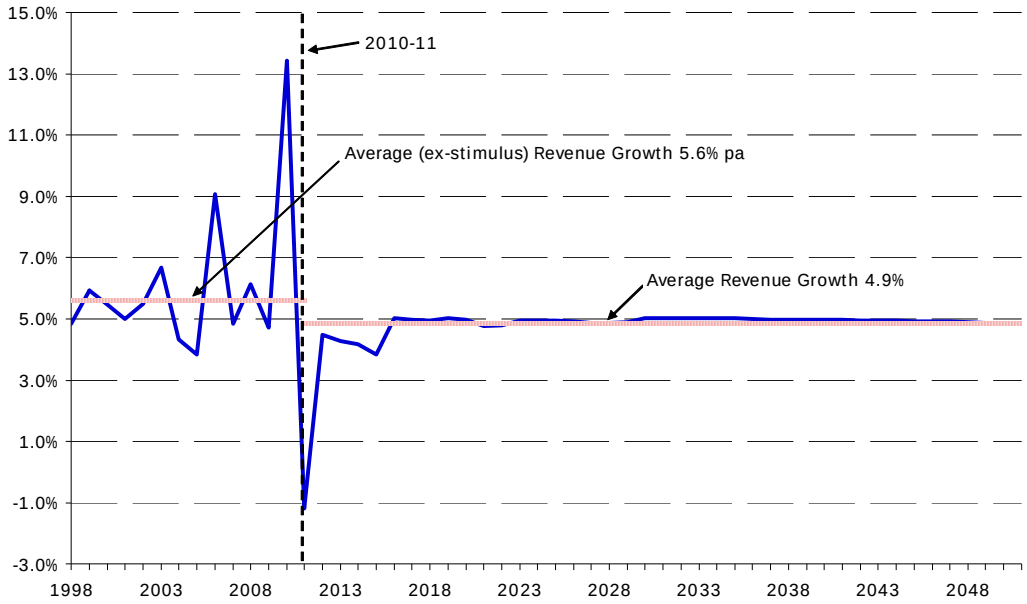
4.5 Revenue Trends and Outlook

Total revenue is projected to grow at an average of 4.9 per cent a year over the next 40 years, in line with projected growth in nominal GSP of 4.9 per cent (see Chart 4.1). This is significantly lower than 5.9 per cent growth experienced since 1997-98. Fiscal stimulus measures boosted revenue growth in 2008-09 and 2009-10 and then slowed growth in 2010-11. If fiscal stimulus measures are removed, the average annual growth rate of government revenue over the last 14 years falls to 5.6 per cent compared with nominal GSP growth of 5.8 per cent. The slower projected rate of revenue growth can largely be attributed to the slower rate of projected economic growth detailed in Chapter 3.

Slower revenue growth over the projection period, compared with the past 14 years, is consistent with the expectation of a lower rate of population and per capita economic growth in the future. It should be noted, however, that past and projected revenue growth rates are not strictly comparable, as there have been many policy changes over the last 14 years that affect revenue, whereas the projection is based on 'no policy change'.

Chart 4.1 suggests a low growth rate for revenues during the forward estimates period. This is mainly driven by the withdrawal of fiscal stimulus funding and the expiry of National Partnerships. An indication of the medium-term trend is the rate of growth of 5.0 per cent a year for the six years beyond the forward estimates.

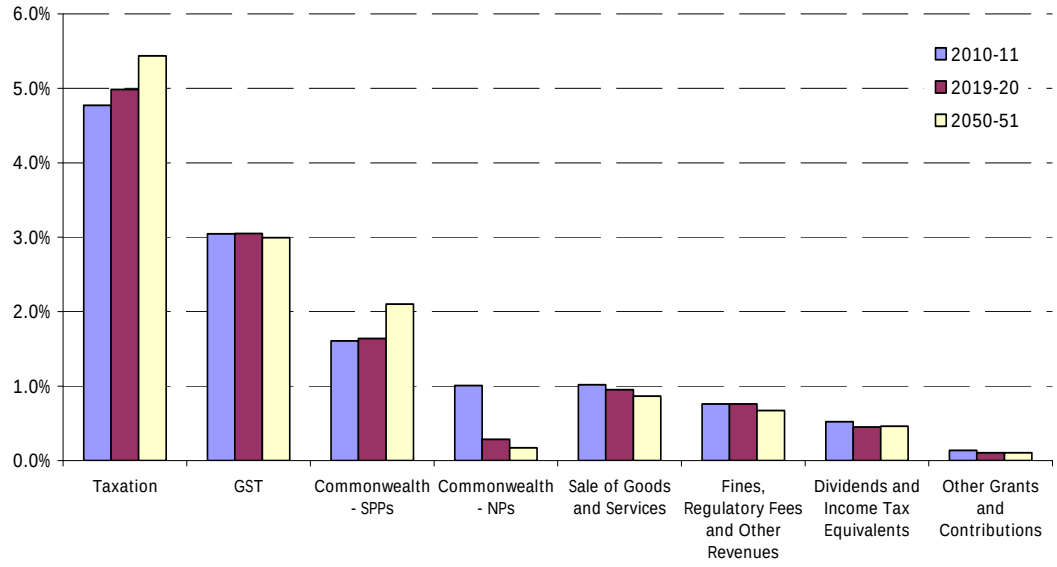
Chart 4.1: Historic and Projected Revenue Growth



As a share of nominal GSP, revenue is expected to fall from 12.9 per cent in 2010-11 to 12.2 per cent in 2014-15 and remain there until 2021-22. It will then gradually rise to 12.8 per cent by 2050-51. This rise comes from, at least for the first part of the projection period, the declining terms of trade assumption. As previously discussed, the terms of trade are assumed to fall gradually from their current historic highs.

If the effect of the terms of trade was not included, revenue as a share of nominal GSP would fall to 12.1 per cent in 2016-17 and remain constant until 2033-34. It would then rise gradually to 12.5 per cent by 2050-51 because of strong growth in taxation and SPP revenue and a compositional effect where the faster growing revenues make up a larger share of the total.

Chart 4.2: Revenue Components as a Share of Nominal GSP



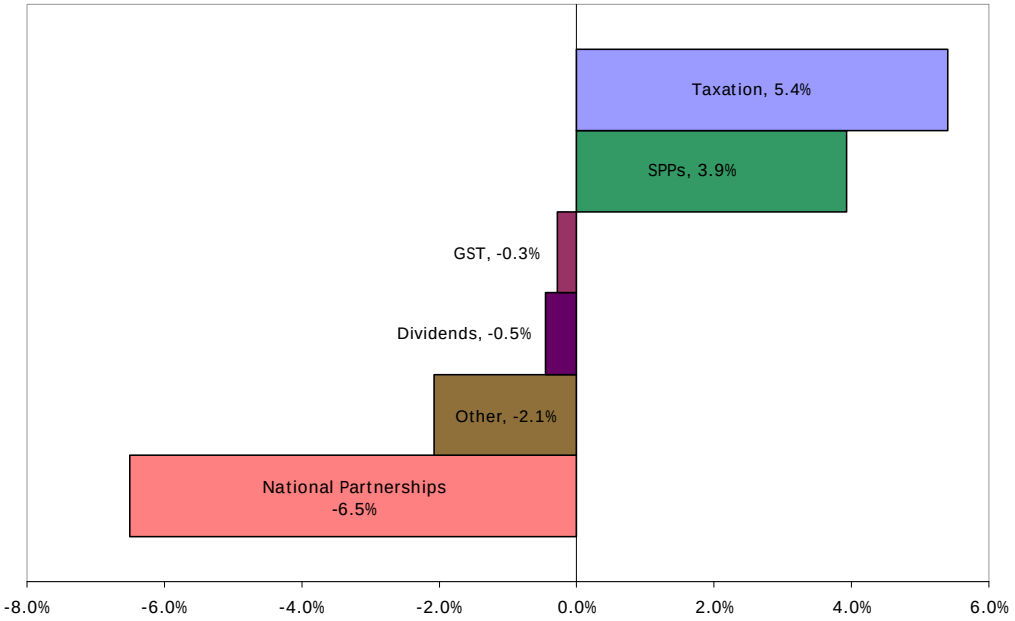
As shown in Chart 4.2, taxation revenue increases as a share of GSP from 4.8 per cent in 2010-11, to 5.0 per cent by 2019-20 and 5.4 per cent by 2050-51. This is largely driven by the growth in NSW property values.

GST revenue is projected to remain fairly constant at about 3 per cent of GSP. National Partnerships revenue is expected to decline significantly, from 1.0 per cent of GSP in 2010-11 to 0.1 per cent by 2050-51. This is consistent with the assumption that time-limited programs will not be renewed. In contrast, Commonwealth SPP revenue is expected to grow from 1.6 per cent of GSP in 2010-11 to 2.1 per cent by 2050-51 because of growth, mainly in the Health SPP.

Dividends and tax equivalent payments are expected to decline as a share of nominal GSP, particularly in the first 10 years (to 2020-21) when the carbon price impacts. PTE revenues regain some of their share for the seven years after 2020-21 as they are escalated in line with growth in real GSP and CPI, which grow faster than nominal GSP. Once the terms of trade effect ends in 2027-28, PTE revenues grow in line with nominal GSP.

All other revenues are projected to decline as a share of GSP. This is mostly because under the 'no policy change' assumption, fees, charges, fines and other revenues are generally not expected to rise beyond what can be accounted for by price and volume effects. Most are therefore indexed to CPI and population growth, which together are less than nominal GSP growth.

Chart 4.3: Change in Revenue Share by Source 2010-11 to 2050-51



The differing projected trends result in changes to the relative share of the different revenue sources. Chart 4.3 shows that the share of taxation revenue is expected to increase by 5.4 percentage points over the projection period, while SPP revenues increase their share by 3.9 percentage points. Due to the assumed decline in the NSW relativity, the share of total revenue from the GST decreases slightly, by 0.3 percentage points. As a result of the carbon tax, dividends and tax equivalent revenues share declines by 0.5 percentage points.

The 'Other' category in the chart combines revenues from sale of goods and services, fines, fees, and other grants and contributions. The revenue shares of National Partnerships and other revenues fall by 6.5 and 2.1 percentage points respectively.

Chapter 5: Expenditure

5.1 Introduction

This chapter sets out the modelling framework used to project general government expenditure on a 'no policy change' basis. Expenditure is divided into:

- expenses, which is the annual cost of providing services
- net capital expenditure, which is used to increase the capital stock through which services are provided.

Interest payments have been excluded as they do not contribute to the primary balance or the fiscal gap. In this report, references to 'expenditure' or 'expenses' should be read as excluding interest transactions in the general government sector.

Over the past 14 years (1997-98 to 2010-11) expenses have grown at an average annual rate of 6.1 per cent. Capital expenditure (net of sales but not depreciation) has grown even more strongly at 8.8 per cent a year, resulting in an overall expenditure growth rate of 6.2 per cent a year. Growth here has outstripped growth in nominal GSP, which has averaged 5.8 per cent a year. Government has therefore accounted for a larger share of the state economy.

Over the next 40 years, expenses are expected to grow at average annual rate of 5.5 per cent, while net capital expenditure will average 3.4 per cent. Combining these, total expenditure is expected to grow at an average of 5.3 per cent a year over the next 40 years. As this projected rate is 0.4 percentage points larger than the projected growth of nominal GSP (4.9 per cent a year), the state general government sector is expected to continue in taking up an increasing share of the overall economy.

The key assumption in this modelling is that the real income elasticity of government expenses is one, implying that real per capita expenses will increase in line with growth in real GSP per capita. The primary driver of expenditure growth is therefore economic growth. Originally, according to Wagner's Law, the income elasticity of government expenditure was thought to be greater than one, implying that government services are a superior good. Some studies suggest that, for developed economies, it is close to unity, although the evidence is mixed[1].

[1] Arpaia, A. and Turrini, A. "Government expenditure and Economic Growth in the EU: long-run tendencies and short-term adjustment" European Papers 300, February 2008
Ram R., "Wagner's Hypothesis in Time-Series and Cross-Section Perspectives: Evidence from "Real" Data for 115 Countries", The Review of Economics and Statistics, Vol. 69, No. 2, May 1987

As well as economic growth, two other components drive expenses—demographic compositional change (or ageing) and other growth factors (OGFs). The modelling takes account of demographic change by allowing expense growth to vary over time to take account of ageing-related trends, such as increased health expenses or reduced relative education expenses. The OGFs are an estimate, by functional area, of the historical tendency for expenses in certain areas to grow at a different rate to the overall economy, once demographic effects and specific policy changes are taken into account.

The other part of expenditure, capital expenditure, is defined as acquisition of non-financial assets, including assets acquired under finance leases, less asset sales. It is modelled using a stock-flow approach on the assumption that the capital-to output–ratio (with output proxied by expenses), remains constant through the projection period. This is an improvement from the treatment in the 2006-07 Report, which assumed capital expenditure would grow in line with the national economy.

5.2 Expenses

Modelling Expenses

Expense drivers, including economic growth and changes in the age structure of the population, were constructed by functional area over a 32-year historical period. Variations in expense growth, which are not explained by known drivers or identified policy changes, contribute to the OGF for that functional area. In projecting expense growth, the same framework of growth drivers is applied, with the addition of the OGF.

Under the expense modelling framework, the primary driver of expenditure growth is economic growth. Economic growth is divided into three components:

- population growth
- GSP per capita growth
- price growth (CPI).

The CPI has been chosen as the price deflator for government services rather than nominal GSP. Nominal GSP is influenced by the wedge of 0.25 per cent a year between the CPI and the GSP deflator, from 2014-15 to 2027-28, that reflects the assumed decline in the terms of trade.

There are three other potential drivers of expense growth:

- changes in population composition (i.e. ageing)
- identified policy measures
- the OGF.

The inclusion of real GSP per capita as an expense driver, as well as demographic factors, allows for certain endogenous expansion of services in line with increases in real income per capita.

Projected expense growth is modelled on the basis of 'no policy change'. Past policy changes should not contribute to projected expense growth. Where records are available, past policy changes have therefore been identified and separated from the OGF. In estimating the extent of policy changes, extra funds to improve service standards are distinguished from extra funds to accommodate demographically driven demand. Only the former is counted as a policy change. For example, in education, decreasing class sizes would be a policy change, whereas opening a new school to meet population growth would not.

The inputs to the expense projection framework are

- the demographic and economic projections from Chapter 2 and Chapter 3
- the calculated OGFs and demographic compositional effects, by way of age-cost indices.

These two final inputs are described in the following sections.

Other Growth Factors (OGFs)

The OGFs are calculated from an historical analysis and are designed to capture cost pressures above those expected from purely demographic and economic drivers. The OGFs capture trends not otherwise reflected in the model, including the impact of technology, the environment and community expectations.

Although efforts have been made to remove the effect of identified policy changes from the OGFs, it is possible that the influence of a number of small policy changes, remain to some extent, embedded. Cumulatively, the small changes that remain in the OGFs could be considered 'policy drift', as they represent an expense trend that emerges in the absence of specific decisions but cannot be explained through economic or demographic factors.

The historic expense data used to calculate the OGFs was ABS Government Finance Statistics (GFS) Government Purpose Classification (GPC) for the 32 years from 1978-79 to 2009-10.[2] This dataset provides an extended time series of expense by policy function, which is unaffected by government agency restructuring. The data up until 1997-98 is a derived accrual version of cash-based GFS data, while the data from 1998-99 reflects accrual-based government finance statistics.

[2] Government Finance Statistics, Australia (2009-10) ABS Cat No 5512.0 and unpublished ABS data

The OGF is derived from an analysis of historic expense growth in each functional area. It is the residual, after accounting for expense growth due to real GSP per capita, population, consumer price inflation, demographic composition and identified policy changes. The OGF for each functional area is obtained by constructing an index based on the component of expense growth that is not explained by known drivers. A constant growth function is fitted to this index, the growth rate of which is the OGF.

As in the 2006-07 Report, the OGFs for each functional area were calculated separately between 1978-79 and 1997-98 and between 1998-99 and 2009-10. The results were taken as the average of the OGFs from the two intervals. This applies a higher weight to the recent period which is more representative of the cost pressures likely to prevail over the projection period. It also reflects the fact that the more recent data is of better quality.

The OGFs for the functional areas are shown in Table 5.1. While they will generally capture the extent to which expenditure pressures have exceeded economic growth, inflation and demographic factors, they may also reflect a large increase in demand for particular services, which is not explained by specific policy changes. For example, the Social Security and Welfare category contains the child protection and ageing portfolios. The high expense growth in this area, not all of which can be attributed to specific policy decisions, accounts for the large OGF of 1.3 per cent a year.

Table 5.1: Other Growth Factors

Principal Functional areas	**New OGFs (%)**	**OGFs from BP6 2006-07 (%)**
General Public Services	0.0	0.0
Public Order and Safety	0.2	0.5
Education	-0.2	0.2
Health	0.5	0.7
Social Security and Welfare	1.3	0.6
Housing and Community	-0.6	0.5
Recreation and Culture	0.2	0.0
Agriculture, Forestry, Fishing etc	-0.9	0.0
Transport and Communications	0.0	0.4
Other	0.0	0.0
Total	**0.4**	N/A

Apart from Social Security and Welfare, the newly calculated OGFs are generally lower than those in the 2006-07 Report as more work has been devoted to identifying and removing expenditure growth associated with specific government policy decisions. It is estimated that, over the last 32 years, policy changes have accounted for extra growth in total expenses of around 0.8 per cent a year.

A total 'general government OGF' can be calculated by taking the sum of the OGFs in each policy area, weighted by historic total expenses in each category. The historical OGF would be 0.3 per cent a year. Looking forward, it is 0.4 per cent a year. This figure is higher because expenses in areas with a higher OGF grow at a faster rate and over time take up a larger share of total expenses. The projected total OGF can be interpreted as the extent by which general government expenses will grow above demographic and economic factors over the next forty years, ignoring policy changes.

In the 2006-07 Report, the OGFs for Recreation and Culture and Agriculture, Forestry, Fishing and Hunting were both set to zero. For this report, they have been allowed to take other values, although the expenditure-weighted combination of the OGFs for the two policy areas is close to zero.

The Education OGF has been interpreted as representing an inability to make the full savings associated with trends away from public schools over the last 32 years. The lower OGF for Education in this report, compared with the 2006-07 Report, reflects a projected slowing in these trends over the next 40 years. This is discussed later in this chapter.

Age-Cost Indices

Critical to the integrity of the expense model is the correct categorisation of functional expenditure categories as either 'age sensitive' or 'not age sensitive'. There are two key criteria for an age sensitive functional area.

- Usage or cost of use shows variation across age cohorts. For example, Health may have a bias towards older people using the system. This, however, is not the whole story since the cost per usage should also be taken into account. Most age sensitive functional areas show variation in both usage and cost per usage across age groups.
- Expenses are demand driven. Although a functional area may display variation in usage, or cost of use, by age, if expenditure is not demand-driven, expense levels are assumed not to be age sensitive. A demand-driven area of government service delivery is one where the standard of service is set at a defined level and is universal. Service levels must therefore endogenously expand to reflect increases in demand.

Health and Education are examples of functional areas where expenses are demand-driven. By contrast, transport services are considered supply-driven as usage generally rises to reflect the availability of transport services and infrastructure. Although governments must respond to increases in demand in the long run, the connection in some areas is not as direct. In practice, no area is either completely demand-driven or completely supply-driven and judgement must be applied. This issue is further discussed for specific functional areas later in this chapter.

For functional areas that are both demand-driven and show variation in usage or cost of use by age, data is combined to establish an age-cost index, using five-year age cohorts. The age-cost indices used in the model are set out in Appendix A and the data sources used in their development are in Appendix B.

The age-cost indices are used to identify the annual increase in expenses from demographic compositional change. This is done by taking the weighted sum of the population by age cohorts, using the age-cost index values as the weighting factors. The growth rate of this weighted population is equivalent to the growth rate of expenses due to demographic factors, both compositional and population growth. The compositional effect is isolated by subtracting the growth rate of the total (unweighted) population from the growth rate of the weighted population.

Although some effort has been made to establish that the age-cost indices are stable over time, the data used to create them is not available over the whole historical period. Although some verification was performed, their stability must remain an assumption, to an extent.

Expense Trends and Outlook

Between 2010-11 and 2050-51, total government expenses are projected, on a ‘no policy change’ basis, to grow at an average annual rate of 5.5 per cent. This exceeds the projected average growth in nominal GSP of 4.9 per cent a year by 0.6 per cent. The difference is accounted for by a combination of the OGF, extra expense growth due to ageing effects and the assumed reduction in the terms of trade.

Factors contributing to this 5.5 per cent growth are set out in Chart 5.1. The main driver of above nominal GSP expense growth is the OGF. However, ageing remains a major cost pressure, particularly over the next 18 years as the baby boomers move into traditional retirement age.

Chart 5.1: Factors Contributing to Expense Growth[3]

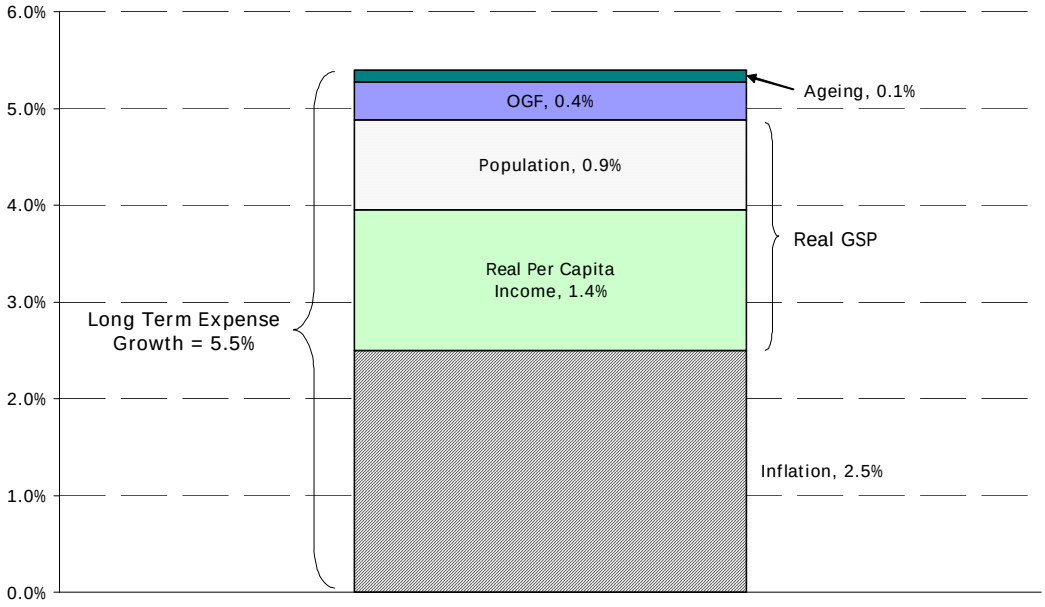


Table 5.2 shows the average expense growth rates for the different functional areas, with and without the effects of ageing. With ageing, Social Security and Welfare has the highest projected rate at 6.6 per cent a year and the second highest is Health at 6.2 per cent. Education shows moderate growth of 4.5 per cent. Agriculture, Forestry, Fishing and Hunting and Housing and Community Amenities have the lowest projected growth, both at 4.0 per cent a year.

The Social Security and Welfare expense category contains Family and Child Welfare Services and Welfare Services for the Aged and Disabled. Ageing cost pressures act in opposite directions for the two areas within this expense category and, when ageing effects are switched off, the rise in expenses of the former is partially offset by a reduction in the latter. The result is that the annual growth rate for the category's expenses falls from 6.6 per cent to 6.4 per cent when the effects of ageing are removed.

The projected Health expense growth rate falls from 6.2 to 5.6 a year when the effects of ageing are removed. This is partly offset by an increase in the rate for Education from 4.5 to 4.7 per cent a year, and Public Order and Safety from 5.2 to 5.3 per cent a year. The impact of ageing in the other areas is either small or zero.

[3] Does not sum due to rounding.

Table 5.2: Expense Growth by Functional Area, 2009-10 to 2050-51

Functional area (by 2-Digit GPC Classification)	With Demographic Compositional Effects		Without Demographic Compositional Effects (no ageing)	
	Expense Growth Rate (%)	Cont. to growth[4] (%)	Expense Growth Rate (%)	Cont. to growth (%)
General Public Services	5.0	2.7	5.0	2.9
Public Order and Safety	5.2	10.1	5.3	11.4
Education	4.5	15.5	4.7	18.5
Health	6.2	38.2	5.6	31.8
Social Security and Welfare	6.6	14.2	6.4	14.5
Housing and Community	4.0	2.8	4.0	3.0
Recreation and Culture	5.2	2.1	5.2	2.3
Agriculture, Forestry etc.	4.0	1.0	4.0	1.0
Transport and Comms.	5.1	11.6	5.1	12.5
Other	5.0	1.8	5.0	2.0
Total[5]	**5.5**	**100**	**5.3**	**100**

The contributions to expense growth, with ageing, for each of the functional areas are presented graphically in Chart 5.2. Health is expected to make the largest contribution over the next 40 years, accounting for 38.2 per cent. Education will follow with 15.5 per cent, then Social Security and Welfare (14.2 per cent), Transport and Communications (11.6 per cent), and Public Order and Safety (10.1 per cent). The other areas make relatively small contributions to the overall increase in the level of expenses.

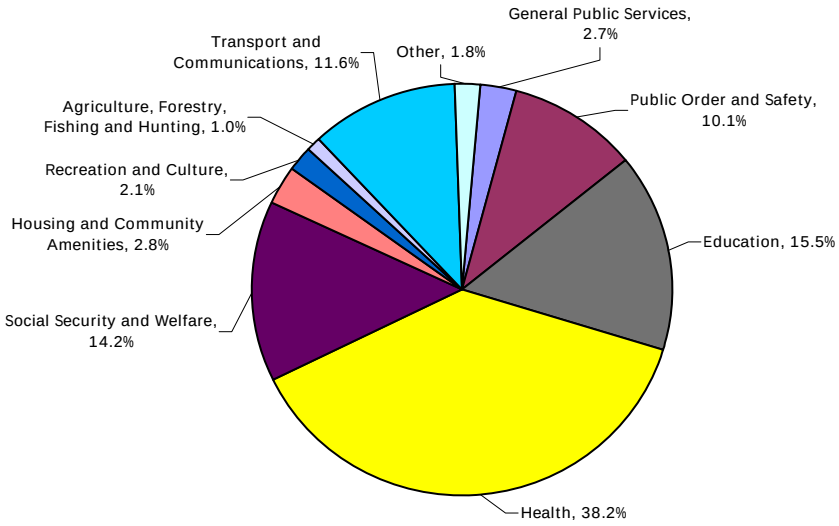
Health makes the largest contribution, even though average annual growth in Social Security and Welfare (6.6 per cent) is slightly higher than Health (6.2 per cent). This is because the annual percentage increases in Health expenses are applied to a much larger expense base.

[4] The change in the projected level of expenses in the functional area divided by the change in the projected level of total expenses over the next 40 years, taken as a percentage.

[5] Due to rounding the contribution from ageing (0.1 per cent) and the growth rate without ageing (5.3 per cent) do not sum to 5.5 per cent.

The analysis highlights that the lower ageing expense pressures in Education, and to a lesser extent Public Order and Safety, go a long way to offsetting the higher ageing expense pressures in Health. This conclusion, however, relies on the assumption that a future relative resource shift from Education to Health can be successfully managed.

Chart 5.2: Contribution to Expense Growth by Functional Area, 2009-10 to 2050-51



Over the projection period, the different rates of expense growth for the functional areas result in changes in their relative share of total expenses (see Chart 5.3). The biggest rise is expected to come from Health, which is projected to increase its share by 8.9 percentage points from 28.1 per cent in 2009-10 to 37.0 per cent in 2050-51. The next largest change is for Education, whose share is projected to fall by 6.9 percentage points from 23.4 to 16.5 per cent. Although this change is expected to occur gradually over the next 40 years, it represents a major reallocation of government resources. The share of expenses going to Social Security and Welfare is also expected to rise, by 4.8 percentage points.

Chart 5.3: Changes in Expense Share of 2009-10 to 2050-51

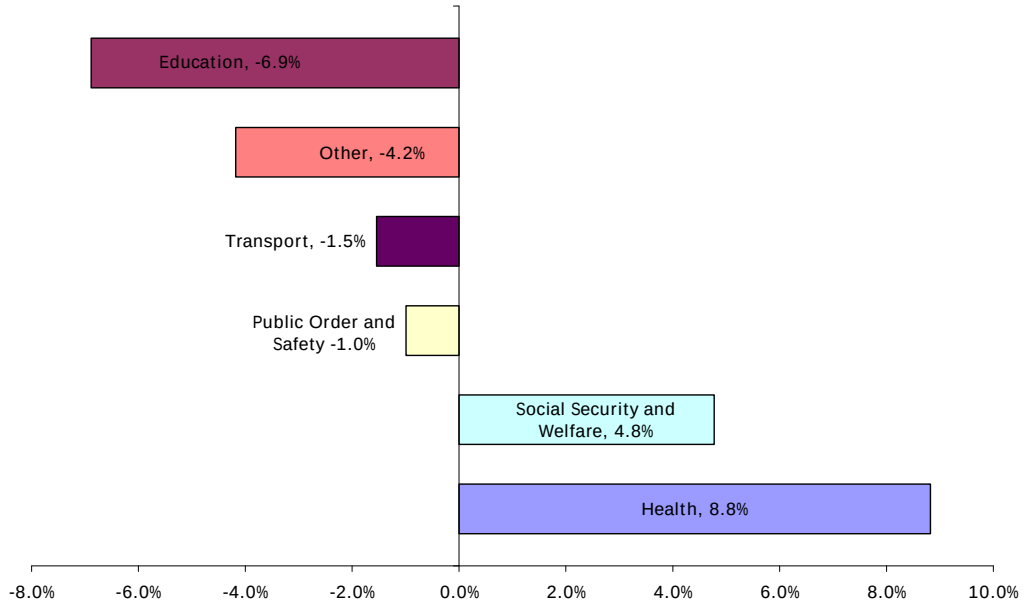


Table 5.3 shows how expense growth changes over time. Over the next decade, it is expected to be strong, at an average of 5.7 per cent a year, as the ageing of the baby boomers results in additional expense pressures. It is then expected to moderate to an average 5.3 per cent a year for the next 20 years before easing to 5.2 per cent a year in the decade to 2050-51. This decline reflects a slowdown in the rate of economic and population growth and an easing in ageing cost pressures.

Table 5.3: Expense Growth Over Time

Percent	2011-12 to 2020-21	2021-22 to 2030-31	2031-32 to 2040-41	2041-42 to 2050-51
Average Expense Growth Rates	5.7	5.4	5.4	5.3

Chart 5.4 shows that, consistent with the assumptions of the model, expenses are largely driven by nominal GSP. The differences in the two growth rates are mostly accounted for by the assumed decline in the terms of trade, and expense growth due to OGFs and ageing compositional factors.

Chart 5.4: Expense Growth over Time

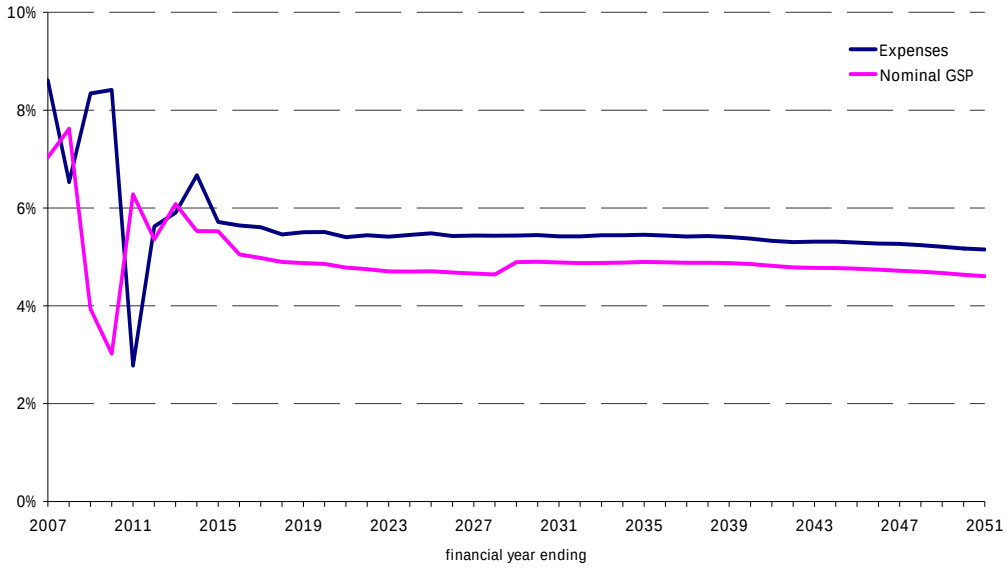


Chart 5.4 also highlights that, as noted earlier, expenditure is expected to grow at a faster rate than nominal GSP, resulting in the general government sector taking up a larger share of GSP over time.

Expenses by Policy Area

Health

Health is subdivided into Patients of Acute Care Institutions, Community Health Services and Other Health.

The largest category is Patients of Acute Care Institutions and relates to the operation of the hospital system. There are numerous policy changes affecting hospital funding in any given year, and most of these are aimed at incremental improvement. Therefore, there are not many major policy changes in this series for which adjustments have been made. However, adjustments of around 0.4 per cent in 2002-03 and 2.0 per cent in 2003-04 are included. These accommodate wage increases awarded to nurses following a special work value case in the NSW Industrial Relations Commission.

The age-cost indices for acute care have been sourced from NSW Department of Health cost data. Because the indices vary by gender, they are shown separately for both men and women. The index for women rises during the childbearing years, but both male and female indices increase steeply with age (see Appendix A). Notably, the indices for acute care are not as skewed towards the older age groups as in the 2006-07 Report, which reflected usage by age but did not include information on the cost per use. Taking account of both usage and cost per usage has led to a smaller ageing component of overall Health expense growth.

Community Health Services have undergone major expansion over the period being analysed. Expenses have grown from very low levels in the late 1970s to around $1.4 billion a year by 2009-10. Successive government decisions have built up the level of this service over the years. In the calculation of the OGF, service improvements have been accounted for, where policy changes can be identified.

The age-cost index for Community Health is also derived from data from the Department of Health. The indices are provided by gender and also show an increase in the female age-cost index during childbearing years (see Appendix A). This profile is substantially different from acute care as the most cost-intensive age groups are the younger ones. This is due to baby wellness and vaccination programs being covered by this expense category.

Also included in the Health category are other services such as mental health, public health and health transport, which are not treated as age sensitive as there is no supporting data available.

The OGF for the Health expense category is 0.5 per cent a year, and the average rate of expense growth to 2050-51 is projected to be 6.2 per cent a year.

Education

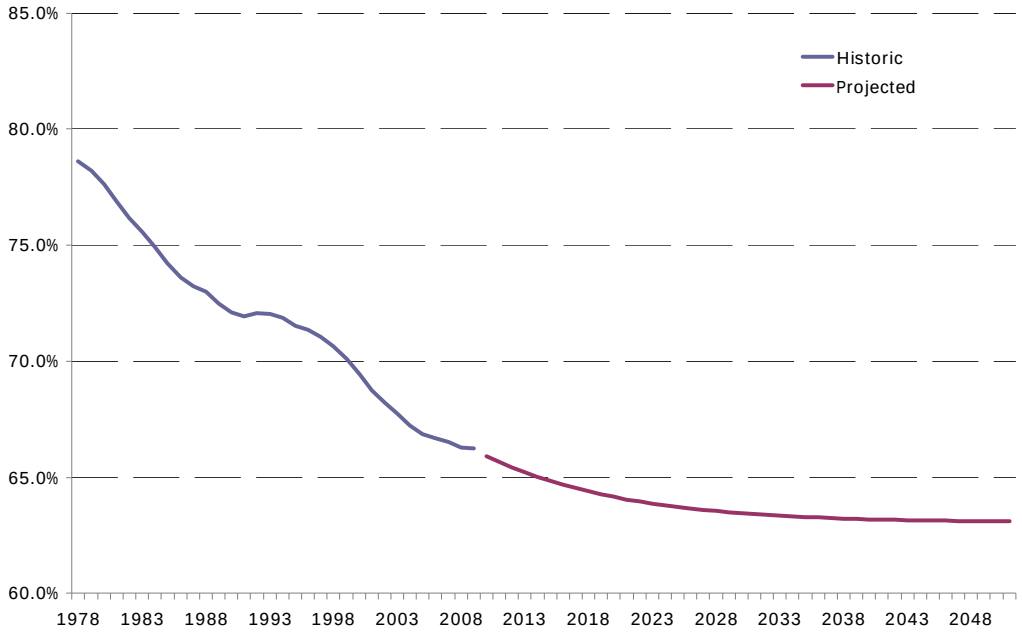
Education covers schools, TAFE and vocational training programs. These areas display variation in cost and usage by age and are driven by demand. This functional area is therefore treated as age sensitive. The overall OGF is estimated to be -0.2 per cent a year.

Primary and Secondary Education relates to funding of the public and private school systems from the NSW Budget. Age-cost indices are derived from ABS school participation data[6] and NSW Treasury data on the cost of educating primary and secondary students. Adjustments have been made to account for policy changes, including class size reductions starting in 2004-05, computers in schools programs and teacher wage rises linked to special work value cases.

Funding for private schools is based on a formula linked to the per-student funding for public schools and the number of private school students. The projection of school expenses therefore requires an assumption about the share of students at public schools. From 1978 to 2009 (32 years), the share of NSW students attending public schools fell at an average rate of 0.6 per cent a year. The future share of NSW students at public schools has been estimated by fitting a logit curve to data back to 1993. Under this assumption, the share falls from the current level of 66 per cent to 63 per cent by 2051 (see Chart 5.5).

[6] *Schools Australia* (2010), ABS Cat No 4221.0

Chart 5.5: Share of Students Attending Public Schools—Historic and Projected



Source: Schools Australia (2010), ABS Cat No 4221.0 and NSW Treasury Calculations

Due to demographic and school choice trends, OGF calculation for school education was different to the other functional areas. Schools have been experiencing falling relative expense pressures. Between 1979 and 2009, trends have produced a decline in the number of public school students averaging 0.3 per cent a year.

As a result of the policy choice to maintain education services in areas of falling demand while expanding services in areas of growing demand, an estimated 42 per cent of potential savings have been realised over the last 32 years. This has resulted in a relatively high OGF. If this OGF was applied to the projection period, it would overestimate expense growth, as demographic and school choice trends will not be as strong as they have been. The OGF projection for school education has been scaled down to reflect the historical savings rate of 42 per cent.

The Tertiary Education area covers funding for TAFE as well as vocational training programs provided by the State. This is an area in which cost pressures have been moderate, reducing the overall education OGF. The school student transport area has a neutral impact on the OGF.

The assumption that 42 per cent of expected savings will be realised over the projection period results in a low Education OGF of around -0.2 per cent a year. This result occurs because the small positive Primary and Secondary Education component is offset by the negative contribution from the Tertiary Education area. If the calculation of the Education OGF was based purely on historical data, it would equate to 0.2 per cent a year, the same as in the 2006-07 Report.

The average rate of expense growth for Education over the next 40 years is projected to be 4.5 per cent a year.

Social Security and Welfare

Social Security and Welfare consists of Family and Child Welfare Services and Welfare Services for the Aged and Disabled. Both of these areas are primarily the responsibility of the Department of Family and Community Services. Another subcategory, Other Social Security and Welfare, includes a range of functions, such as food and clothing in times of emergency, pensioner concessions for council and water rates, and electricity and transport concessions for the aged—including the pensioner excursion ticket.

Out-of-home care and statutory reporting make up a major part of Family and Child Welfare Services. These are demand-driven and are mostly concerned with the welfare of minors. This functional area is therefore treated as age sensitive. Expenses built up from a very low base in the early 1980s, growing steadily through the 1990s and then experiencing strong growth over the last decade. Policy changes and exceptional events, such as the implementation of statutory reporting and wage increases, make up much of this expansion.

The profile of the age-cost index means that, from 1978-79 to 2009-10, the demographic cost pressures have been negative, while overall expense growth has strongly increased at an average rate of 18.9 per cent a year. This has contributed to the high OGF for Social Security and Welfare.

Welfare Services for the Aged and Disabled is another demand driven area that has experienced major growth over the last 32 years, from relatively low levels in the early 1980s. Average annual expense growth has been 14.6 per cent with significant policy enhancements. The components of Stronger Together—a recent funding package—that involve the expansion of existing services to meet demographic demand were separated from those that involve the creation of new services. New services have been treated as policy changes and, when calculating the OGF, adjustments have been made.

Because of the high correlation between age and disability, expenses in Welfare Services for the Aged and Disabled are skewed towards the older age cohorts (see the age-cost index in Appendix A). Over the last 32 years, expense pressures due to demographic factors have averaged 0.4 per cent a year. Strong expenditure growth above the level explained by demographic, economic and policy factors results in a strong positive contribution to the Social Security and Welfare OGF.

As part of the National Health Care Reforms, it has been agreed that roles and responsibilities in the aged care and disability care sector will change. The National Partnership supporting these changes has yet to be finalised, and so adjustments for the impact of this agreement will be included in updates.

The Other Social Security and Welfare area is a mix of age sensitive and non-age sensitive programs and includes a range of age-based concessions. An age-cost index has been developed based on the relative weightings of age-sensitive and non-age sensitive components. Average expense growth over the last 32 years has been 6.7 per cent a year, and growth due to demographic effects has been 0.1 per cent a year.

The OGF for Social Security and Welfare is 1.3 per cent and over the 40 years to 2050-51 expenses are expected to grow by an average of 6.6 per cent a year.

Transport and Communications

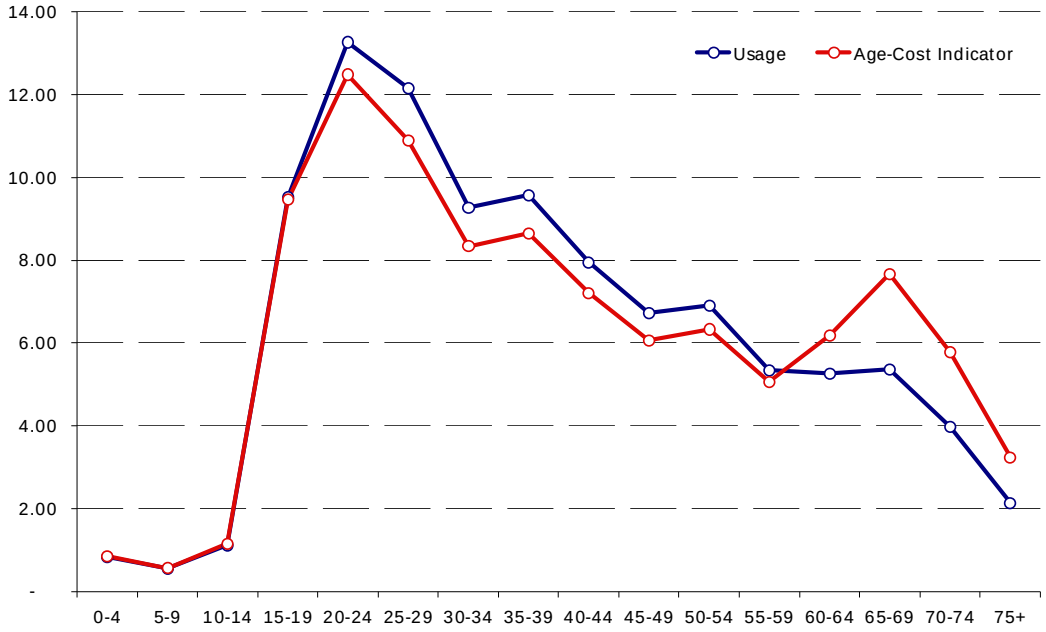
This functional area covers roads, rail, bus and water transport as well as communications. Capital grants make up around 25 per cent of its expenses and are primarily for public trading enterprises, such as RailCorp, to expand transport infrastructure.

As capital grants are lumpy, especially for rail, they are better modelled as capital expenditure than expenses. They have therefore been removed from the expense data for the purposes of calculating the OGF. This has had the effect of lowering the OGF for this report compared with the 2006-07 Report. As in the 2006-07 Report, the expenses associated with the depreciation of RTA roads have also been excluded from the OGF calculation. Projected transport expenses do, however, include capital grants as they are modelled along with capital expenditure and then added back to the expenses total.

Transport usage data[7] was combined with accounting data to develop age-cost indicators for various modes of transport. For example, the usage and cost by age cohort for rail transport is plotted in Chart 5.6. The chart highlights the distinction between usage and cost. This difference is small for younger groups (as school student transport subsidies are included in Education), but is larger for the older cohorts (as concessions for seniors are more generous).

[7] Unpublished Data from the NSW Bureau of Transport Statistics

Chart 5.6: Rail Usage and Age-Cost Index



Source: NSW Bureau of Transport Stats. and NSW Treasury

In assessing the age sensitivity of Transport expenses, judgement must be applied in determining whether transport is demand or supply driven. The primary expenditure driver for transport services appears to be the need to expand transport networks generally, driven by overall population growth and distribution, rather than demographic composition. Furthermore, it is not clear that age-based usage patters remain stable over time, as different generations maintain similar usage characteristics throughout their lives. Because these issues raise doubt as to the validity of the age-cost indicator approach, expenses for Transport and Communications have been treated as independent of ageing.

One component of transport expenses that is age-sensitive is concessions. Apart from the pensioner excursion ticket, however, it is not feasible to model these separately because of data constraints. Expenses for the excursion ticket have been included in the Other Social Security and Welfare category, which is age dependent. As a result, this model does not feature concessions to students and welfare beneficiaries but this may not be significant since such concessions are smaller than those for seniors.

Based on these assumptions, the OGF for Transport and Communications is estimated at zero and the long-term expense growth is projected to be 5.1 per cent a year.

Public Order and Safety

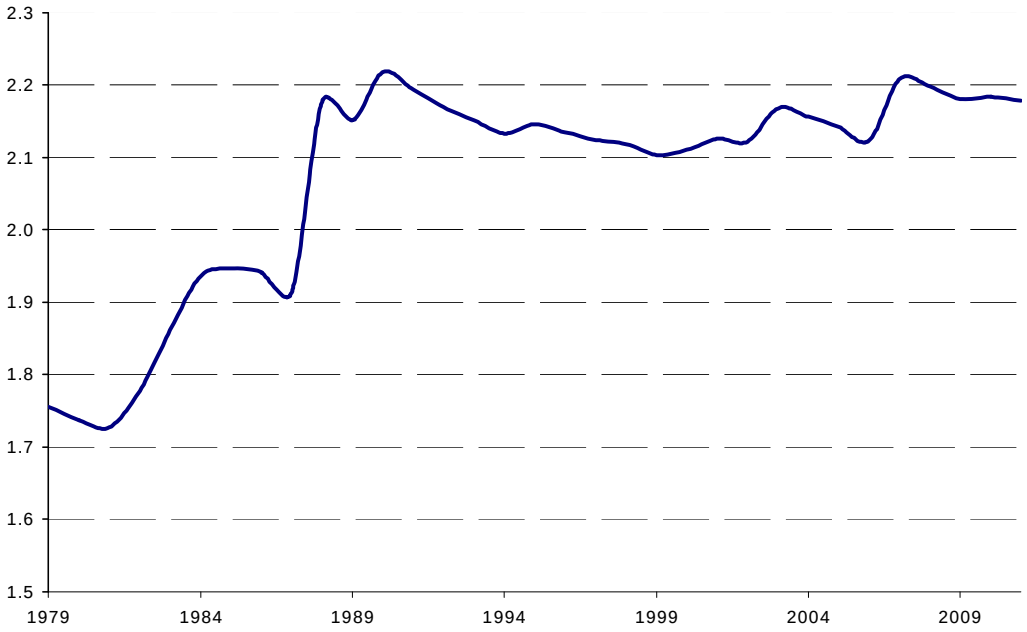
This area covers Police, Law Courts and Legal Services, Prisons and Corrective Services and Other Public Order and Safety. Only Prisons and Corrective Services are sensitive to changes in demographic composition.

At first glance, police expenses might appear to be age sensitive, as offender rates are higher among younger age groups. However, it has been argued that older groups have a keener perception of crime. It is possible that these two factors work against each other[8]. It has therefore been assumed that the resourcing of police is not demographically sensitive.

Current government policy requires a fixed number of sworn officers (currently around 16,000) rather than matching resources to outcomes like crime levels, arrests or clearance rates. On a 'no policy change' basis, the literal application of the Government's policy would result in a fixed number of sworn officers over the whole projection period. This would mean a fall in the ratio of police to population.

The policy has instead been interpreted as keeping the ratio constant through the projection period. This follows recent historical trends, as the ratio of police to population has been more or less steady since the late 1980s (see Chart 5.7). The most significant historic policy change affecting police expenses was the introduction of the death and disability scheme in 2005-06 and 2006-07, for which adjustments have been made to the OGF.

Chart 5.7: Police Officers per 1,000 of Population



Source: NSW Treasury

[8] For more detail, please see the Productivity Commission's research report, *Economic Implications of an Ageing Australia*, pp.241-242.

For Law Courts and Legal Services, some age sensitivity might be expected due to the higher offender rates among younger age groups, but only a component of the expenses for this functional area relate to the court system, and an even smaller part relates to the criminal jurisdiction. Overall, these expenses were not considered to be age sensitive. Policy changes in this area mostly relate to increases in the legal aid budget over the last decade and functions passed to Land and Property Information in 2000-01.

Prisons and Corrective Services is considered age sensitive as the service is demand driven and, while the cost by age of inmates does not vary much, usage by age does. There is a distinct age bias in the prison population towards younger males. The profile suggests that under 'no policy change', as the population ages, the relative cost of maintaining the prison system will fall. The age-cost index for prisons was constructed from age-based, cell-night prison population data (see Appendix A).

The high growth in the prison population, over and above what can be explained by demographic factors, in the last 32 years means this functional area contributes positively to the Public Order and Safety OGF. Although there seems to be a broad-based policy trend towards incarceration, it is difficult to point to specific policy initiatives. The exception is the new bail laws introduced in 2003 and in calculating the OGF, adjustments have been made in the 2003-04 and 2004-05 fiscal years to accommodate this.

The Other Public Order and Safety functional area is mostly made up of fire protection and emergency services. These activities are not considered age sensitive and in calculating the OGF, the only specific policy change taken into account was a change to the treatment of the fire services levy in 1989-90.

Taken together, the combined Public Order and Safety expense category has an OGF of 0.2 per cent a year and a projected expense growth rate of 5.2 per cent a year over the next 40 years.

Housing and Community Amenities

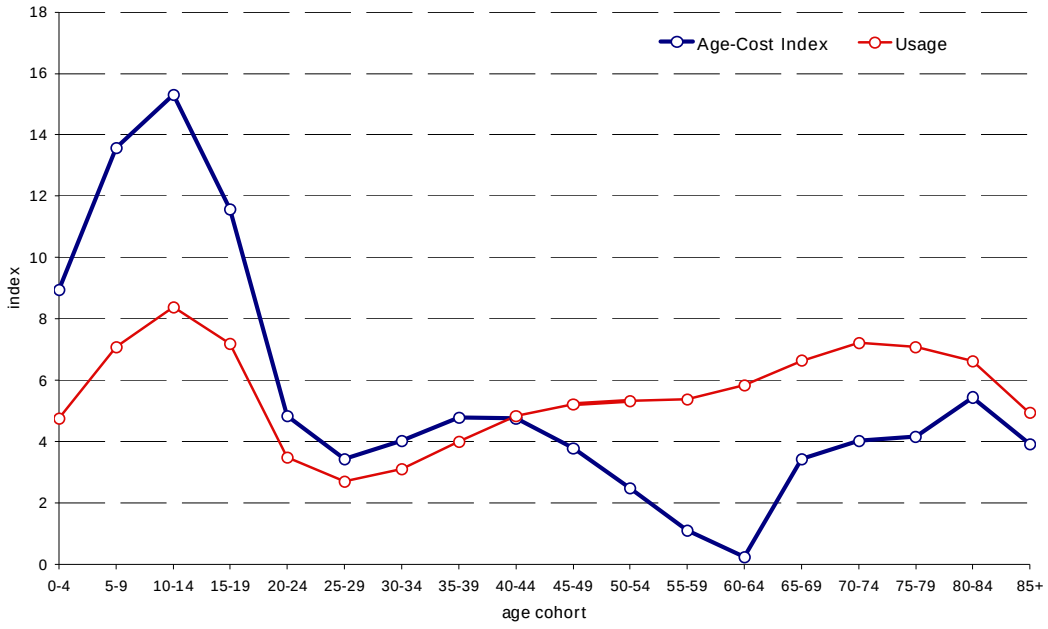
Housing and Community Amenities consists mainly of spending on public housing delivered through Housing NSW. It also covers expenses for community development, including Aboriginal communities, water supply, environmental protection and other community amenities.

Housing NSW provides housing for the disadvantaged and people with special needs. It also funds community housing projects, which involves building housing stock which non-government organisations then manage, to make low-cost accommodation available to those in need.

An age-cost index for housing services was constructed using cost and usage data supplied by Housing NSW. Chart 5.8 suggests that this profile is skewed towards the younger age groups. This is because there are currently a large number of families with children housed by Housing NSW. The net costs of housing a person with no income (for example, a child) is deemed to be higher because children do not directly pay rent and rent is charged as a proportion of tenant income.

Chart 5.8 shows that older groups also make up a large proportion of NSW Housing's tenant population. These groups have a higher cost base than other adult cohorts, as they need extra support. For example, the *Tenant Connect* program, which provides a free daily phone call to older tenants who are socially isolated, costs $3.1 million over four years. Despite this, the cost recovery for older groups is higher than for those under 20 as they are more likely to have some income, even if it is Australian Government benefits. The net impact of these effects is that population ageing has a diminishing effect on expenses in public housing.

Chart 5.8: Housing—Usage and Age-Cost Index



Source: Housing NSW and NSW Treasury

However ,there are several factors that work against this conclusion. First, Housing NSW is reforming public housing to re-focus on those most in need. This would tend to result in the aged and disabled becoming a larger share of the client base. It would be inappropriate to use the current tenant profile to project expenses. Also, a shift in client base will require a reconfiguration of the stock away from larger family houses and toward smaller dwellings to suit one or two people.

Nationally, there has been a shift in resources away from public housing and towards rent assistance[9]. At the state level, this has transferred resources from direct provision of housing towards community housing as, unlike Housing NSW clients, community-housing tenants are eligible for federal rental assistance. This suggests that, because of past policy decisions, the client profile and cost structure of Housing NSW will not be stable over time.

While there is an existing client profile, and associated cost recovery ratios, for Housing NSW that suggest diminishing expense pressures as the population ages, there has also been a policy change that is likely to result in a higher proportion of elderly clients. On balance, given that the cost of rent is well below market levels, the demand for public housing is expected to continue to outstrip supply. So the provision of public housing has been be categorised as supply driven and is therefore not age sensitive.

Capital grants to housing increased markedly in the early 1990s and then fell towards the end of that decade. Accordingly, the expense profile does not provide a clear trend. Adjustments were made to expenses in 2008-09 and 2009-10 to remove the distorting effect of large capital grants linked to the Australian Government fiscal stimulus program.

The OGF for long-term growth in Housing and Community Amenities is estimated to be -0.6 per cent a year, leading to an average rate of expense growth of 4 per cent a year over the projection period. This lower growth reflects the high current expense base associated with fiscal stimulus. As the stimulus unwinds, expenses in this functional area fall in 2010-11 and 2011-12.

General Public Services

General Public Services relates largely to the activities of the legislature and central government. The OGF has been assigned a zero value as these expenses are quite small and highly volatile. Also, there is no basis to believe that these cost pressures should be greater than nominal GSP. This is consistent with the 2006-07 Report.

Over the 40 years to 2050-51, the average rate of projected expense growth in this policy area is 5.0 per cent a year.

Recreation and Culture

Recreation and Culture covers a wide range of activities, including national parks and cultural services. It is not considered to be age sensitive and has an estimated OGF of 0.2 per cent a year. Over the next 40 years expense growth in this area is projected to average 5.2 per cent a year.

[9] Productivity Commission 2005, *Economic Implications of an Ageing Australia*, Research Report, Canberra, p 227

Agriculture, Forestry, Fishing and Hunting

In the Agriculture, Forestry, Fishing and Hunting functional area, agriculture is the largest activity, covering land management, research and extension services, forestry and fisheries management, as well as drought relief. In calculating the OGF, the cyclical effect of drought and natural disaster funding was removed.

Overall the OGF for Agriculture, Forestry, Fishing and Hunting was estimated to be -0.9 per cent a year and expenses are projected to grow at an average rate of 4 per cent a year over the next 40 years.

Other Expenses

Other Expenses are made up of a range of small and unrelated expense items such as gas, fuel and electricity, mining, manufacturing, tourism and economic affairs. As for General Public Services, the high volatility and the lack of any clear rationale for expenses to grow above economic and demographic factors, the OGF has been set to zero.

Over the next 40 years, the expense growth rate for Other Expenses is projected to be 5 per cent a year.

5.3 Capital Expenditure

Introduction

Capital expenditure[10] is an important part of total general government expenditure. In 2009-10, net capital expenditure was $6.4 billion and made up around 11 per cent of the total. For this report, net capital expenditure is defined as the acquisition of non-financial assets plus assets acquired under finance leases, less asset sales.

The modelling approach for capital expenditure differs from that taken in the 2006-07 Report. In the earlier report, it was assumed that a national pool of capital funds grew at the same rate as GDP and was then allocated to New South Wales in line with the state budget share. The difficulty here is that, because of the effect of ageing and the OGF, expenditure grows at a different rate to GDP, so the ratio of capital stock to expenses may change over the projection. Without a clear reason to believe that government services will become more or less capital intensive over time, an assumption that capital expenditure will grow with GDP may tend to overstate or understate the fiscal pressures on the capital side.

[10] Capital expenditure includes funds from the Australian Government as part of various fiscal stimulus programs.

To avoid the issue of a variable capital-to-output ratio, the modelling for this report assumes a constant ratio of real capital stock to real government expenses by function throughout the projection period. This is equivalent to fixing the capital-to-output ratio where expenses are used as a proxy for output.

Modelling Capital Expenditure

The model breaks capital expenditure down into the 10 functional areas used for the expense model. A difference is that the ABS Government Finance Statistics do not provide information on capital stock, so NSW accounting data was used for the historical analysis.

Ratio of Capital Stock to Expenditure

The central assumption in this modelling is that the ratio of real capital stock to real expenditure remains constant through the projection period. The ratio of capital to land is also assumed to remain constant. The production function for government services, over the long run, is therefore in the form of a Leontief function[11].

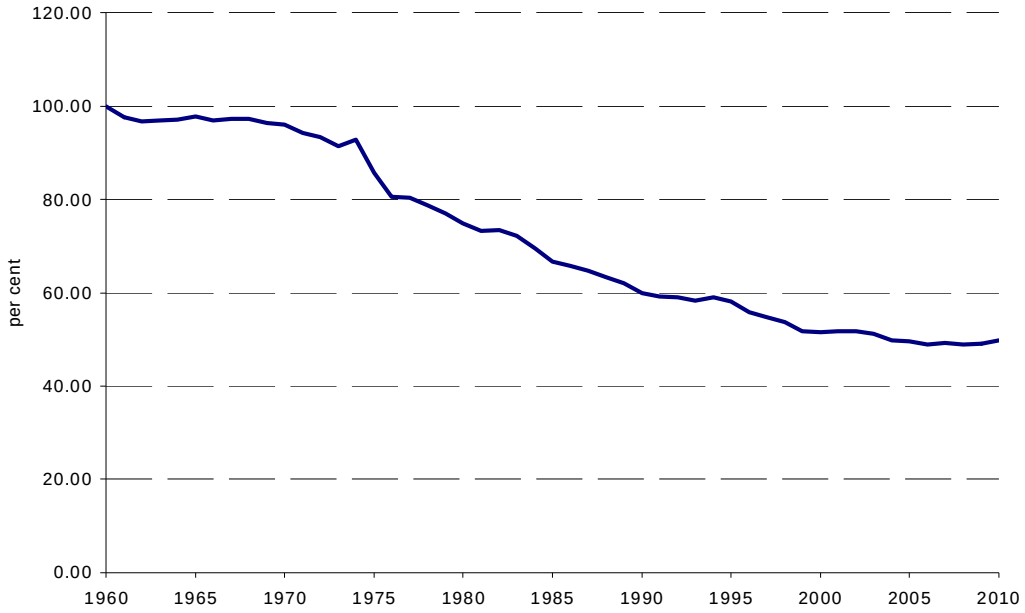
Chart 5.9 presents ABS National Accounts data showing the historic ratio of real state and local general government capital stock to Australian state and local general government expenditure. It shows that the ratio of stock to expenditure for state and local government remained relatively stable through the 1960s and the early 1970s, after which it fell steadily until around 2000. It has remained fairly stable since.

It is not clear why this ratio has changed over time. Possible explanations include:

- the dramatic fall in the price of computer hardware
- the rationalisation and more effective use of land and office building assets, including a move towards renting office accommodation
- the movement of assets from the general government sector into the public corporations sector through the 1990s
- over the last 50 years, the Government becoming a larger provider of human services, which need less physical capital.

[11] A Leontief Production Function involves all factors of production being used in fixed proportions, with no substitution therefore being possible.

Chart 5.9: Ratio of State and Local Government Capital Stock to Expenditure



Source: *Australian System of National Accounts* (2009-10) ABS Cat No 5204 and Unpublished ABS data

The ratio of capital stock to expenditure for state and local government in Australia has been fairly stable over the last decade and so a constant real capital-to-expenditure ratio has been assumed.

It is also assumed that, over the long run, the price deflators for capital expenditure and expenses will follow the consumer price index. This may have the effect of overstating capital expenditure needs as historically the government capital expenditure deflator has grown at a slightly lower rate than the government expenditure deflator. However, this is likely to be offset by more demands for capital expenditure in the future, particularly in transport.

Treatment of Land

The capital expenditure model handles land differently to physical capital, as land does not depreciate, unlike structures, plant and equipment. The question also arises as to the appropriate price deflator to use for land assets held by the Government, as there is no consistent time series available. An obvious candidate is the ABS index for Sydney established house prices[12]. When the old and new series are combined, the index can be extended as far back as June 1986. Since then, the index has risen at average rate of 7.2 per cent a year.

[12] *House Price Indexes: Eight Capital Cities* (June 2010), ABS Cat No 6416.0

The high growth in Sydney house prices is the result of imbalances between supply and demand for established housing stock. It is likely that the land price deflator, based on this index, would overestimate growth in the price of government-owned land. Further, much of the land is remote from Sydney, dedicated for conservation or recreational uses, lies beneath roads or rail lines or is subject to planning controls precluding its use for housing.

The alternative to the Sydney house price index is to assume that price of government-owned and used land will increase in line with the consumer price index over the long run. This is the assumption that has been adopted.

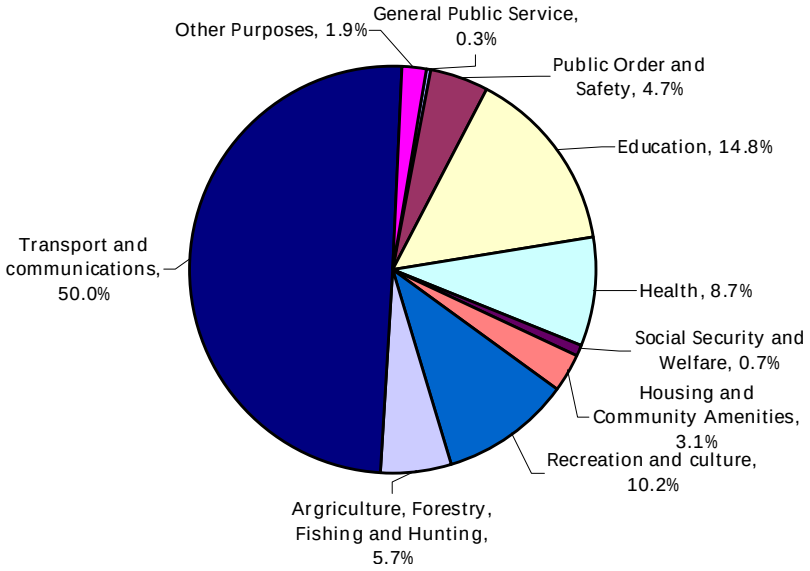
Disaggregated Model

Since the physical capital and land requirements of different areas of government service delivery are heterogeneous, the model has been disaggregated into 10 functional areas to match the categories defined for expenses. For example, the Housing NSW capital stock consists mostly of dwellings and, since they are mainly in urban areas, a large proportion of their value is associated with land. The dwelling stock depreciates very slowly and is frequently re-aligned according to client needs, requiring a high rate of disposals and acquisitions. By comparison, the general government sector would have most of its capital invested in plant and equipment (like computer hardware) or information systems, which depreciate more quickly and have relatively low land intensity as most government offices are now leased.

The model assumes that the ratio of capital stock and land to government expenses remains constant over time by each functional area. Since the rate of expense growth varies greatly in different functional areas, the faster growing areas will increase their share of the capital stock over time.

Another reason for a disaggregated model is that capital stock is not distributed across functional areas in the same proportions as expenses. Chart 5.10 shows the distribution of physical and land stock by area. Transport and Communications, Recreation and Culture and Education account for around 75 per cent of the value of capital stock, but only about one-third of expenses. Table 5.2 shows that these areas are expected to grow at a slower rate than the overall average of 5.5 per cent a year. Given that the capital stock is concentrated in the slower growing functional areas, the growth rate of capital expenditure is lower than the expense growth rate. The disaggregated model thus captures this effect.

Chart 5.10: Share of Capital and Land Stock by Value (2008-09)



Medium Term Estimates

A conventional capital stock-flow model is used to find the level of capital expenditure needed to maintain a constant ratio of capital stock to expenses in each functional area through the projection period. Estimates based on departmental data have been adopted for the first 10 years of the projection. Otherwise, the expected drop in capital expenditure over the forward estimates, after fiscal stimulus projects unwind, and the 'lumpiness' of large capital projects (particularly in rail), would not be captured. A consistent series is obtained by applying the capital expenditure growth rates from the stock-flow model to the expenditure levels at the end of these estimates.

Capital Expenditure Trends and Outlook

Nominal capital expenditure is projected to rise from around $7 billion in 2010-11 to $27 billion in 2050-51, or by approximately 390 per cent over the 40 years. This equates to an average growth rate of 3.4 per cent a year.

Capital expenses are expected to decline by an average of 0.7 per cent a year over the first 10 years. This is mainly the result of the withdrawal of the fiscal stimulus programs. However, the expected completion of major projects such as the Royal North Shore Hospital redevelopment also plays a role.

Excluding the first 10 years, the average annual growth in net capital expenses is expected to be 4.8 per cent. This is consistent with the growth in capital expenditure being lower than expense growth over the same period (5.4 per cent), given the concentration of capital stock in the slower growing functional areas.

5.4 Total Expenditure

Total expenditure is projected to rise from around $60 billion in 2010-11 to $470 billion by 2050-51. This is around 700 per cent in total or average growth of 5.3 per cent a year. Growth in expenditure is therefore expected to exceed nominal GSP growth by an average of 0.4 percentage points a year and the general government sector is expected to take up an increasing share of the economy.

Chapter 6: The Fiscal Gap

6.1 Introduction

Over the 40 years to 2050-51, revenues are projected to grow at an average rate of 4.9 per cent a year while expenditures are projected to grow at 5.3 per cent a year. The imbalance between revenue and expenditure growth, without any policy change, will result in a fiscal gap of 2.8 per cent of gross state product (GSP) by 2050-51. This is equivalent to $11.5 billion, based on 2009-10 GSP.

The primary balance is the difference between revenues and expenditures, excluding interest transactions. In the base year of 2009-10, the primary balance was -0.3 per cent of GSP. By 2051, it is expected to drop to -3.2 per cent, resulting in the 2.8 per cent gap[1].

As the primary balance deteriorates over time, debt levels will build up and interest payments will take up an ever larger share of actual expenditure. If measures are not taken to close the fiscal gap, net debt would rise from 2.3 per cent of GSP in 2009-10 to 119 per cent by 2050-51. Interest payments would also rise from around 3 per cent of total expenditure to around 30 per cent by 2050-51.

6.2 The Fiscal Gap

The fiscal position of the State has been projected over 41 years from 2009-10 to 2050-51 without future cyclical effects but incorporating economic and demographic factors. It should be emphasised that these projections are not forecasts, as they have been made on the basis of 'no policy change'. Future policy settings will change with each Australian and NSW Budget.

The fiscal projections differ from the Budget forward estimates as the latter includes the impact of policies announced in the Budget as well as movements in revenues.

The primary balance is the gap between expenditure and revenue excluding interest transactions but including net capital expenditure. It is the preferred measure of fiscal pressure because it is unaffected by initial debt levels and interest rate assumptions. The analysis in this Budget Paper is thus focused on the primary balance rather than the net operating balance. The fiscal gap is defined as the change in the primary balance between the base period (2009-10) and the end period (2050-51), expressed as a percentage of GSP.

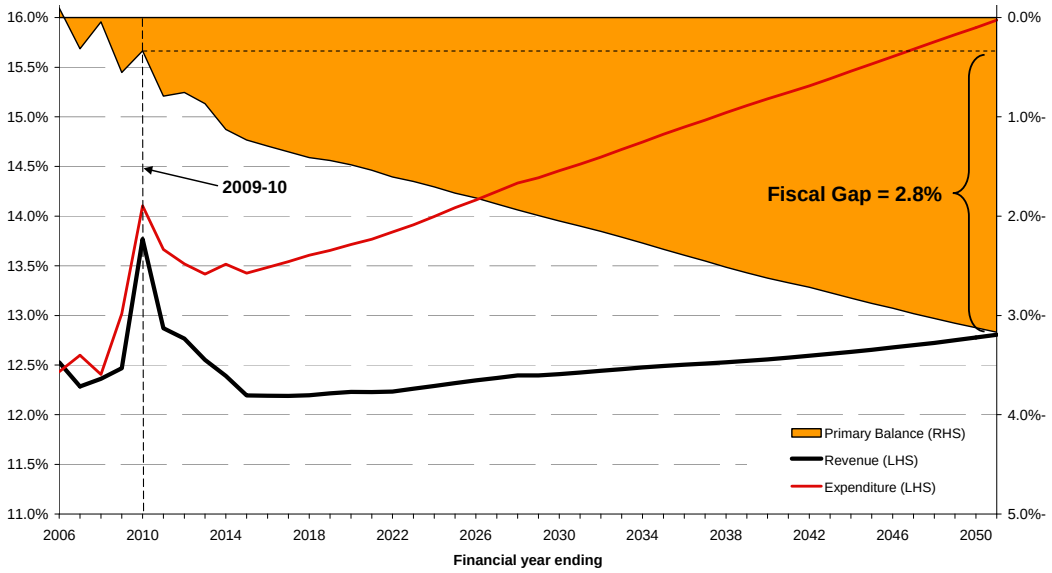
[1] Does not sum due to rounding.

In practice, the budget balance is more relevant because it indicates the sustainability of the fiscal position and includes interest costs. This report, however, is concerned with examining future pressures that may affect fiscal sustainability, rather than fiscal sustainability itself.

Chart 6.1 shows revenue, expenditure and the primary balance as a share of GSP through the projection period. The primary balance is projected to decline from –0.3 per cent of GSP in 2009-10 to –3.2 per cent of GSP by 2050-51, resulting in the fiscal gap of 2.8 per cent of GSP.

In 2009-10, both revenue and expenditure as a percentage of GSP peaked; revenue at 13.8 per cent and expenditure at 14.1 per cent. This peak was mainly due to the effect of fiscal stimulus programs, which will unwind in the coming years. Expenditure is expected to fall as a percentage of GSP over the forward estimates period, remaining relatively constant until 2016-17, after which it will climb steadily to reach 16.0 per cent of GSP by 2050-51. Revenue is expected to fall as a percentage of GSP over the forward estimates, reaching a low by 2014-15 before rising steadily to 12.8 per cent of GSP by 2050-51.

Chart 6.1: Primary Balance and Revenue and Expenditure as a share of GSP



The fiscal gap is due to higher expenditure growth than revenue growth, caused by ageing and the OGFs. Of the 2.8 per cent gap:

- 16 per cent (or 0.5 percentage points) is due to the ageing of the population
- 76 per cent (or 2.1 percentage points) is due to the OGFs
- 8 per cent (or 0.2 percentage points) is due to average revenue growth slightly below average nominal GSP growth.

Composition of the Fiscal Gap

Table 6.1 shows the breakdown of the fiscal gap by functional area. Health is the largest contributor, accounting for 2 percentage points. Social Security and Welfare is the second largest, adding 1 percentage point, almost all of which is driven by the OGF.

Education acts in the opposite direction to both these areas, reducing the fiscal gap by 0.5 percentage points as a result of demographic factors.

Table 6.1: Contributions to the Fiscal Gap in 2050-51 (per cent of GSP) [2]

Expenses	Demographic Factors	Other Growth Factor (OGF)	Total
Public Order and Safety	0.0	0.2	0.1
Education	-0.5	0.0	-0.5
Health	0.9	1.2	2.0
Social Security and Welfare	0.1	0.9	1.0
Housing and Community Amenities	n.a.	-0.1	-0.1
Recreation and Culture	n.a.	0.0	0.0
Agriculture, Forestry, Fishing and Hunting	n.a.	-0.1	-0.1
Transport and Communication	n.a.	0.1	0.1
Revenue Effect	n.a.	n.a	0.2
Total Fiscal Gap	0.5	2.1	2.8

Comparison with the 2006-07 Report

The composition and size of the fiscal gap has changed significantly since the 2006-07 Report. Then, around 40 per cent of the gap was accounted for by demographic factors and 60 per cent by the OGF. Examining this change in more detail, the contribution of the OGF in the results is very similar, being 2 percentage points in the 2006-07 Report and 2.1 percentage points in this one. The contribution from demographic factors has, however, fallen from 1.4 percentage points in the 2006-07 Report to 0.5 percentage points.

[2] Totals may not sum due to rounding. A positive number indicates an increase in the fiscal gap.

An improved demographic outlook has diminished the impact of ageing since the 2006-07 Report. This is due to higher migration and fertility. The 'base case' assumes:

- a fertility rate of 1.85 babies per female (1.76 in 2006-07)
- future net overseas migration of 180,000 a year, with 30 per cent going to New South Wales (110,000 in 2006-07)
- future net interstate migration of 20,000 a year outwards (18,000 in 2006-07).

The demographic assumptions of the 2006-07 Report would result, in the current model, in a fiscal gap of 3.1 per cent of GSP by 2050-51.

The other major reason for the decline in the impact of ageing on the fiscal gap in this report is a change from the usage index to evaluate the age sensitivity of the cost of acute patient care in the 2006-07 Report. This report uses an age-cost index for acute patient care which takes account of information on both usage and cost per use by age. The revised index suggests that costs are not as strongly weighted towards the older age groups. This change is largely responsible for reducing the Health component of the demographic impact on the fiscal gap, from 1.6 per cent of GSP to 0.9 per cent in this report.

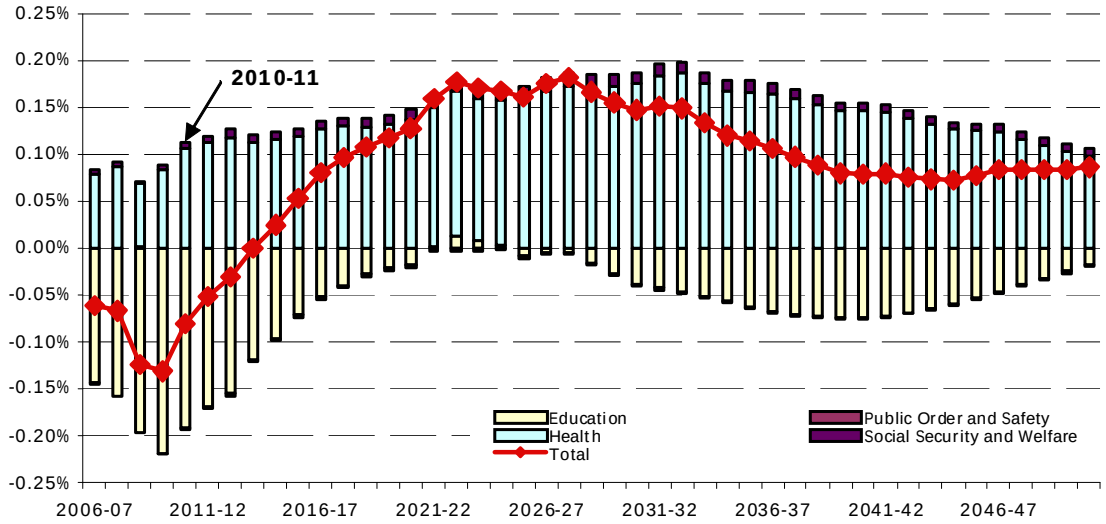
The diminished age sensitivity in some functional areas other than Health, and a higher threshold for assuming that a functional area is age sensitive, have also had a downward effect on the fiscal gap. In this report, for a functional area to be modelled as demographically sensitive, there must be age-based variation in usage or cost **and** the service must be demand driven. Whereas the functional areas of housing, police and transport were treated as age sensitive in the 2006-07 Report, this is no longer the case. Although they show some variation in usage or cost by age, they are not generally demand driven. This has reduced the demographic component of the fiscal gap by around 0.2 percentage points.

While updated demographic assumptions and revised treatment of age sensitivities have reduced the fiscal gap, revenue has also contributed. In the 2006-07 Report, revenue was projected to decline as a proportion of GSP, adding 0.3 percentage points to the fiscal gap by 2043-44. In this report, the revenue outlook is somewhat improved, resulting in a contribution to the fiscal gap of only 0.2 percentage points.

6.3 The Impact of Ageing

Although the impact of ageing has reduced since 2006-07, it is still important, particularly over the next 18 years as the baby boomers move into traditional retirement age. Chart 6.2 shows how ageing will contribute to expense growth over the projection period. The main dynamic is higher expense growth in Health being partially offset by lower expense growth in Education. To a lesser extent, there will also be extra demographic cost pressures from Social Security and Welfare and fewer cost pressures from Public Order and Safety.

Chart 6.2: Contribution to Age Related Expenses by Functional Area



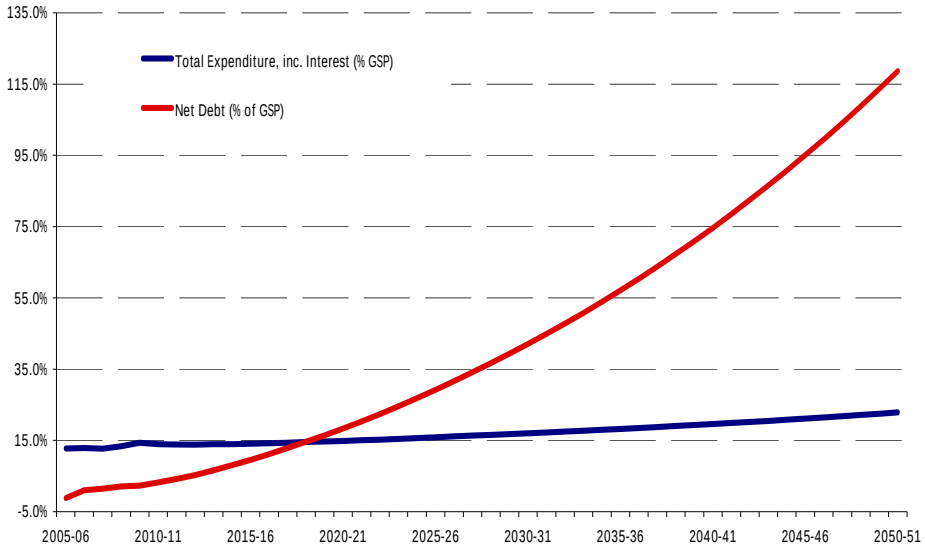
In recent years, ageing has reduced overall cost pressures on government, as negative cost pressures in Education have more than offset positive cost pressures in Health. With the retirement of the baby boomers from 2010-11, ageing cost pressures will rise rapidly. Between 2012-13 and 2014-15, ageing will shift to being a positive cost pressure. After 2014-15, demographic cost pressures are expected to continue to increase quickly, adding around 0.15 percentage points to annual expense growth through the 2020s, before easing back to around 0.1 percentage point by 2050-51.

From 2010-11 to 2020-21 the net turnaround in ageing cost pressures acting on the budget is projected to be 0.2 per cent a year. It is this turnaround, and the relative resource shift that it entails, that presents a significant fiscal challenge for the next 10 years, as much perhaps as managing the overall cost pressures expected over the next 40 years.

6.4 The Impact on Fiscal Sustainability

In this report the focus has been on the fiscal impacts of ageing and other cost pressures rather than on fiscal sustainability. If the effects of current debt levels and interest payments are taken into account then, as shown in Chart 6.3, expenditure and debt levels increase precipitously. Expenditure, including interest and net capital expenditure, would grow at an average rate of 6.2 per cent a year and increase from 14.5 per cent of GSP in 2009-10 to 22.9 per cent by 2051-51. Under this scenario net debt would increase at an average rate of 14.7 per cent a year, increasing from 2.3 per cent of GSP in 2009-10 to around 119 per cent by 2050-51.

Chart 6.3: Projected Expenditure (inc. interest) and Net Debt



Clearly the scenario presented here is not sustainable, with interest payments consuming an increasing share of total expenditure from 2.7 per cent in 2009-10 to approximately 30 per cent in 2050-51. Before such a scenario eventuated the Government would take corrective measures so that debt and interest payments remained manageable. The purpose of this report is not to forecast the trajectory of state debt and expenditure, but to put into perspective the magnitude and implications of the 2.8 per cent fiscal gap, if left unaddressed.

6.5 Sensitivity Analysis

If measures are to be implemented to address the fiscal gap, it is necessary to investigate the extent of changes required to close it. Further, the robustness of the projections is dependent upon the input assumptions and the sensitivity of the model to these assumptions. The following section provides sensitivity analysis showing the extent to which the fiscal gap changes, as the key input assumptions are varied.

Productivity

Economy Wide Productivity

One of the key assumptions in this report is that any real per capita income growth is matched by growth in government expenditure, or that the real income elasticity of government expenditure is equal to one. Hence additional economic growth alone will not reduce the fiscal gap if expenditure increases at the same rate as economic growth. It implies that economy wide improvements in labour productivity, although they will raise living standards, will have little impact on the fiscal gap unless combined with lowered community expectations.

Table 6.2 reports the projected fiscal gap under various combinations of real income elasticities and labour productivity growth assumptions. The results suggest that while the fiscal gap is not very sensitive to the economy wide productivity growth assumption, it is highly sensitive to the real income elasticity assumption.

Table 6.2: Impact of Productivity Growth and Real Income Elasticities on Fiscal Gap

		Annual Productivity Growth (per cent)			
		1.4	1.6	1.8	2.0
Real Income Elasticities (per cent)	110	3.5	3.7	4.0	4.2
	100	2.7	**2.8 (base)**	2.9	3.0
	90	2.0	2.0	2.0	1.9
	80	1.2	1.2	1.1	1.0

Relative to the 'base case' scenario the fiscal gap reduces from 2.8 per cent of GSP to 1.2 per cent when community expectations are lowered so that 80 per cent of real GSP per capita growth is reflected in government expenditure growth. This high sensitivity to the real income elasticity is because it has a direct effect on expenditure, while overall economic growth and revenue remains unaffected.

Holding the real income of elasticity constant at one and increasing the economy wide labour productivity growth assumption by 0.4 percentage points from 1.6 to 2.0 per cent a year increases the fiscal gap from 2.8 per cent of GSP in the 'base case' to 3.0 per cent of GSP. Increasing labour productivity by 0.4 percentage points increases revenues by less than expenditures, therefore increasing the fiscal gap by 0.2 percentage points.

The policy implications are that improvements in economy wide labour productivity, while effective in raising living standards, will not close the fiscal gap. If the fiscal gap is to be reduced it will be necessary to achieve productivity improvements while at the same time lowering community expectations.

Government Productivity

While state-wide productivity improvement will not by itself improve the projected fiscal gap, an improvement in productivity in the general government sector will have a clear impact. This is because an improvement in general government productivity growth will act directly to lower expense growth, therefore reducing the fiscal gap.

The modelling shows that if general government productivity growth could be immediately increased by 0.5 per cent, over and above that of economy wide productivity growth, then the fiscal gap would disappear entirely.

Participation

Increasing the labour participation rate has a very similar impact on the fiscal gap to increasing labour productivity. This is because an improvement in participation will boost real GSP per capita, which will in turn increase both revenue and expenditure—although it will increase expenditure by slightly more than revenue. Revenue will increase as the overall level of economic activity increases, whereas expenditure increases as a result of the assumption that the income elasticity of government expenditure is one.

For example, if the age based participation rates for over 55s at the end of the projection period are increased by six percentage points then the average rate of both revenue and expenditure growth will increase by 0.1 percentage points. Because the increase in revenue growth will be slightly less than the increase in expenditure, the projected fiscal gap will increase marginally from 2.8 per cent of GSP to 2.9 per cent.

Similar to productivity, while an increase in participation will improve living standards, it will not reduce the fiscal gap because it will increase both expenditures and revenues.

Population

The three main assumptions in the population projections are fertility, net overseas migration and life expectancy. Sensitivity testing is performed for fertility and overseas migration. Life expectancy is not sensitivity tested because unlike migration and fertility, life expectancies lend themselves to extrapolation and are not as influenced by government policy decisions as fertility and migration.

The 'base case' contains a fertility rate assumption of 1.85 births per female and a net overseas migration assumption of 180,000 inward migrants a year. Table 6.3 shows how the fiscal gap changes if the fertility and net overseas migration assumptions are varied.

Table 6.3: Impact of Fertility and Net Overseas Migration on the Fiscal Gap

(per cent of GSP)		Fertility Rate				
		1.60	1.75	1.85	1.95	2.1
Annual Australian Net Overseas Migration ('000)	160	3.0	3.0	3.0	3.0	2.9
	180	2.9	2.9	**2.8 (base)**	2.8	2.8
	200	2.7	2.7	2.7	2.6	2.6

The analysis suggests that the fiscal gap is not very sensitive to changes in the fertility rate. This is because while some relative Health cost pressures due to ageing are ameliorated, this gain is largely offset by higher expense growth in Education. On balance there are small improvements in the fiscal position as a result of higher fertility.

The fiscal gap is more sensitive to net overseas migration. The results show that for every 20,000 additional migrants a year (into Australia) the fiscal gap is reduced by approximately 0.1 percentage points. This is because migrants tend to be of prime working age, and therefore lower the aged dependency ratio and reduce relative growth in Health expenditure without imposing additional relative expense pressures in education.

Migration alone cannot be the solution to long-term fiscal pressures, as to close the fiscal gap to zero, with an assumed fertility rate of 1.85, Australian net overseas migration would have to be lifted to approximately 420,000 a year, an unprecedented level. If migration were to be lifted to a sufficient level to close the component of the fiscal gap that relates to ageing (0.5 percentage points) then net overseas migration would have to be lifted to 240,000 a year, which is below the peak of 316,000 a year in 2008.

While over the past 20 years annual real GSP growth has averaged 2.8 per cent, over the next 40 years it is expected to slow to 2.4 per cent a year. If average real GSP growth over the next 40 years is to be maintained at the same level as the last 20 years, all other things remaining constant, annual net overseas migration would have to be sustained at 280,000 a year. If fertility were to be increased from the current assumption of 1.85 to the replacement rate of 2.1, to maintain average real GSP growth of 2.8 per cent over the next 40 years, annual net overseas migration of 250,000 a year would be required.

The results suggest that the model is sensitive to demographic assumptions, particularly net overseas migration. Governments may well opt for higher migration and fertility as part of the solution of an ageing population. For the most part, however, the policy levers regarding migration and fertility lie not with the State, but with the Australian Government. The NSW Government can, however, potentially impact on the share of net overseas migration going to New South Wales, as will be discussed in the next section.

House Prices

In Section 4.2 it was shown that revenue growth is sensitive to the house price growth model. The preferred house price model, an econometric model for house price growth linked to wages, employment and stock market returns, resulted in a house price growth projection averaging 5.7 per cent a year over the next 40 years. Two other alternative models were also considered. The first has house prices growing in line with wages at 4.1 per cent a year, and the second has house prices growing at the historical average taken from the ABS series for Sydney established houses, which is 7.2 per cent a year.

Table 6.4 presents the results of sensitivity of the fiscal gap to the house price growth model.

Table 6.4: Sensitivity of the Fiscal Gap to House Price Model

House Price Model	Average Annual House Price Growth (%)	Average Annual Growth in Overall Revenue (%)	Fiscal Gap (% of GSP)
Wages ('low')	4.1	4.7	3.7
Econometric ('med')	5.7	4.9	**2.8 (base)**
Historical ('high')	7.2	5.1	1.7

The fiscal gap falls to 1.7 per cent if it is assumed that house prices grow at their historical rate and it increases to 3.7 per cent if it is assumed that house prices increase with wages. This is because property price growth—proxied by house price growth—drives taxation revenue growth through transfer duty and land tax. Higher house price growth therefore drives higher revenue growth, reducing the fiscal gap.

These results show that both revenue and the fiscal gap are sensitive to the house price growth model.

Carbon Tax

The carbon tax is expected to impact on the Budget in two main ways. It will reduce the growth rate of dividend and tax equivalent revenues from the electricity generation sector and will impose additional direct costs on service delivery. Due to data constraints at the time of preparation of this Budget Paper, only the larger impact associated with reduced PTE revenue has been included.

It is estimated that as a result of the carbon tax the average growth in overall dividend and tax equivalent revenues will fall by 0.3 percentage points, from 4.9 per cent to 4.6 per cent a year. This reduction in revenues, as a result of the carbon tax, increases the fiscal gap by approximately 0.1 percentage points.

Although the direct effect of the carbon tax on the cost of services is less than the PTE revenue impact, if included, it would cause a further minor upward shift in the fiscal gap.

6.6 Policy Implications

The pressures of ageing and other growth factors will open a significant fiscal gap which, if left unaddressed, would be unsustainable.

The timeliness and extent of the response from government will be critical in managing these projected fiscal pressures. Smaller responses early, mean larger responses at a later point in time can be avoided. Small changes now to issues such as labour force participation, productivity and community expectations can significantly alter fiscal and economic outcomes 40 years hence.

The modelling and analysis in the report point to a range of possible areas of policy response from governments which are discussed in further detail in this section.

Managing the Economy

Migration and Fertility

As seen in the sensitivity analysis, the fiscal gap improves somewhat with increased fertility and improves significantly with higher migration. In addition to reducing the fiscal gap, higher migration (and to a lesser extent fertility) would also mitigate the expected slowdown in the rate of economic growth.

The state government has little capacity to affect fertility rates, as most of the policy levers in this area relate to tax incentives, welfare benefits, childcare policies and maternity leave arrangements, which are the responsibility of the Australian Government.

Similarly, state government has very little capacity to influence Australian migration policy directly, but nevertheless it maintains responsibility for delivering the infrastructure and services which attract migrants. Well developed infrastructure and services, especially transport infrastructure and services which allow commutable access to employment opportunities, will make New South Wales an attractive location for migrants to settle.

Dwelling prices are an important consideration for migrants. If New South Wales is to boost the workforce and therefore economic growth by attracting migrants, there needs to be sufficient dwelling supply. Rules about the availability of new land and urban consolidation are within the control of state government. The transport, electricity, health, education and water infrastructure and services needed to support new dwellings are also a state responsibility. The NSW Government has announced a review into the planning system with a view to creating new State planning legislation. It is due to report within the next 18 months.

The sensitivity analysis demonstrated (Section 6.5) that both higher house price growth and higher migration will act to close the fiscal gap. It is certainly not suggested that a policy of higher house price growth would close the fiscal gap, as it is likely that this would have a long lasting downward effect on migration levels, thereby resulting in an extended period of reduced economic growth and a larger fiscal gap. The interaction between house prices, migration and the fiscal gap deserves further detailed consideration.

Improve Economy Wide Productivity

One key area of the economy where state government can exert influence, and contribute to a lift in potential GSP growth and living standards, is state-wide labour productivity growth. If, for example, productivity growth was to increase by an extra one half a percentage point per year, real income would be approximately 22 per cent higher in 40 years time.

The key mechanisms that the NSW Government is using to influence productivity growth include:

- providing high quality education and training and improving human capital
- removing regulatory and other red tape barriers for private business
- improving competition in the private sector
- adopting best practice in the provision of social and economic infrastructure (including improving the productivity of public trading enterprises)
- improving the efficiency of tax design and policy and
- improving public sector productivity in New South Wales.

It should be emphasised that, as observed in the last section, while economy wide improvements in labour productivity will increase incomes, they will not reduce the fiscal gap unless community expectations for improvements in government services are concurrently lowered.

Breaking the link between economic growth and government expenditure will be easier to achieve if the economy is growing strongly. In this circumstance government can still grow to meet additional service demands, but expenditure would make up a smaller proportion of the overall economy over time. As revenues tend to grow in line with the economy, the fiscal gap would diminish.

Strong productivity growth is therefore a vital ingredient for lowering community expectations.

Participation

Like productivity, an improvement in participation will not automatically reduce the fiscal gap, however, it will improve income and standards of living. If the projected NSW age-specific labour participation rates are increased so that by 2050-51 the aggregate participation rate is lifted by 2 percentage points, from 58.7 per cent in the 'base case' to 60.7 per cent, average real GSP growth will increase from 2.4 per cent a year to 2.5 per cent a year. This equates to a three per cent improvement in GSP by 2050-51, however, without a concurrent reduction in community expectations the fiscal gap would increase to 2.9 per cent of GSP by 2050-51.

The Australian Government has the responsibility for policies such as the taxation and welfare systems, which have the greatest potential for increases in labour force participation rates. If the State is to influence labour force participation, it must do so through public sector workforce policies, education and technical training and public health policies. A new national framework for vocational education and training will be developed by COAG in 2011 to enable all working age Australians to develop the skills and qualifications to more effectively participate in the labour market. Other aspects of COAGs broader policy agenda (e.g. National Health Reform and in Education) will help lift participation by supporting a healthier, more educated and active population.

Managing Government Expenditures

Government Productivity and Efficiency

While state-wide labour productivity improvements will not by themselves improve the projected fiscal gap, an improvement in labour productivity in the general government sector will reduce the cost of providing a given amount of government output while leaving revenues unaffected. The modelling shows that an increase in general government productivity growth of 0.5 per cent a year, over and above economy wide productivity, would close the projected fiscal gap.

If the productivity improvement was delayed by seven years, the annual improvement required to close the fiscal gap would rise to 0.6 per cent a year. If it were delayed by 15 years, the annual improvement required would rise to 0.8 per cent a year. In today's dollars a 0.5 per cent improvement amounts to efficiency gains of around $300 million a year. A 0.7 per cent improvement would amount to an efficiency gain of approximately $450 million a year.

A key finding in this report is the requirement to manage a relative resource shift from Health to Education as ageing cost pressures begin to impact. In the past, 42 per cent of potential Education savings associated with demographic and school choice trends have been realised. If 100 per cent of theses savings could be realised then the fiscal gap would decline by 0.2 percentage points, to 2.6 per cent of GSP by 2050-51.

The 2011-12 Budget contains strategies to reduce the rate of expenditure growth including targeted savings and efficiency measures, an improved expenditure review process to ensure budget discipline and rigorous evaluation of government activities, performance and costs.

In addition to productivity improvement, general government expenditure growth can be reduced via slower growth in input costs such as wages and capital. New South Wales public sector employee wages have been growing at a higher rate than private sector employees for some years. This was accentuated during the Global Financial Crisis, when private sector wage growth dropped below three per cent a year while public sector wages continued to grow at around four per cent a year.

To this end the Government has amended the NSW Industrial Relations Act, with the effect of limiting the cost of wage increases to 2.5 per cent a year, in line with the mid-point of the Reserve Bank of Australia's inflation targeting range. This will preserve real wages over time, and improve the state fiscal position, while allowing services to be maintained.

Community Expectations

While higher state-wide productivity growth will raise GSP growth and revenue growth, if the improvements in real incomes result in higher service expectations by the community, improved productivity will have no downward effect on the fiscal gap.

Particularly in health, there are ever increasing demands to provide the very best quality care. The costs, however, have to be managed in order to also educate children, provide care for the disabled, support law and order, and build essential infrastructure. At the extreme, as indicated in these projections, health spending would more than consume all NSW taxation revenues in 40 years time.

Community expectations regarding the limitations and role of government in delivering quality basic services and infrastructure is therefore important in managing future cost pressures.

Appendix A

Age-Cost Indices

For functional areas that are demand-driven and show variation in usage, or cost of use by age, usage and cost per usage data is combined to establish an age-cost index. This takes the form of an index that is consistent with the profile of cost with respect to age, in 5-year age cohorts. The index is scaled so that the total population usage index equals 100. The charts below show age group contributions to the indexes for various functional areas.

Chart A1: Prisons and Corrective Services (inc. Juvenile Justice)

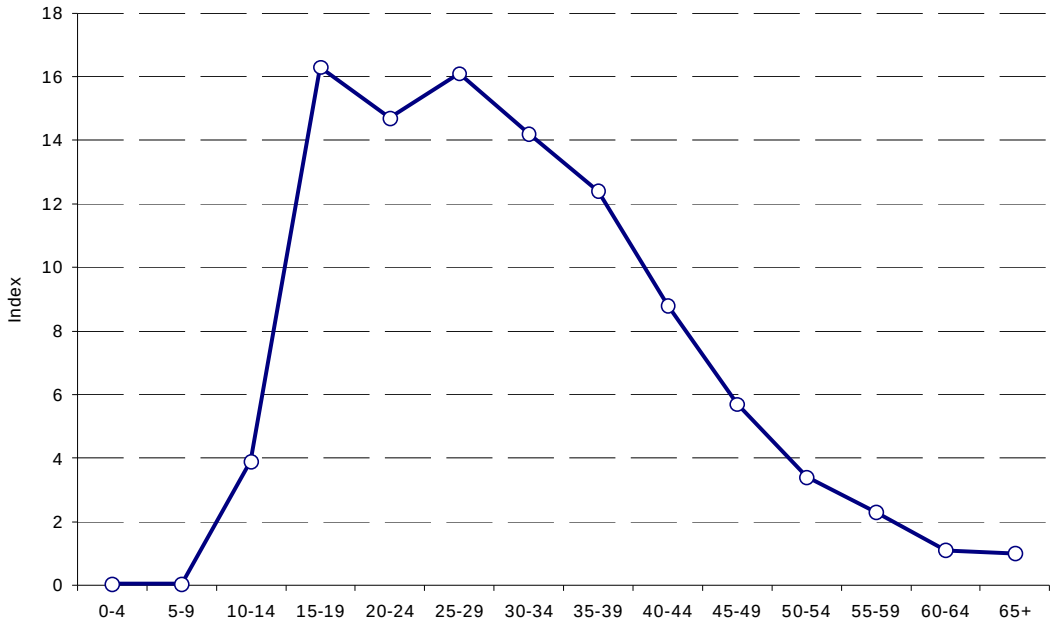
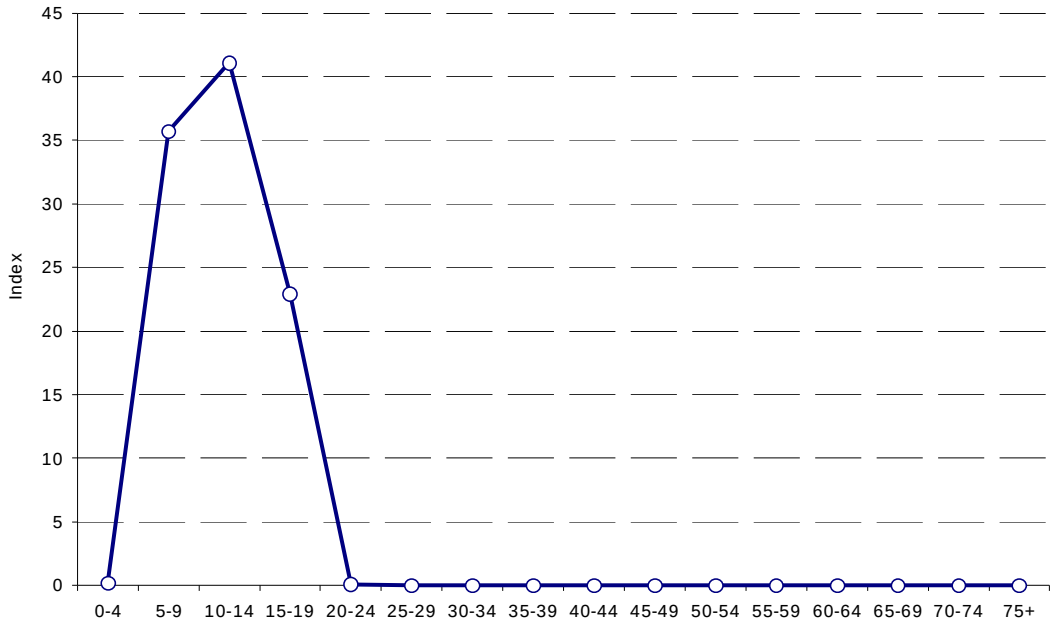


Chart A1 shows the usage index for 'Prisons and Corrective Services', which includes both prison stays and community supervision for both juvenile and legal age offenders. The index is based on data provided by the NSW Departments of Corrective Services and Juvenile Justice and shows that usage is concentrated amongst the 15-19 to 25-29 age cohorts, steadily declining thereafter.

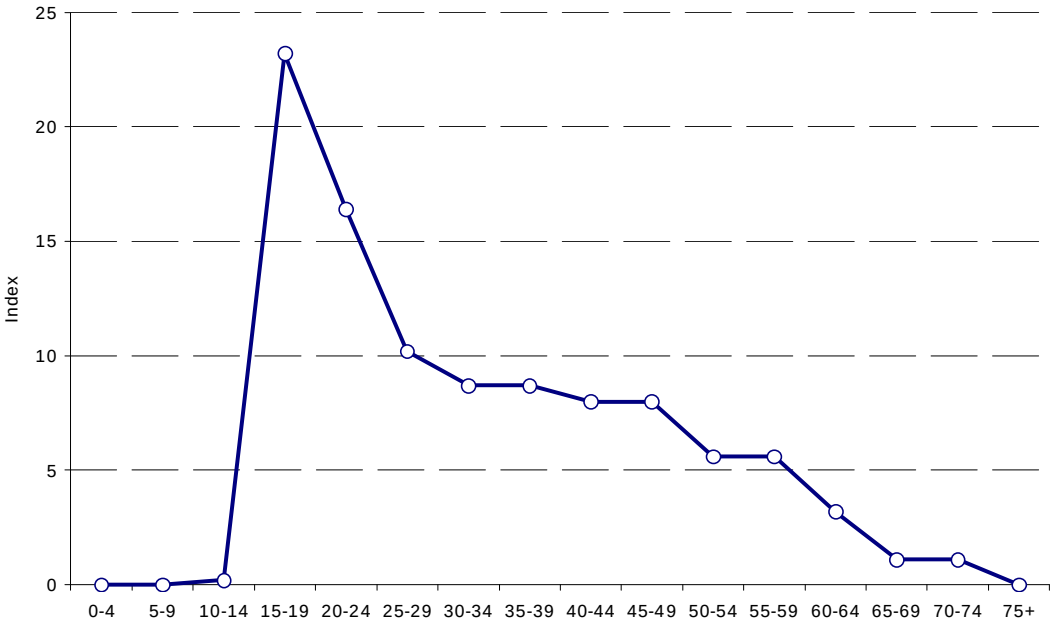
Chart A2: Primary and Secondary Education



The index for primary and secondary education is a combined usage and cost of use index. As might be expected, it is the youngest age groups that drive education demand. The index declines sharply after the 10-14 age cohort and is zero for the 20-24 cohort and beyond as students move on to tertiary education or the workforce.

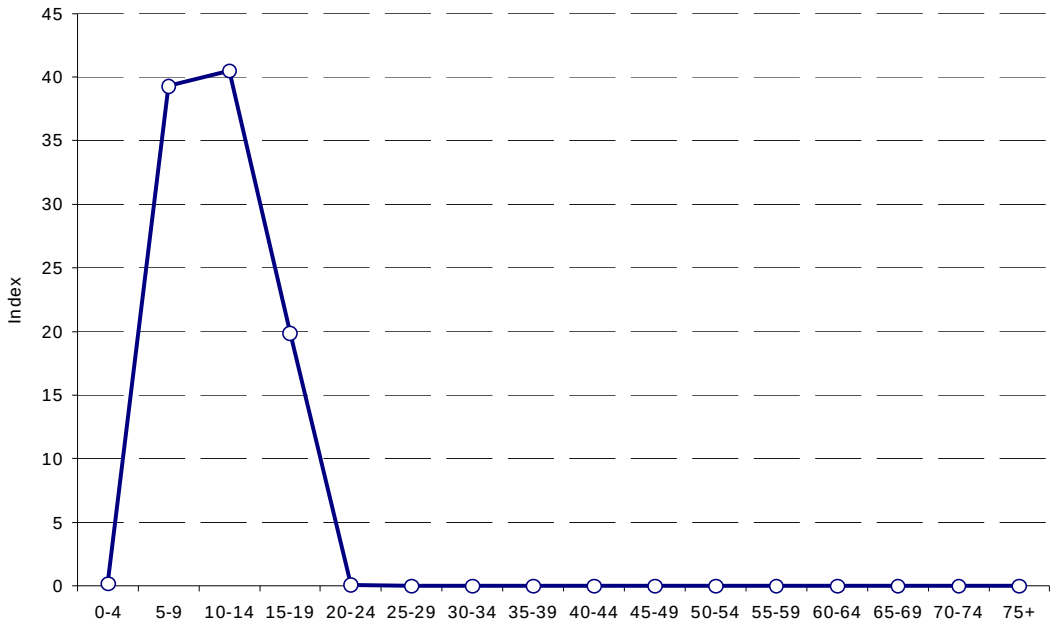
This index is derived from ABS age-based school participation data (ABS 4221.0) and NSW Treasury expense data on the cost of educating primary and secondary students.

Chart A3: Tertiary Education



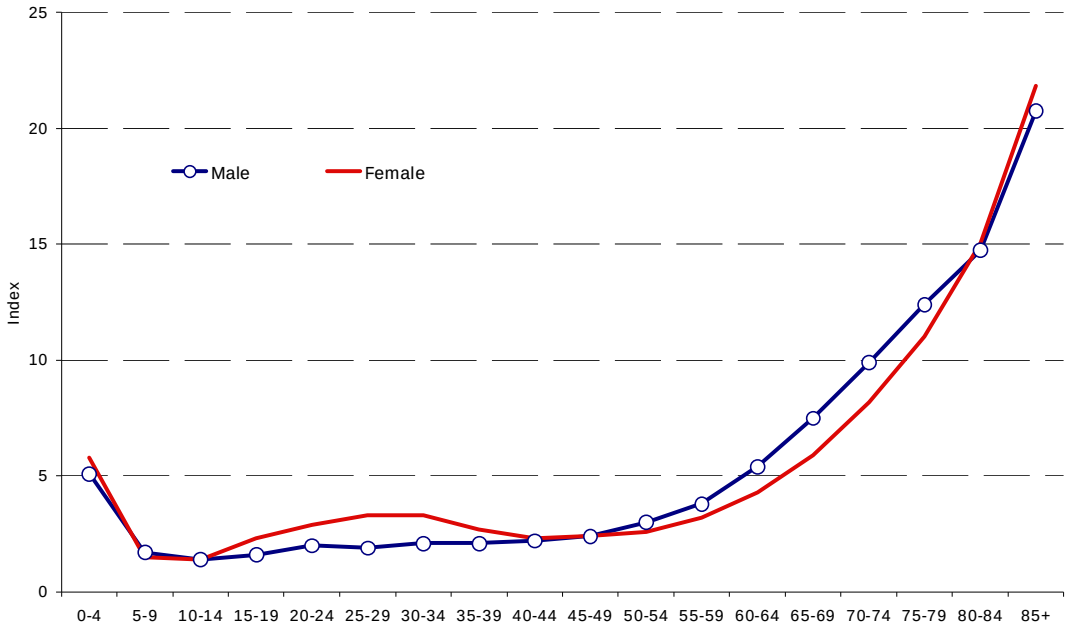
At the state level tertiary education covers technical and further education through the TAFE and community college system, with expenses driven primarily by usage. Usage peaks around the 15-19 age cohort though it remains significant through to the 45-49 age group and declines rapidly thereafter.

Chart A4: Transportation of School Students



The usage profile for student transport tracks that for primary and secondary education with only school students eligible for this service. In contrast to the primary and secondary education index, this is a usage index only since there is no variation in costs associated with age. This index was derived from school student participation data sourced from the ABS (ABS 4221.0).

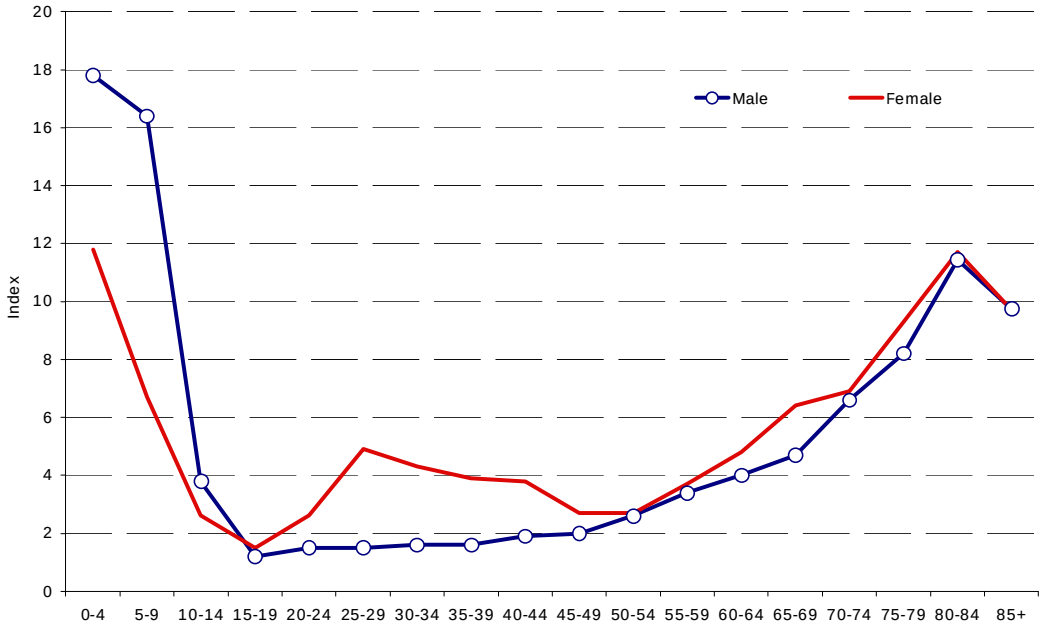
Chart A5: Patients of acute Care Institutions (Hospitals)



The age-cost index for 'Patients of acute Care Institutions' was derived using NSW Department of Health data. The index reflects both cost and frequency of use. It shows relatively high cost in the 0-4 age group due to hospital births, while the divergence in male and female demand between the 15-19 and 40-44 cohorts is again due to childbirth.

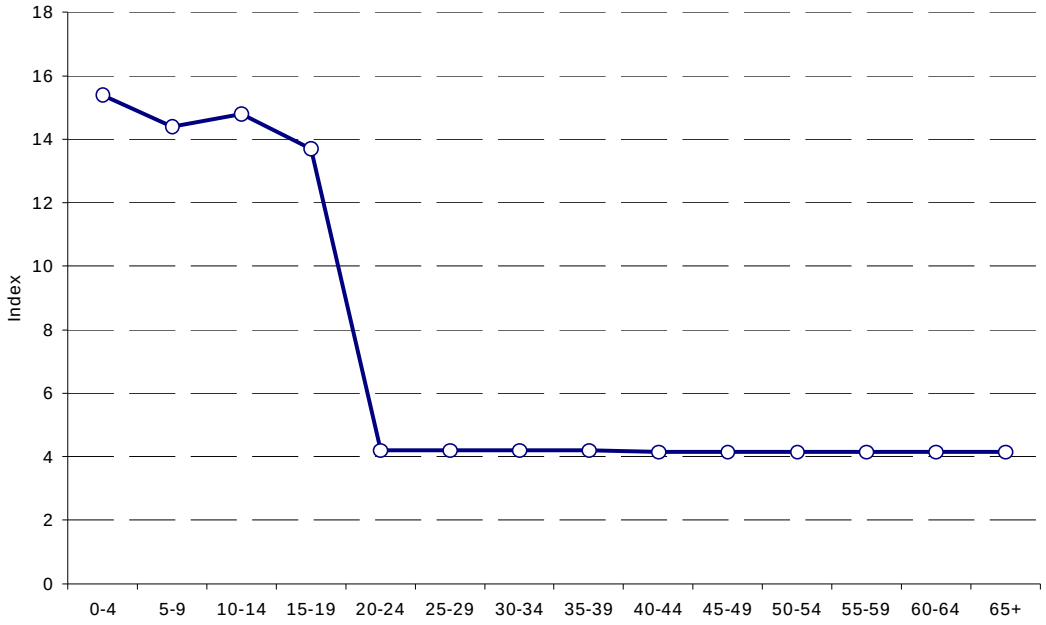
The sharp rise in the index in the later age cohorts is due to the increased propensity to require acute care.

Chart A6: Community Health Services



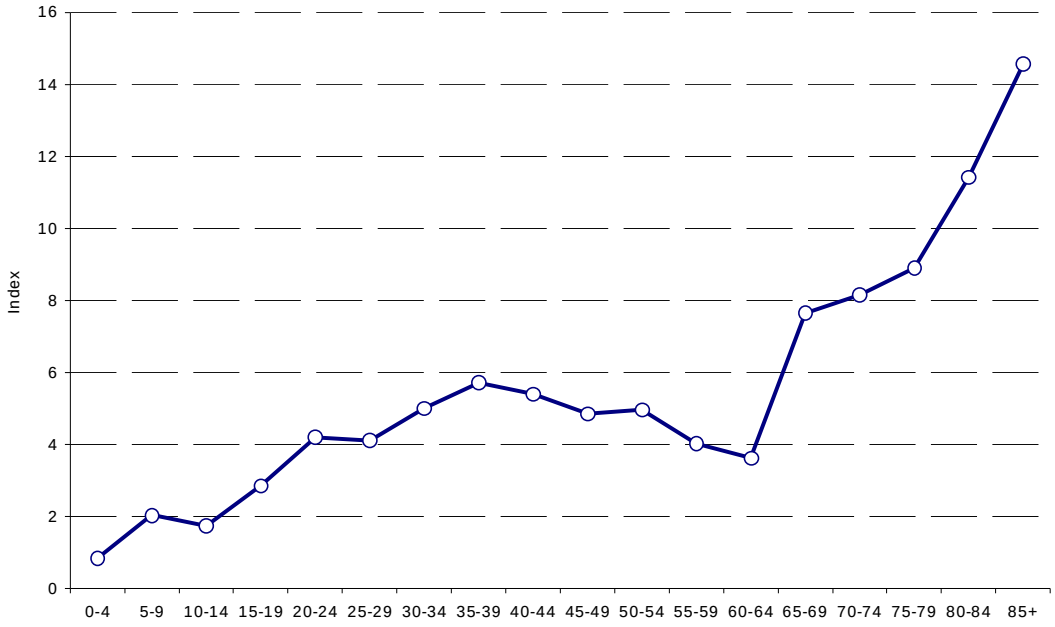
This index for 'Community Health Services' was derived using NSW Department of Health data. Usage is highest in the early age-cohorts due to child wellbeing and vaccination programs. Female usage increases during childbearing age. Cost then rises steadily for both males and females through the older cohorts. The slight drop in the 85 and over cohort may be a result of switching into acute care.

Chart A7: Family and Child Welfare Services



The index for 'Family and Child Welfare Services' primarily reflects the use and cost of providing child protection services. Data underpinning this index was sourced from FACS and budget data. The steep drop in the index between the 15-19 and 20-24 age cohorts is due to children entering adulthood and thus leaving the child protection system. The index does not fall to zero for older groups as there are programs in this area that are not age-specific.

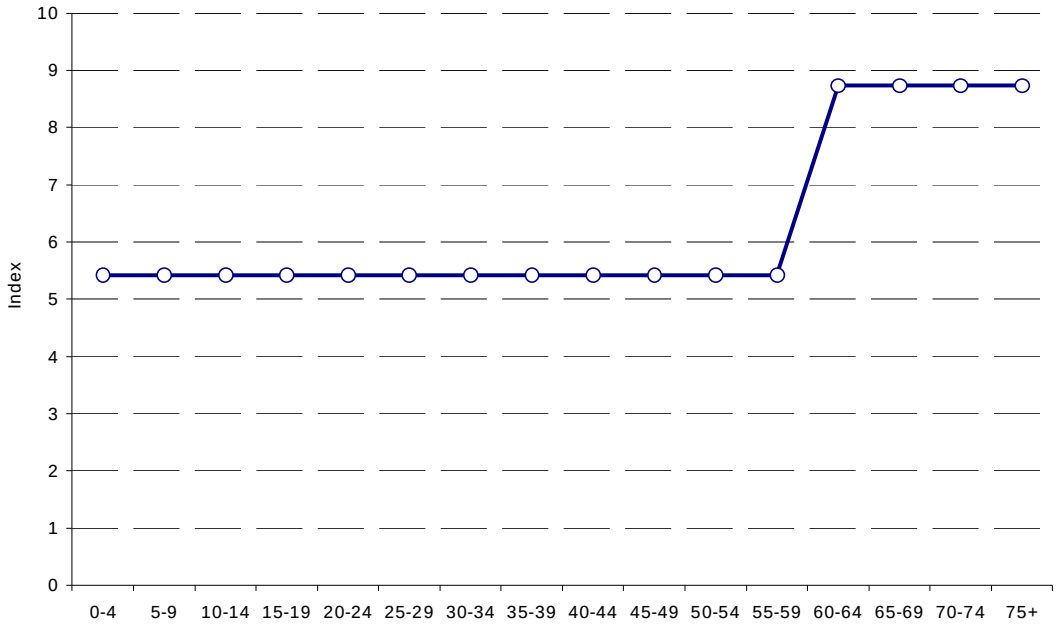
Chart A8: Welfare Services for the Aged and Disabled



The index for 'Welfare Services for the Aged and Disabled' reflects both usage and the cost of use and displays two distinct components. The first reflects the cost services for the disabled, which peaks at around the 35-39 age cohort and declines thereafter. The second reflects the cost of services provided to the aged which begins in the 65-69 cohort and escalates significantly thereafter. Data for this index was sourced from the PricewaterhouseCoopers report commissioned by the NSW Department of Ageing Disability and Home Care[1].

[1] PricewaterhouseCoopers Report 2005 Need & Supply Model

Chart A9: Other Welfare Services



The index for 'Other Welfare Services' reflects both usage and cost of use. It covers outlays on various pensioner concessions, such as those for utilities, transport (the pensioner excursion ticket) and other services. Since the provision of concessions is aged based, there is a step up in the index when the eligibility threshold is reached. There are also some expenses within this category that are not age sensitive.

Appendix B

Age-Cost Indices – Data Sources

Expenditure Category	Sub-category	Data Source
Public order and safety	Prisons and corrective services	NSW DCS Inmate Census Productivity Commission, *Report on Government Services* NSW Dept. of Juvenile Justice
Education	Primary and secondary school education	School Age/Cost Index combines ABS 4221.0 with unit cost data from DET.
	Tertiary education	VET Participation Index (ABS 3201.0)
	Transportation of school students	School Student Participation (ABS 4221.0 and 3201.0)
Health	Patients of acute care institutions	Hospital Care Index – cost and case mix weighted by age (NSW DoH).
	Community health services	Community Health Care Index – resource distribution weights (NSW DoH)
Social security and welfare	Family and child welfare services	DOCs and NSW Budget Data
	Welfare services for the aged and disabled	DADHC PricewaterhouseCoopers Report (2005) Need & Supply Model
	Other social security and welfare	Age index based on proportion of expenditure restricted to over 65s.

Appendix C

2011-12 Long Term Fiscal Pressures Report: Projections Summary

	2009-10	2020-21	2030-31	2040-41	2050-51	AAGR[a]
Economic projections (%)						
Nominal GSP growth	3.0	4.8	4.9	4.8	4.6	4.9
Real GSP growth	1.7	2.5	2.3	2.3	2.1	2.4
Productivity growth	0.8	1.6	1.6	1.6	1.6	1.5
Population growth	1.5	1.1	0.9	0.8	0.7	0.9
Employment growth	1.2	0.9	0.7	0.7	0.4	0.8
Participation rate	63.4	63.4	61.4	59.9	58.7	-
Real GSP per capita growth	0.1	1.4	1.4	1.5	1.4	1.4
Population projections[b]						
Fertility (%)	1.9	1.85	1.85	1.85	1.85	-
Net overseas migration ('000)	66	54	54	54	54	-
Female life expectancy (yrs)	84.5	86.5	88.2	89.6	90.9	-
Male life expectancy (yrs)	80.1	82.8	84.9	86.8	88.5	-
Total NSW population						
Under 65 ('000)	6,215	6,730	7,151	7,572	7,977	0.6
65 and over ('000)	1,018	1,425	1,872	2,231	2,555	2.3
Age dependency ratio (%)	20.9	27.2	33.8	37.7	40.9	-
Youth dependency ratio (%)	27.9	28.6	29.0	27.8	27.8	-
Total dependency ratio (%)	48.8	55.8	62.7	65.5	68.7	-
Fiscal parameters (per cent of GSP)						
Aggregates						
Revenue	13.8	12.2	12.4	12.6	12.8	4.9
Expenses	12.9	13.1	14.0	14.7	15.5	5.5
Net Capital Expenditure	1.6	0.9	0.9	0.9	0.9	3.4
Total Expenditure	14.1	13.8	14.5	15.2	16.0	5.3
Primary Balance	-0.3	-1.5	-2.8	-2.7	-3.2	-
Expenditure functions						
General Public Services	0.4	0.4	0.4	0.4	0.4	5.0
Public Order and Safety	1.4	1.4	1.5	1.5	1.6	5.2
Education	3.0	2.8	2.7	2.6	2.5	4.5
Health	3.5	4.0	4.6	5.2	5.7	6.2
Social Security and Welfare	1.1	1.3	1.5	1.8	2.1	6.6
Housing and Community Amenities	0.9	0.5	0.5	0.5	0.5	4.0
Recreation and Culture	0.3	0.3	0.3	0.3	0.3	5.2
Agriculture, Forestry, Fishing	0.2	0.2	0.2	0.2	0.2	4.0
Transport and Communications	1.7	1.8	1.8	1.8	1.8	5.1
Other	0.3	0.3	0.3	0.3	0.3	5.0

(a) AAGR: Average annual growth rate in the levels for the period 2011-12 to 2050-51.

(b) Projections based upon the level for the calendar year coincident with the end of the relevant financial year.

Appendix D

2006-07 Long Term Fiscal Pressures Report: Projections Summary

	2009-10	2020-21	2030-31	2040-41	AAGR[a]
Economic projections (%)					
Nominal GSP growth	5.1	4.6	4.5	4.5	4.7
Real GSP growth	2.5	2.0	1.9	1.9	2.1
Productivity growth	1.7	1.8	1.8	1.8	1.7
Population growth	0.9	0.7	0.5	0.3	0.6
Employment growth	0.7	0.3	0.2	0.2	0.4
Participation rate	63.5	60.0	57.1	55.4	-
Real GSP per capita growth	1.6	1.3	1.4	1.6	1.4
Population projections[b]					
Fertility (%)	N/A	1.76	1.76	1.76	-
Net overseas migration ('000)	39.2	39.2	39.2	39.2	-
Female life expectancy (yrs)	N/A	86.4	N/A	N/A	-
Male life expectancy (yrs)	N/A	82.4	N/A	N/A	-
Total NSW population					
Under 65 ('000)	6,024	6,245	6,348	6,430	0.3
65 and over ('000)	1,035	1,449	1,834	2,088	2.2
Age dependency ratio (%)	21.9	29.4	36.6	41.0	-
Youth dependency ratio (%)	27.6	26.7	26.6	26.2	-
Total dependency ratio (%)	49.6	56.1	63.2	67.1	-
Fiscal parameters (per cent of GSP)					
Aggregates					
Revenue	12.9	12.8	12.9	12.9	4.6
Expenses	13.0	13.8	14.8	16.0	5.3
Net Capital Expenditure	1.0	1.1	1.1	1.1	5.2
Expenditure	14.0	14.8	15.9	17.1	5.3
Primary Balance	-0.3	-1.1	-2.1	-3.2	-
Expenditure functions					
General Public Services	0.4	0.4	0.4	0.4	5.2
Public Order and Safety	1.4	1.4	1.5	1.6	5.2
Education	3.5	3.3	3.3	3.3	4.5
Health	3.4	4.1	4.9	5.7	6.2
Social Security and Welfare	1.0	1.2	1.3	1.4	5.7
Housing and Community Amenities	0.5	0.6	0.6	0.7	5.5
Recreation and Culture	0.3	0.3	0.3	0.3	4.5
Transport and Communications	1.6	1.7	1.7	1.8	5.3
Other[c]	1.1	1.3	2.3	3.8	7.7

(a) AAGR: Average annual growth rate in the levels for the period 2003-04 to 2043-44

(b) Projections based upon the level for the calendar year coincident with the end of the relevant financial year.

(c) For the 2006-07 LTFM, 'Other' includes expenses for Agriculture, Fisheries, Forestry and Hunting.

Chart and Table List

Chapter 4 Revenue

Chapter 5 Expenditure

Chapter 6 The Fiscal Gap

Appendix A Age-Cost Indices