

# Economic *Roundup*

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# Trends in infrastructure

Greg Coombs and Chris Roberts<sup>1</sup>

The adequacy of Australia's infrastructure has been a long-standing topic of debate. This article provides some insight into the question of infrastructure adequacy by examining trends in investment across OECD countries, and discusses some of the fundamental factors influencing Australia's investment relative to other OECD countries. The article also looks at the question of the changing composition of public and private infrastructure spending in Australia over recent decades.

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<sup>1</sup> Greg Coombs is from the Macroeconomic Policy Division and Chris Roberts is from the Industry, Environment and Defence Division of the Australian Treasury. This article has benefited from comments and suggestions provided by Graeme Davis, John Hawkins and Gene Tunny. The views in this article are those of the authors and not necessarily those of the Australian Treasury.

## Introduction

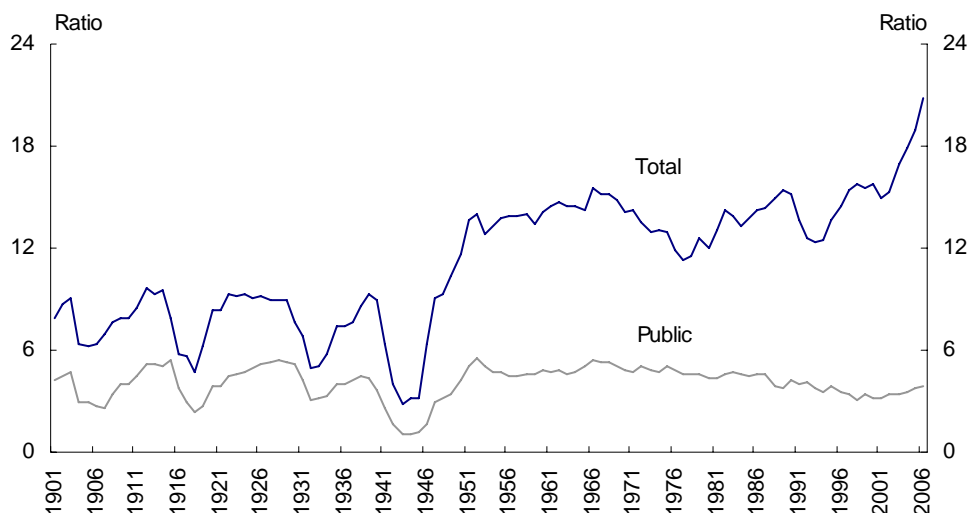
Debate over the adequacy of Australia's infrastructure had its genesis in 1786 with the decision by the British government to establish a convict settlement at Botany Bay. This decision changed the way in which the British authorities dealt with convicts because, unlike the convict trade with North America, the British government committed not just to the transportation of convicts but to a major investment in public infrastructure (Boot 1998). The debate has returned time and time again through our history, and the debate is no less relevant now than it was then. This article presents some stylised facts and identifies some broad factors that should be taken into consideration in such debates.

## Trends in Australian infrastructure investment

### The very long run

In broad terms, through the period from Federation to the present, total fixed capital investment as a proportion of GDP has fluctuated widely from around 3 per cent of GDP to around 19 per cent of GDP.

**Chart 1: Ratios of total and public investment to GDP: 1901-2005**



Source: Maddock and McLean (1987) for data from 1901 to 1981, ABS cat. no. 5204.0, Table 62 and 63 for data from 1982-2005, and Treasury calculations. Public investment refers to total gross fixed capital formation by the public sector, which includes machinery and equipment and non-dwelling construction, net of dwelling construction. Chain volume measure, 2004-05.

There was a sustained rise in investment of over 5 per cent of GDP immediately following World War II, mainly attributable to private fixed capital. During the 1950s, just over half of the increase in private fixed capital investment was attributable to non-dwelling investment. Important sectors were manufacturing, commerce and

equipment for agricultural production. In the 1960s, the mining and finance sectors joined manufacturing as the major investing sectors. The resources boom came to a halt in the early 1970s and with it mining investment.

Compared to private investment, public investment has fluctuated by much less: in a band between just over 1½ per cent and just under 6 per cent of GDP. Wide swings in public investment were evident prior to the 1950s, but subsequently, public investment has been a relatively stable proportion of GDP and a declining proportion of total investment.

In the years from Federation to World War II, public investment in infrastructure increased to complement industrial development, the spread of the use of the motor vehicle and utility networks for sewerage and electricity. It then fell as resources were switched to the war efforts during 1914-18 and 1939-45. This period also experienced wide fluctuations in economic growth.

During the period from the end of World War II to the late 1970s, public sector investment was strong. Investment rose quickly to clear the backlog of public works that had accumulated over the 1930s and the war years. Population growth was strong: during the period 1946-1975 more than 2 million migrants (net) arrived in Australia, and the fertility rate peaked at 3.5 children per woman in 1961. Public investment reached a post-war peak of just over 6 per cent of GDP in the mid-1960s, a level of investment not surpassed since the era of 'colonial socialism' of the second half of the 19th century. Strong public investment underpinned the rapid industrial expansion and urban development of Australia in the post-war years.

## Recent times

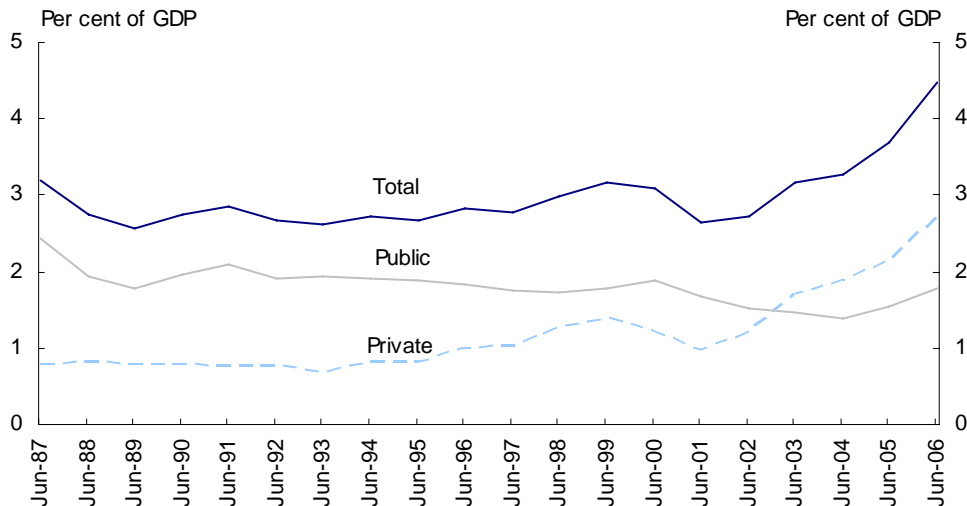
Chart 2 takes a closer look at a recent period – from June 1987 to June 2006 – for a sub-set of fixed capital expenditure – investment in economic infrastructure. Economic infrastructure covers utilities and non-dwelling construction.

Investment in economic infrastructure stood at 4.5 per cent of GDP in June 2006, compared with 3.2 per cent in June 1987.

Since the mid-1990s, the decline in public sector investment in infrastructure has been more than off-set by private sector investment in infrastructure, reflecting in part recent investment in infrastructure for export of commodities but also National Competition Policy reform, as discussed in the accompanying article in this *Economic Roundup*. Total public sector investment in infrastructure has declined as a proportion of GDP, from just under 2.5 per cent to just over 1.8 per cent of GDP. Both Commonwealth and state public sector investment has declined, broadly by the same proportion.

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**Chart: 2 Investment in economic infrastructure by sector**  
As a percentage of GDP



Source: ABS cat. no. 8762.0, Table 5, current prices. Economic infrastructure includes non-dwelling construction excluding buildings.

Underlying these trends is that infrastructure investment as a proportion of GDP reflects efficiency gains in the provision of new public investment, as productivity levels in construction increased in the late 1990s compared with historical trends (Dolman et al, 2006).

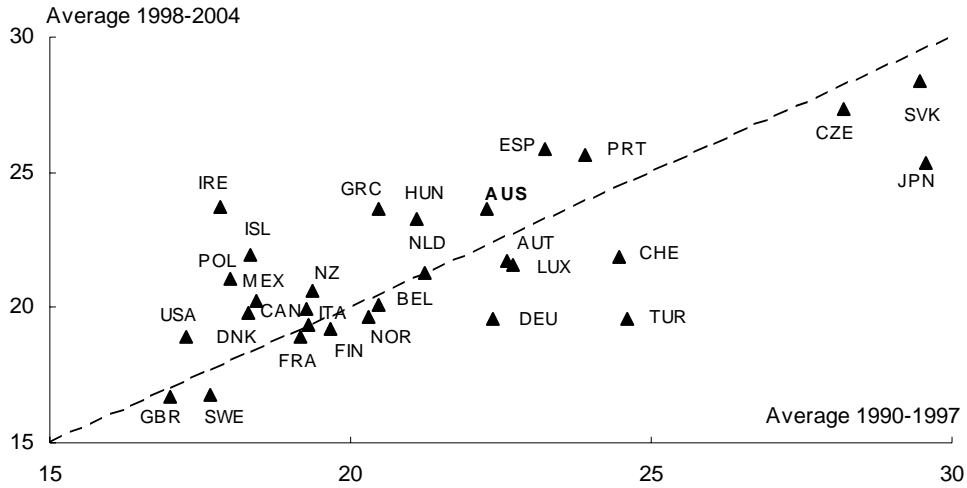
## International comparisons

Total fixed capital investment across OECD countries has been stable over the whole of the period 1990-2004, with as many countries reducing investment over the period 1998-2004 (below the no change line) as increasing investment (above the no change line).

Australia's total fixed capital investment as a proportion of GDP was slightly higher than the OECD average over the period 1990-2004, and significantly higher than that of the United States (Chart 3a).



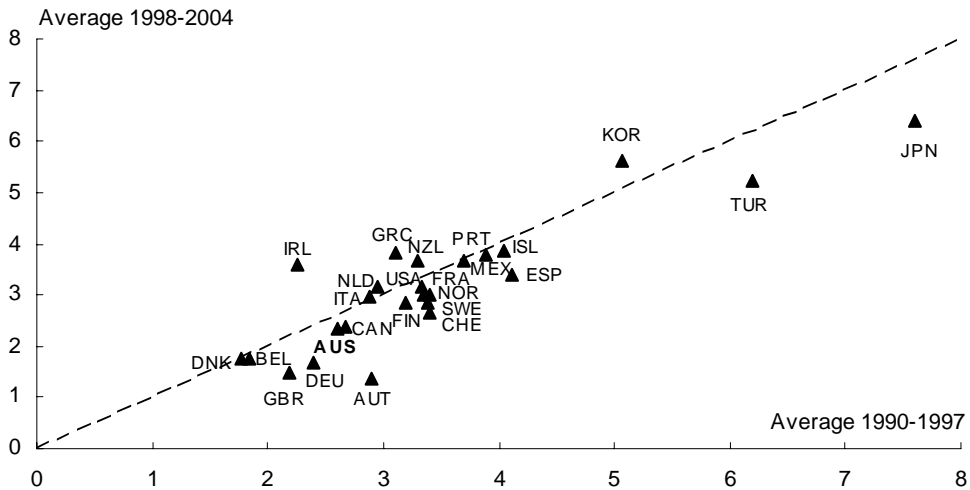
**Chart 3a: Total investment, percentage of GDP**



Source: OECD (2006c), excludes Korea.

Australia's investment in public infrastructure as a proportion of GDP is at the lower end of OECD countries (Chart 3b), and has only slightly declined from an average of 2.6 per cent of GDP over 1990-1997 to 2.3 per cent of GDP over 1998-2004. The reduction in Australian investment is in keeping with the majority of other OECD countries, although some countries have reduced investment significantly.

**Chart 3b: Public investment, percentage of GDP**



Source: OECD (2006a), data for 25 OECD countries.

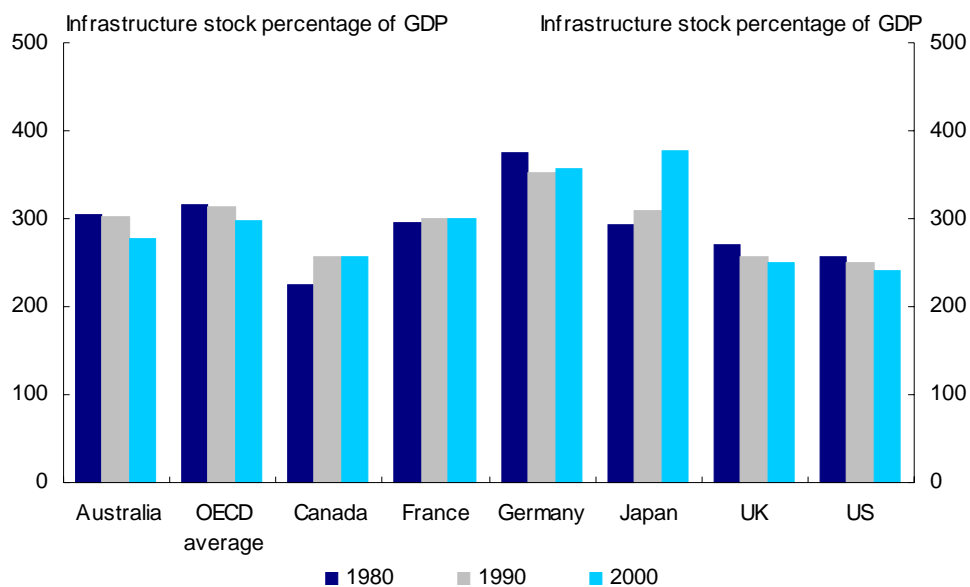
As fixed capital tends to have a long economic life, often spanning many decades, the flow of current investment is unlikely to be a reliable indicator of capital adequacy. A better approach is to measure the value of the capital stock, that is, the cumulated

## Trends in infrastructure

value of investment over a long period minus the consumption of that capital used in the process of producing goods and services. Internationally comparative measures of capital stock (and infrastructure) are problematic because of differing definitions, depreciation rates, and data collection methods. Nonetheless research by Kamps (2004) of the International Monetary Fund provides internationally comparable estimates of infrastructure stock using the perpetual inventory method.

Kamps identifies that Australia's capital stock to GDP ratio has gradually declined over the past three decades, consistent with the United States and the average of OECD countries. Many countries undertook major investment during the 1950s to 1970s, particularly in manufacturing and services, reflecting the modernisation of advanced economies at that time. This capital stock has been gradually utilised over the following decades.

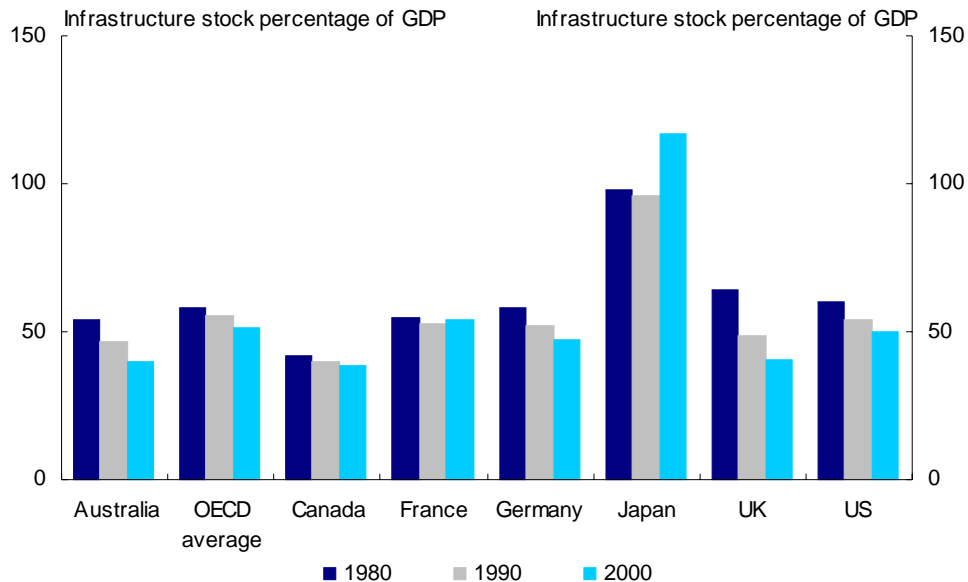
**Chart 4a: Total net capital stock to GDP ratio in selected OECD countries at 2000 purchasing power parity, in US dollars**



Source: Kamps (2006) and Kiel Institute (2006).

Kamps confirms that the decline in Australia's public investment is also reflected in estimates of the value of the capital stock. Chart 4b shows that on the basis of public capital to GDP ratio, Australia ranked 16th of 22 OECD countries in 2000. Public capital-GDP ratios have tended to decline in most OECD countries since the late 1970s, and there is considerable disparity in public capital across OECD countries even though there has been some convergence in the past two decades.

**Chart 4b: Government net capital stock to GDP ratio in selected OECD countries at 2000 purchasing power parity, in US dollars**



Source: Kamps (2004).

## Interpreting the trends

Is Australia's relatively low rate of investment and low stock of public infrastructure impeding economic performance? There is no simple answer to this question. A number of factors bear on the question, including the impact of structural change, Australia's population concentration, the stage of the replacement cycle and aggregate investment signals – these are considered further below. Policy and policy coordination issues are handled in the companion article in this edition of *Economic Roundup*.

## Impact of structural change

The evolving structure of the Australian economy has changed both the level and composition of infrastructure investment, creating ebbs and flows in investment over the past half century. There are several factors at play.

In a period immediately after the Second World War, the manufacturing sector share of GDP peaked at around 25 per cent and then steadily declined to around 10 per cent by the end of the 20th century. During the same period, the agriculture share of GDP also declined from around 20 per cent to less than 5 per cent of GDP. The less infrastructure-intensive services sector's share of GDP rose from around 50 per cent to around 80 per cent. As the main reliance on the economy shifts from manufactures and

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agriculture to the services sector, the composition of its infrastructure also changes. New technologies enabled the extension of the economic life of existing infrastructure and new infrastructure was installed for telecommunications, including fibre optic cable.

Demographic factors have had an important bearing on the level and pattern of public investment in infrastructure. Population growth was a strong factor influencing infrastructure demand in the 1950s and 1960s. The development of new suburbs including public housing created complementary needs for roads, reticulated water, electricity generation and distribution and for schools, health and other public facilities.

Furthermore, increasing longevity and lower birth rates are expected to change infrastructure priorities, with higher needs for aged care facilities and reduced needs for schools. The changing pattern of population settlement has created demand pressures in provincial regions, particularly in coastal areas.

Changing preferences, particularly the preference for a cleaner environment, will also place pressure on infrastructure. For example, there may be more demand for better water quality and power generation involving lower carbon emissions.

## Population concentration

Infrastructure is a means to an end: to get people, goods and services from where they are to where they need to be in order to meet the needs of economic and social activity in an efficient manner. An important characteristic of infrastructure – common to transport, communication, distribution and disposal – is the size of the network, which reflects the geographic concentration of the population.

Economic geography sets Australia apart from most other OECD countries. Australia is a vast continent with a small population and thus Australia's population density is among the lowest in the world (at around two persons per square kilometre). However, for the provision of infrastructure, population concentration, not density, is the more important factor. Geographic concentration refers to the degree of unevenness of the spread of the population over a country.

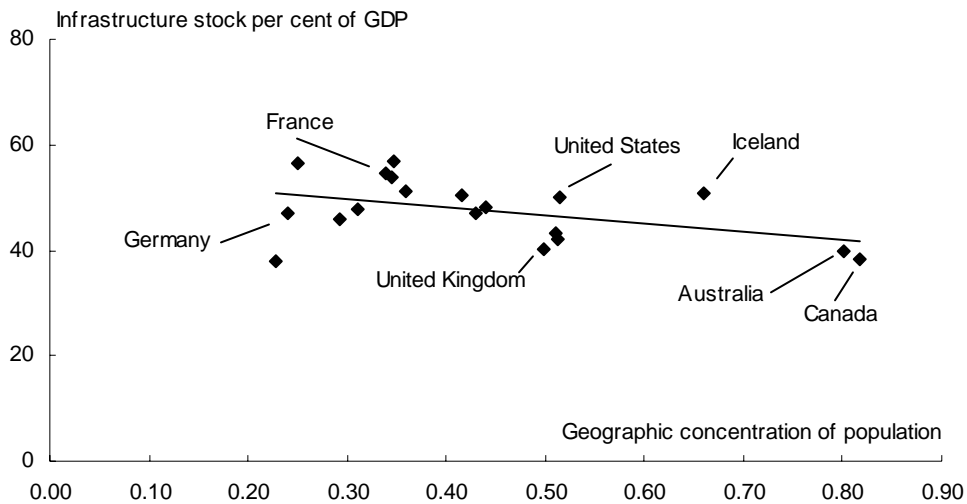
The higher the population concentration, the smaller the infrastructure network because the shorter is the average distance of the connections between people, goods and services necessary for engaging in economic and social activity. Australia has one of the most uneven population distributions in the OECD – most of the population is concentrated in a small number of large cities. In terms of the OECD's population

concentration index, Australia has an index of 0.80, which is twice the OECD average.<sup>2</sup> Only Canada's population is spread more unevenly than Australia's, and only slightly so, with an index of 0.82.

The lower the population concentration, that is, the more even the spread, the larger the infrastructure network because the longer is the average distance of the connections between people, goods and services necessary for engaging in economic and social activity. With an index of 0.34, France has a low population concentration compared with the OECD average. Even though Paris is a big city, a large proportion of the population is spread throughout the country.

Chart 5 shows that for the OECD high-income group of countries, the greater the population concentration, the lower the infrastructure stock as proportion of GDP.

**Chart 5: OECD countries — relationship between geographic concentration of population and public infrastructure stock, 2000**



Source: Kamps (2004) for infrastructure stock as a proportion of GDP and OECD (2005) for the geographic concentration index. Groningen Growth and Development Centre (2006) data base was used for high-income countries based on GDP per capita in purchasing power parity terms. Countries included are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States.

2 The population concentration index measures agglomeration. The index is calculated as the difference between the population share of a region and the area share of a region, summed for each region. In precise terms,  $\text{index} = \sum_{i=1}^N |p_i - a_i|$  where  $p_i$  is population share of region  $i$ ,  $a_i$  is the area of the region  $i$  as a percentage of the country area,  $N$  stands for the number of the regions and  $| |$  stands for the absolute value.

## Trends in infrastructure

While the relationship between concentration and public infrastructure is statistically significant, only about 20 per cent of the change in infrastructure stock can be explained by concentration. This indicates that there are other factors that contribute to the size of the infrastructure stock for any particular country. Thus these results should be regarded as indicative only and warrant further investigation.

For example, population density within cities is likely to influence infrastructure stock as a proportion of GDP. Calling on the discussion above, the population density of Paris is much higher than that of any city in Australia, and thus the infrastructure stock as a proportion of GDP would, all other things the same, be lower. This example brings out the point that countries with a small population such as Australia need not bear high infrastructure costs per capita where populations are agglomerated in a small number of large cities. In other words, to some degree, Australians have adapted economic activity to the geographic context of the continent. The question for investigation is how well Australia has adapted to its geographic context.

The qualifications to the above results run deeper than human geography. For example, in terms of physical geography, temperature variation, degree of undulation of the land, soil type, stability of the land mass and type of raw materials available for construction of infrastructure, all play an important role in determining the cost of infrastructure.

Some of the OECD countries have been excluded from Chart 5 because there is good reason to believe that these countries are some distance away from optimal investment levels and this would distort the results.

Ireland is an outlier, and has been excluded from the scatter plot. Despite low population concentration, the country has low infrastructure stock. As the OECD (2006b) states, investment in infrastructure has not kept pace with Ireland's very rapid economic growth, and that underinvestment may impede Ireland's economic growth in the future.

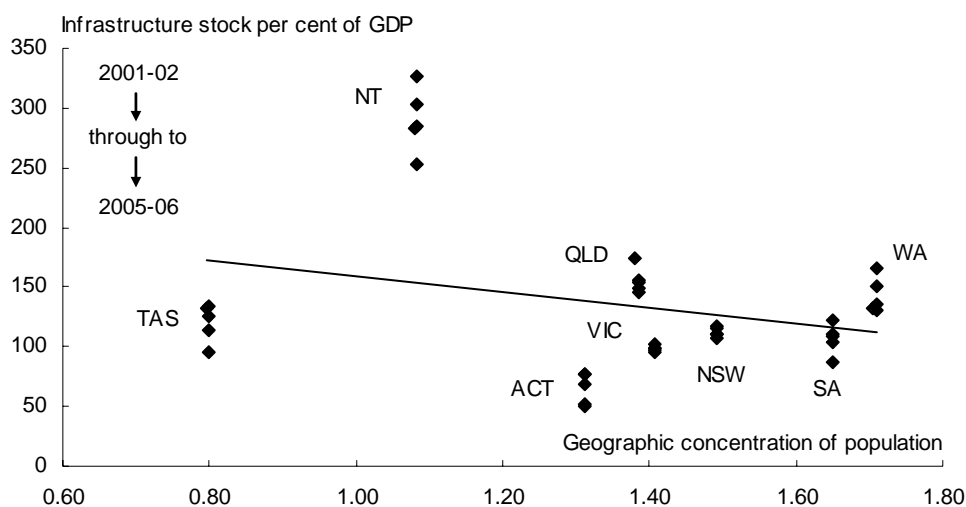
Japan and New Zealand have by far the highest public infrastructure stock-to-GDP ratios, but have been excluded from the scatter plot. It is well known that the Japanese government repeatedly attempted (in vain) to reinvigorate the sluggish economy with the help of large public construction programmes. New Zealand undertook a major infrastructure programme over 15 years to the mid-1980s, thus the average age of the infrastructure stock is young and hence the capital stock value is high relative to other OECD countries. New Zealand also over-provided infrastructure. Since the mid-1990s New Zealand has dropped back to low investment rates of between 2 to 3 per cent of GDP.

The methodological approach for the cross-country OECD comparison above is replicated for the Australian states and territories in Chart 6. The population concentration index was developed from data on statistical divisions.

In Australia's case, most of the states and territories are represented by populations that are heavily concentrated in the capital cities and a few other key areas. It is difficult to identify a strong relationship between the states and territories' population concentrations and public expenditure on infrastructure as most lie around the mean (Chart 6). However, one state, Tasmania, is a stand out example of a population that is more evenly distributed than those of the other states and territories.

In comparing Tasmania with the other states and territories, Chart 6 highlights the additional expenditure on infrastructure associated with lower levels of population concentration, or with a population that is more evenly distributed. The high levels of population concentration among the states and territories also highlight Australia's lower level of public expenditure on infrastructure relative to other OECD countries.

**Chart 6: Australian States and Territories — relationship between geographic concentration of population and public infrastructure stock, 2001-2005**



Note: The capital stock to Gross State Product ratio of public infrastructure is highest for each state and territory in 2001-02 and falls to 2005-06, the lowest point for each state and territory in the chart.  
Source: ABS cat no. 5204.0, 1379.0, 8762.0 and Treasury.

### Infrastructure age and replacement cycle

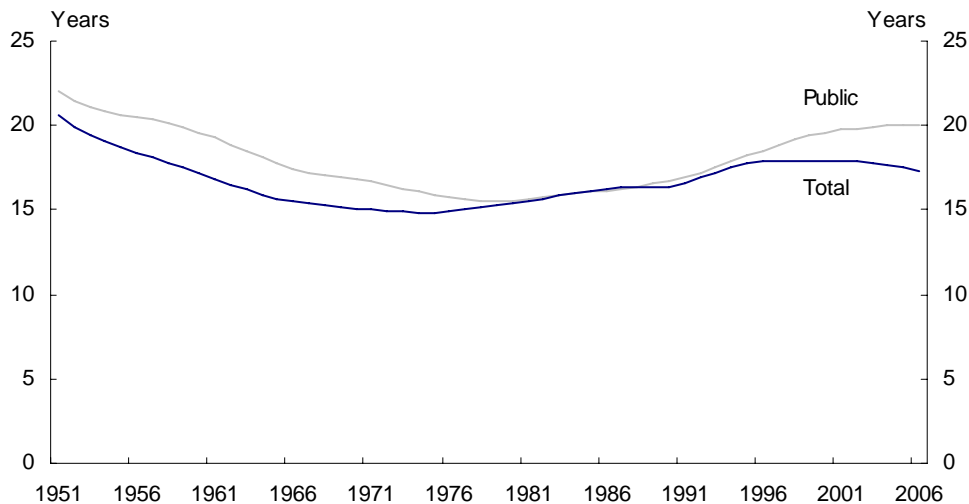
The average age of Australia's infrastructure has been rising since the early 1970s (Chart 7). As mentioned in the previous section, Australia underwent a major expansion in infrastructure from World War II through to the 1960s. In the early 1990s there were concerns that much infrastructure installed during these earlier periods was reaching the end of its economic life and that Australia would undergo a massive asset

## Trends in infrastructure

replacement cycle at around the turn of the century that would place governments under considerable fiscal stress.

For example, the South Australian Government Public Accounts Committee presented eight asset management reports to Parliament between August 1986 and April 1987. These reports indicated an enormous replacement task for South Australia. For example, the report noted that in the five years to June 1987, the water authority consumed \$500 million worth of assets but spent only \$80 million on asset replacement (Evans 1989). While the asset replacement cycle did not materialise to the extent projected, in part as a result of technological change including the use of robots for the inner sleeving of water pipes, the report sounded an early warning signal relevant to all Australian governments of the importance of planning to overcome an anticipated increase in asset replacement.

**Chart 7: Average age of infrastructure, 1950 to 2005**



Source: ABS cat. no. 5221.0.

## Investment signals

Proponents of the view that investment in public infrastructure is too low argue that increased investment would have positive spill-over effects on national productivity and growth. That is, there is a high social rate of return to public investment. Empirical work in the context of the United States by Aschauer (1989) and Mundell (1993) finds high pay-offs from investment in public infrastructure. Following Aschauer's approach, Otto and Voss (1994) find similar results for Australia. More recently, Kamps (2004) finds positive and statistically significant returns to public infrastructure across many OECD countries and for the OECD as a whole. For Australia, this study finds that a one per cent increase in the stock of public infrastructure would increase output by about two thirds of one per cent.



Critics of these studies argue that the estimates of the output response to public investment are implausibly high. The criticisms range from problems with modelling (Dowrick 1994), problems with the interpretation of results (Englander and Gurney 1994), inconclusive evidence (Ford and Poret 1991) and evidence of negative returns (Pope and Withers 1995, OECD 1997).

Through the use of cost-benefit analysis, there is a well-established methodology for calculating the rate of return from investment, at the project level. While such techniques are supported, a problem is that for network projects the return to the individual project can be higher than the return to the network as a whole. The Allen Consulting Group (2005) identifies this problem in the context of appraising rail projects that potentially affect the economic viability of road projects.

Overall, the messages are mixed on the relationship between public investment and output. Nonetheless, as Englander and Gurney (1994) suggest, the productivity response to infrastructure will get higher as demand is tighter. In the Australian context, there has been some evidence of infrastructure bumping up against capacity constraints at ports.

The overall position from the above discussion is that analysing trends in infrastructure investment at the macroeconomic level does not provide clear cut answers and that much more empirical evidence is required to form a view about Australia's infrastructure adequacy.

This observation underlines the importance of the microeconomics of infrastructure investment to guide decisions at the project level. Many studies of infrastructure adequacy advocate the rigorous application of cost-benefit techniques both for projects and broader considerations around network development and sector analysis. However, high-quality microeconomic decisions are difficult to make in situations where there are poor pricing signals, a lack of a 'level playing field' for competition, and inappropriate regulatory regimes. Hence, the importance of National Competition Policy (NCP) reforms, which are covered in the companion article in this edition of *Economic Roundup*.

## Conclusion

Australian total fixed capital investment as a proportion of GDP took a sustained rise after World War II and from thereon has trended upward with fluctuations. Compared with other OECD countries, Australia is toward the higher end of investment as a proportion of GDP, and investment has been rising in recent times. Consistent with other OECD countries, Australia's total fixed capital stock per head of population is declining.

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Australian investment in public infrastructure as a proportion of GDP has been declining since the 1980s, and this trend is consistent with the trend in most other OECD countries. Australian expenditure on infrastructure investment as a proportion of GDP is at the low end of OECD countries.

The implications of these trends for Australia's economic growth are not clear cut. There has been a string of studies to show that the declining trend in infrastructure in Australia reflects the changing composition of the structure of the economy toward the less infrastructure-intensive services sector and that productivity in the construction sector has played a role in reducing the real cost of infrastructure. Also privatisation and NCP reforms have shifted investment from the public to the private sector and introduced pricing signals which have helped to rationalise infrastructure.

It is not clear where Australia sits in the infrastructure replacement cycle because past experience shows that the timing of replacement is significantly influenced by technology and the changing characteristics of demand. At the microeconomic level, replacement projects should be guided by sound cost-benefit analysis.

An important observation in this paper is that Australia's population concentration plays a role in determining the level of public infrastructure. While Australia has a small population in a vast continent, the population is concentrated in a small number of large cities. Using the OECD population concentration index for advanced economies and IMF measures of infrastructure stock, there appears to be an inverse relationship between population concentration and public infrastructure stock. Thus, for countries with high population concentration – such as Australia, Canada and Iceland – infrastructure stock is at the low end of OECD levels. This relationship was also examined for the States and Territories of Australia. It was found that in the case of a less concentrated population, the stock of infrastructure was at a higher proportion to the other states and territories with higher levels of population concentration.

There does not appear to be strong macroeconomic evidence to support the need for Australia to increase total investment in public infrastructure. There may well, however, be examples of specific areas where new investment is required, for example, in some particular commodity export ports.

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# Australia's infrastructure policy and the COAG National Reform Agenda

Luke McInerney, Chris Nadarajah, Frances Perkins<sup>1</sup>

In the last 15 years, Australian governments' infrastructure policy has shifted systematically from directly providing virtually all infrastructure to creating competitive markets where competing public and private suppliers can provide infrastructure efficiently. Wide ranging competition and structural reforms, particularly under National Competition Policy, have underpinned this policy shift. The Productivity Commission (2005) estimated these reforms added about 2.5 per cent to GDP, or about \$7,000 to household income each year.

However, significant opportunities remain to enhance infrastructure markets' performance and hence raise national productivity and wellbeing. Outstanding policy reforms broadly involve making markets more fully competitive where competitive supply is possible and resolving regulatory and planning failings where natural monopolies remain. All governments took an important step forward to address some of these issues, when in February 2006, the Council of Australian Governments agreed to a wide ranging National Reform Agenda (NRA) to build on National Competition Policy. The competition stream of the NRA focuses on reform initiatives in energy, transport and infrastructure regulation and planning; it tackles many, but not all, of these outstanding infrastructure policy issues. Fully implemented, the NRA and other reforms canvassed in this paper would make a significant contribution to ensuring Australian households and businesses receive the most efficient and cost effective infrastructure services possible.

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<sup>1</sup> The authors are from Competition and Consumer Policy Division, the Australian Treasury. This article has benefited from comments and suggestions provided by Brad Archer, Steve French and Jim Murphy. The views in this article are those of the authors and not necessarily those of the Australian Treasury or the Australian Government.

## Introduction

After 15 years of continuous growth, in the midst of a resources boom and a major drought, some Australian infrastructure sectors are showing signs of strain. Communities are suffering water shortages, bulk commodity ships are queuing off some ports, on hot summer days electricity capacity reserves can be quite low in several States and the cost of urban traffic congestion is rising in major cities. While the Fisher Taskforce's report, *Australia's Export Infrastructure* (2005), concluded Australia did not have an infrastructure crisis, it found some parts of the nation's export infrastructure faced immediate capacity constraints and, if not dealt with, some underlying weaknesses in the infrastructure investment environment threatened to make these problems more widespread, compromising Australia's export potential in the next five to ten years. The OECD (2006) and International Monetary Fund (2006) outlined similar concerns about infrastructure market constraints in their recent reviews of the Australian economy. This paper examines best practice policy for infrastructure, analyses many of the major challenges facing Australia's infrastructure sectors and suggests potential policy solutions. It then examines the contribution the Council of Australian Governments' (COAG's) new National Reform Agenda (NRA) should make to resolve a number of these problems when fully implemented.

Because infrastructure is an essential input to virtually all economic activities and contributes directly to people's wellbeing, economically efficient infrastructure policy is crucial to Australia's economic performance. State governments retain constitutional responsibility for most energy and transport infrastructure policies while the Commonwealth Government is responsible for telecommunications policy and some economic regulation of infrastructure through the Trade Practices Act. The basic objective of Australian governments' infrastructure policy is to ensure households and businesses can access high quality, competitively priced infrastructure services in an efficient and sustainable way. However, ensuring infrastructure policies maximise community wellbeing is a challenging task. This is because most infrastructure activities including electricity, gas, water, telecommunications and land, air and sea transport have distinctive public good, externality and/or natural monopoly characteristics. However, if public policy ensures infrastructure markets function effectively, governments usually can allow competing suppliers to provide infrastructure services. Where competition is not possible, governments often need to regulate to ensure monopoly power is not abused or may decide to provide such services themselves. (See Appendix for more discussion of monopoly power issues.)

Over the past 15 years, Australian governments, like many others in the OECD, have reformed their infrastructure policies. As part of their broader microeconomic reform agenda to boost productivity and growth, governments have shifted systematically from directly providing virtually all infrastructure to creating markets where competing public and private suppliers can efficiently provide infrastructure services.

Indeed, as shown in the article 'Trends in Infrastructure' in this edition of the Treasury *Economic Roundup*, the share of private sector investment in infrastructure has markedly increased since the mid-1990s, to more than off-set a moderate decline in total public sector infrastructure investment during this period. As a result of rising private investment, the ratio of total Australian infrastructure investment to GDP rose from an average of around 3 per cent from 1987 to 2000 to almost 4.5 per cent by 2006 (Coombs and Roberts 2007).

However, Australia's infrastructure policy reforms are incomplete. This paper examines a range of factors constraining complete infrastructure markets and efficient infrastructure regulation. These policy issues can contribute to uncertainty that may discourage timely new investment and can generate actual or potential infrastructure bottlenecks and raise infrastructure prices for users.

Pressures to provide infrastructure in the most efficient way are increasing. Lower barriers to international trade and foreign investment, along with financial sector and other microeconomic reforms have increased the trade intensity of the economy. Technological advances also increase the importance of innovation in infrastructure provision and provide opportunities to recover costs through user charges.

## Best practice infrastructure policies

Understanding why, when and how governments and the private sector can participate effectively in infrastructure provision is essential to delivering an efficient policy environment and maximising community gains from infrastructure policy. Given that most infrastructure sectors exhibit special characteristics, government infrastructure policy needs to:

- understand the monopoly nature of much infrastructure;
- prevent exploitation of monopoly power by, wherever possible, introducing competition in and for infrastructure service markets, or, if competition is not possible, appropriately regulating these markets; and
- recognise and allow for public good characteristics and externalities of some infrastructure services.<sup>2</sup>

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2 This section of the paper draws on the 'Principles of Infrastructure Provision' chapter of an East Asian Analytical Unit (1998) report led by Frances Perkins.

## Public or private ownership?

The ownership of infrastructure assets is a sensitive community issue in many countries and Australia is no exception. This is due primarily to public sector employees' concerns about job losses and consumers' fears of reduced service levels and higher prices from privatised suppliers, particularly where public utilities' prices have been held artificially low or are used to subsidise certain groups. However, in all but a few centrally planned economies, privately owned businesses operating in competitive markets supply most goods and services. Because private firms' profits and management incomes typically are more closely linked to their performance, they generally respond better to customer demands and price signals.<sup>3</sup> Hence, most consumers accept that, at least in sectors without significant public good, externality or natural monopoly characteristics, competing providers are more likely to supply high quality and competitively priced goods and services, compared to public sector monopolies using non-market resource allocation mechanisms. The economic efficiency losses from underpricing infrastructure services and the significant fiscal burden and risks imposed on taxpayers from developing new infrastructure create further incentives for governments to recoup fully the cost of infrastructure services and seek private involvement where appropriate.

One argument advanced for government ownership is that infrastructure supplies essential services, or merit goods, with benefits extending beyond direct users to the community more broadly. However, while water supply, sewage treatment, transport, energy and telecommunications certainly are essential services, this does not in itself justify public sector provision.<sup>4</sup> Food is at least as essential as these services, but given the agricultural failures of centrally planned economies, few would argue that public sector provision increases food security.

Without public ownership, governments can ensure healthy competition in infrastructure industries and monitor reliability and safety standards as they do in

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- 3 They also are more likely to minimise costs and innovate in technology and service provision than are state owned entities. Effective public sector managers are less likely to be rewarded than their private sector counterparts for cutting costs or increasing revenue because public enterprises do not keep their profits. As a consequence, public managers often can invest in excessively secure systems or 'gold plated' investments to ensure they never fail, rather than implementing more cost-effective risk management strategies. The very negative public and political reaction to public infrastructure failures such as Auckland's power supply breakdown in 1998 and the failure of Sydney's water treatment plants and possible outer-catchments containment in 1998 show why public authorities often adopt such risk averse strategies.
  - 4 While minimum quantities of water and acceptable levels of sanitation prevent the outbreak of disease, generating considerable community benefits, direct government provision is not the only, or necessarily the most efficient way, to ensure even these most essential services are supplied.



other industries such as food and hospitality. In fact, governments arguably can regulate standards more effectively when they do not own and operate firms in the regulated industry; remaining an impartial umpire is difficult when you are also playing in the game.

While public ownership may reduce efficiency, it also can generate benefits. As discussed in the following sections, public ownership of infrastructure assets, regulatory control or government subsidies are more likely to deliver net benefits for the community if infrastructure exhibits significant public good, externality or natural monopoly characteristics. Other motivations for government ownership include providing a source of information for regulators, thereby making regulation easier and cheaper, and achieving social objectives that cannot be secured readily by other means.<sup>5</sup> To determine whether the public sector should invest in infrastructure assets decision makers need to assess competing projects using robust and transparent cost benefit analysis.<sup>6</sup>

Alternatively, governments can recognise some infrastructure's public good and externality characteristics or achieve social objectives by offering subsidies to private operators, preferably in the form of contestable community service obligations.<sup>7</sup> For example, rather than owning airlines that operate financially unviable services to isolated areas as they did in the past, Australian governments now provide contestable subsidies to private airlines to operate such services.

## Public goods and externalities

Public ownership is likely to be necessary if the infrastructure is a pure public good. (See Appendix for a discussion of the characteristics of public goods.) For example, governments around the world typically supply public roads and urban infrastructure like footpaths and street lighting, which have strong public good characteristics.

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5 Sometimes governments decide that maintaining public ownership is the best way to provide subsidies to targeted groups in the community. The relative costs of public ownership may be low when production processes are simple, the asset has substantial monopoly power and the information costs of regulating a private monopoly are high.

6 If private operation of an infrastructure service is not financially viable but the service is expected to generate positive net economic benefits for the community, due to externality or public good characteristics, the government could justify providing the service itself. The net economic benefits of selected projects should have the highest present value among all alternative uses of public funds.

7 Transparent, on-budget subsidies to competing suppliers to meet specified community service obligations should not exceed the net economic benefits (including positive externalities) derived from the infrastructure. If a government offers subsidies, the best approach is to ask market participants to bid to provide the service through a competitive tender process, with the bidder requiring the lowest subsidy to provide the service winning the contract.

Without subsidies, private sector providers cannot provide such pure public goods because they cannot efficiently charge people for using them.<sup>8</sup> However, even public ownership of infrastructure services does not preclude private sector participation as the construction of infrastructure can involve private contractors, leaving the operation and ownership of the assets in public hands.

Governments also often play an important role in funding and providing infrastructure that generates significant externality, or spillover, benefits to the community. For example road, rail and public transport networks typically generate benefits beyond those immediately enjoyed by direct users that can increase land values in surrounding areas. Infrastructure generating significant positive externalities may be underprovided if governments do not subsidise it in some way.<sup>9</sup> Hence, governments may decide to install such infrastructure itself and tax those, like landowners, receiving external benefits from it.

Similarly, infrastructure assets and services which produce negative externalities, such as noise, traffic accidents or pollution, may be overprovided if governments do not tax or regulate their provision. Congestion charges in urban areas, regulations requiring trucks to install quieter braking systems and prohibitions on heavy vehicles entering certain urban areas are some methods of discouraging activities or technologies which create negative externalities.

## Monopoly networks and market power

The most critical difference between most infrastructure sectors and other industries is that many infrastructure industries have at their core networks that are natural monopolies (monopoly networks are discussed more in the Appendix). These include high voltage electricity transmission wires, fixed telephone lines, water and gas pipe networks, road and railway networks or regulated connections between transport nodes such as air routes. Inter-modal facilities like ports, rail hubs and airports also can possess monopoly power if suitable sites are not available to reproduce facilities or the current market is only large enough to justify one efficient facility in a particular location. As new entrants usually cannot threaten owners of such electricity, water or gas networks the owners could exploit their monopoly power without regulatory

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8 Public provision of most roads is likely to remain unless it is technically feasible to charge for access. However, in many markets overseas, on toll roads and in some cities, telematic and related technologies now often charge vehicles directly for their actual use of roads.

9 This is because potential private sector investors will only value the revenue they can generate from charging the infrastructure's direct users, not any external benefits it may generate for the community. Thus if externalities are sufficiently large, a commercially unviable project still could have positive net economic benefits for the community.

oversight.<sup>10</sup> Unregulated monopolies can earn excessive profits in the long term by constraining their output below, and pushing their prices above, levels that normally would hold in fully competitive markets.

However, not all infrastructure assets are pure natural monopolies and some can be duplicated efficiently and compete with each other even when they possess a level of market power. Such assets include ports, airports or rail hub inter-modal facilities in reasonable proximity to each other.<sup>11</sup> Road, rail, sea and air transport networks also can compete with each other to provide many but not all services. Similarly, mobile phone services, cable and Voice-over Internet Protocol now compete with fixed line telephony, reducing the monopoly power of telecom incumbents and allowing new players to enter these markets.

Governments also can play an important role in facilitating competition between infrastructure assets that are not pure monopolies but have some market power, thereby expanding service levels and/or reducing prices for users. Where it is economically viable to do so, governments can help reduce the monopoly power of incumbents by providing opportunities for investors to establish competing infrastructure assets and services. They also can prevent dominant incumbent infrastructure owners from bidding for limited sites or market niches for potentially competing facilities. For example, if an entity owns the main inter-modal (rail head) facility or airport in a city and the government decides to release land suitable for a competing facility, the inter-modal facility or airport owner incumbent could be proscribed from bidding to establish the new facility.<sup>12</sup> The two separately owned rail heads or airports could then create competitive pressures on each other, potentially reducing user charges and improving service quality. Similarly, if a port has a dominant position in a particular region and the government decides to open up a new port site, the private or public owners of the existing port or facility preferably should not be permitted to bid for the new potentially competing site.<sup>13</sup>

In the past, many governments addressed infrastructure networks' market power by publicly owning and operating integrated utilities that included these networks.

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10 Replicating electricity transmission lines, water pipe networks and reticulated gas pipelines typically is not efficient as these networks are a major component of industry costs.

11 Typically infrastructure service providers like air, sea, road or rail transport service providers, loading facilities or stevedoring services within such transport hubs do not have any natural monopoly power and can compete in open entry markets.

12 In the case of rail heads, to remove incentives to restrict access to the new facility, such inter-modal facilities would be better developed by unbundled track owners or third parties, rather than integrated track and rail service providers.

13 Finally, if a port has only two stevedores and the government decides to develop a third berth which could compete with incumbents, the existing players should not be permitted to bid to provide this service.

However, they now increasingly recognise that competing suppliers often can provide lower cost and higher quality services than public utilities. Hence governments have sought alternative ways of addressing monopoly network power issues to reap the benefits of competing operators delivering infrastructure services.

### Unbundle or integrate?

The most important first step in this process is for governments to consider vertically and horizontally separating, or 'unbundling', integrated infrastructure monopolies into their competitive and natural monopoly elements. While most integrated infrastructure utilities have natural monopoly network components at the centre of their operations they also include activities that smaller competing firms could supply more efficiently. Examples of unbundled infrastructure facilities and activities that can be supplied competitively include electricity generating plants, electricity retailing, water and sewage treatment plants, telephone exchanges and telephony retailing, rail passenger and freight services and gas wells, treatment plants, compressors and retailing. Unbundling is particularly important if the infrastructure is going to be privatised. Owners of vertically integrated networks and service activities have a commercial incentive to restrict access to their network to advantage their service supplying activities over other suppliers.

### Benefits and costs of unbundling

Once competitive business segments are unbundled from monopoly networks, the competitive elements of the industry can be fully privatised without needing significant regulation. So long as they operate in a competitive market environment, privatisation will help pass on the gains from commercial efficiencies to customers, without government intervening with 'heavy handed' pricing or rate of return regulation. Infrastructure networks also can be privatised after unbundling, but typically will require ongoing access and price regulation.<sup>14</sup>

If an infrastructure network is separated from the industry's competitive components, and network access is assured by legislation, potential new entrants need not duplicate expensive network investments to compete. Instead, as in normal industries, new competitors can enter merely by investing in production capacity. Even major investments like power stations will not deter new entrants so long as they are guaranteed access to the network at economically efficient prices. The costs and decision delays associated with managing and operating large firms often provide

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<sup>14</sup> Owners of vertically separated infrastructure networks will have an incentive to provide competing suppliers access to their network, but if they have market power, may seek to charge excessive tariffs for such access.

opportunities for nimble competitors to exploit new technologies and gain market footholds.

The main potential cost of vertically separating infrastructure and regulating to mandate access to monopoly networks is that network owners who also provide services in competition with other access seekers may be unwilling to invest in new networks if they cannot have exclusive access.<sup>15</sup> Even if potential network investors are not also competing with service providers, mandatory access and regulated prices may cap the upside of returns from new investments while network investors carry the risk of losses from the investment. Hence, some investors seek 'access holidays' for new network investments so they can capture more of the up-side from their investment.<sup>16</sup>

### When to unbundle?

A government that owns an integrated infrastructure monopoly can significantly influence the future structure and performance of the industry by allocating its competing and monopoly activities to different companies before privatising it. Unbundling can produce a more efficient and fairer outcome for consumers by increasing competition and allowing a more transparent and stable regulatory regime. In 1995, the COAG adopted National Competition Policy (NCP), committing governments that were considering privatising public monopolies to undertake reviews to determine, inter alia, the merits of separating the natural monopoly elements from potentially competitive elements.<sup>17</sup> If a public monopoly is privatised as a monopoly, or a private firm invests in integrated monopoly infrastructure, subsequent sectoral restructuring options are limited.

### Monopoly network access regulation

Governments play a crucial role in regulating access to monopoly networks such as electricity transmission lines, fixed telecommunication lines and rail networks. Monopoly networks can either be retained in public hands, as is the standard gauge

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15 Certain industry characteristics also can generate benefits from vertical integration. For example, vertical integration of track and rail services can reduce the risk of higher maintenance costs because poor track and train wheel maintenance can increase costs for rail service and rail network operators, respectively. Integration of electricity generators and retailers can also save some financial risk hedging expenses. However, such types of integration, if widespread, may discourage new entrants into these activities.

16 For example, Australia's gas access regime now allows proposed international gas pipelines to apply for a 15 year price regulation exemption. Under the exemption, pipelines are not subject to price regulation but may be subject to other forms of economic regulation such as ring fencing arrangements.

17 Paragraph 4(3)(b) of the Competition Policy Agreement.

interstate rail network operated by Australian Rail Track Corporation (ARTC)<sup>18</sup>, or sold or leased to private sector operators, as were the Victorian and South Australian electricity transmission networks and the Victorian, South Australian, Tasmanian and Western Australian rail networks. Both publicly and privately owned monopoly networks typically are placed under national or state based access regimes to prevent network owners from exploiting their monopoly power. These regimes require infrastructure owners to provide third parties with access to their networks under commercially negotiated or independently arbitrated terms and conditions, including access fees and tariffs.

### Motivation and conditions for successful privatisation

Privatising monopoly assets should aim to benefit consumers through lower prices and improved services. However, this will only occur if the market and regulatory environment maintains appropriate competitive and regulatory pressures on private operators and ensures they meet necessary safety and quality standards. A low market value for public assets can indicate the government has not established transparent or stable regulatory process, exposing buyers to sovereign risk. Alternatively, a very high sale price for privatised assets can indicate that the new private owners expect to reap monopoly profits at the expense of consumers, because the market structure of the industry into which it is privatised does not encourage competition or regulation is ineffective in controlling monopoly power.

### Private Public Partnerships

Private Public Partnerships (PPPs) is a term used rather imprecisely in public debates to cover a wide range of quite different infrastructure provision arrangements involving public and private participants. At one end of the spectrum are conventional private sector infrastructure investments in which the private investor carries all the commercial, operational, foreign exchange and sovereign risk of the investment. At the other end are contractual arrangements under which private sector participants may install and operate infrastructure in return for guaranteed revenue flows and taxation benefits while governments carry most or all of the project's risk. Sometimes, governments' desire to take major investments off their balance sheets to improve their apparent debt position may motivate the latter arrangements.

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<sup>18</sup> The ARTC was created in 1997 to operate and manage Australian, State and Territory government-owned rail tracks. As part of its establishment, the ARTC was required to submit an undertaking to the ACCC under Part IIIA of the *Trade Practices Act 1974* that would facilitate access to its rail network by third party rail operators. The ARTC is wholly owned by the Australian Government and in addition to ARTC's own capital investment program it also receives investment funding from the Australian Government's AusLink program.

Private infrastructure investment in well regulated competitive markets can boost the productivity of infrastructure investment and relieve taxpayers of commercial risks they are not well suited to bear. Many NCP reforms aim to increase such private participation. However, artificial infrastructure investment arrangements leave governments carrying most of the risks while guaranteeing private participants often inflated, non-transparent and non-contestable profits will not achieve these important objectives and could reduce community wellbeing.<sup>19</sup>

### The role of National Competition Policy and the Trade Practices Act

Since 1995, NCP has played a crucial role in Australia's infrastructure policy reforms. In the Competition Policy Agreement, one of the key underpinning agreements of NCP, Australian governments agreed to implement competitive neutrality principles, ensuring public and private companies operated on a level regulatory playing field, and to structurally reform public monopolies. The CPA committed governments, where appropriate, to corporatise and consider unbundling integrated publicly owned infrastructure monopolies into natural monopoly networks and competing infrastructure facilities and service providers prior to privatisation. Government business enterprises also became subject to the competition provisions of the *Trade Practices Act 1974*. These reforms allowed private firms to compete in many previously government dominated infrastructure markets like electricity, rail and telecommunications. The independent National Competition Council (NCC), created to oversee the NCP, monitor reforms across jurisdictions, advise on competition payments and transparently report on its progress is considered a key factor in the NCP's success (Productivity Commission 2005).

Part IIIA of the Trade Practices Act and State-based access regimes also play an important role in Australia's infrastructure policy. The intention of Part IIIA is to ensure significant infrastructure with natural monopoly characteristics does not create a barrier to competition in related markets. Under these regimes, businesses can seek access to nationally important infrastructure services on reasonable terms where duplicating monopoly infrastructure would not be feasible economically, access would facilitate competition in upstream and downstream markets and commercial negotiations with the infrastructure owner or operator have failed. If requested by a third party access seeker, the Treasurer or relevant state minister, with advice from the

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19 The Public Sector Comparator is a tool developed by the Australian Department of Finance and Administration to assist in assessing the value of private sector involvement in infrastructure investments (DOFA 2002). The Public Sector Comparator acts as a neutral benchmark to value the outputs and costs of privately financed project proposals, including the transfer of project risks from the government to a private proponent to help determine whether a project is best financed by the private or public sector.

National Competition Council (NCC) can 'declare' significant private or government-owned infrastructure. Declaration of a service gives any access seeker the right to apply for a binding arbitration before the ACCC if access terms and conditions cannot be agreed through commercial negotiations with the service provider. Part IIIA also allows firms to provide to the ACCC voluntary access undertakings that set out terms and conditions of third party access to their infrastructure.

After one and a half decades of reforms, most Australian infrastructure services including mobile and fixed line phone services, broadcasting, electricity generation and retailing, gas production and retailing and air, road, rail and sea freight and passenger services are provided successfully in competitive markets. In addition, many infrastructure facilities including fixed and mobile phone networks, electricity transmission and distribution lines, reticulated gas networks, railway networks, toll roads, ports and some water supply facilities are owned and operated successfully by competing firms. The Coombs and Roberts (2007) article in this issue of the Treasury *Economic Roundup* shows private sector investment's contribution to total Australian infrastructure investment doubled from the mid-1990s to mid-2006. Over this period, private infrastructure investment increased from under 1 per cent to about 2.8 per cent of GDP, while total infrastructure investment rose from 3 to 4.5 of GDP.

### Benefits of NCP infrastructure policy reforms

Infrastructure policy reform has been central to NCP's success in boosting national productivity and growth. The Productivity Commission's *Review of National Competition Policy Reforms* (2005) found productivity gains in the six major infrastructure sectors which underwent most reform permanently added at least 2.5 per cent to gross domestic product over the period 1990 to 2003, raising average income in all but one of 57 regions studied across Australia and in all income groups. Output per worker in electricity, gas, urban water, telecommunications and rail freight sectors more than doubled over the 1990s. The Productivity Commission also found NCP and related structural reforms significantly reduced the cost of infrastructure services, particularly for business users of telecoms, electricity and land transport services.

While Australia has made major advances in its infrastructure provision policy in the last two decades, several major areas could benefit from further reforms. For example, in many infrastructure sectors prices do not reflect the full cost of provision. Several sectors without significant public good aspects still operate an inefficient mix of direct government provider and competing public and private supplier approaches to infrastructure provision. Some regulatory regimes and planning processes cause delays and uncertainty for investors. Together, these issues reduce potential productivity gains from infrastructure reforms, undermine investor confidence,



increase the risk of supply disruptions in vital sectors like electricity and contribute to congestion in ports and land transport.

## The National Reform Agenda

In February 2006, COAG announced the NRA, a broad ranging 10 year microeconomic reform program aimed at raising economic productivity and workforce participation to help underpin Australia's future prosperity. The NRA seeks to build on the successes and lessons of the National Competition Policy reforms that commenced in 1995.

The NRA encompasses competition and regulation reforms in energy, transport, infrastructure regulation and best practice regulation as well as initiatives to enhance the capability and contribution of the Australian people – the nation's human capital (see Box 1).

### Box 1: A snapshot of the NRA

The NRA's three streams aim to improve competitive markets in key infrastructure sectors, promote better regulation and enhance the nation's human capital.

#### Competition

Energy — Strengthen the national electricity market, encourage more efficient energy use and investment.

Transport — Increase the efficiency of land freight pricing, planning and regulation; reduce urban congestion.

Infrastructure regulation and planning — Promote a simpler and more consistent national approach to regulation of significant infrastructure.

#### Regulation

Promote best-practice regulation by strengthening gate-keeping for new regulation and reviewing regulation stock.

Reduce regulatory burden focusing initially on ten identified 'hot spots'.

#### Human capital

Early Childhood — Improving childhood development outcomes in the first five years of a child's life, up to and including school entry.

Diabetes — Improving health outcomes and building on the national Chronic Disease Strategy and the Australian Better Health Initiative.

Literacy and numeracy — improving student outcomes on literacy and numeracy.

Child care — Encouraging and supporting workforce participation of parents with dependent children.

Note: COAG's NRA is outlined at <http://www.coag.gov.au>

The infrastructure reform elements of the NRA are designed to address many, but certainly not all, of the infrastructure policy issues discussed in the following section of this paper, drawing on approaches outlined in the policy best practice sections above. When fully implemented, these NRA reforms should deliver electricity and land transport charges that better reflect their financial and economic cost of provision and

## Australia's infrastructure policy

other structural reforms to ensure more competitive energy and land transport markets.

The NRA also aims to streamline and harmonise infrastructure regulation, with all heads of governments signing the Competition and Infrastructure Regulation Agreement (CIRA) at the 10 February COAG meeting as part of the NRA. The CIRA commits all governments to ensuring infrastructure service suppliers can access significant monopoly infrastructure facilities in a more timely and nationally consistent way.

However, NRA does not include facilities for water reform, which is covered by the National Water Initiative, or telecommunication sector reforms, which the Australian Government has progressed separately.

To help inform the detail of infrastructure reforms to be progressed under the NRA, COAG initiated three reviews to report by the end of 2006. These are the Productivity Commission's inquiry into road and rail pricing, the Energy Reform Implementation Group's inquiry into national energy markets and a joint Commonwealth, state and territory review of urban congestion.

## Major issues confronting Australian infrastructure policy

While most Australian infrastructure sectors are operating reasonably effectively, several are confronting current or future capacity constraints, service quality or congestion problems, inefficient pricing or other regulatory and efficiency issues. These issues can be grouped under two broad headings: an absence of competitive markets in sectors where competitive supply is possible; and regulatory and planning shortcomings, particularly of monopoly infrastructure that cannot be supplied competitively.

As discussed below, reform being progressed under the NRA will go some way to address a number of (although not all) of the issues confronting Australian infrastructure policy.

## Difficulties in creating competitive markets

Governments have an important role in encouraging competitive markets for infrastructure services and assets which are not pure monopolies. As discussed above, this is because competitive, functioning markets usually provide consumers with the best long term guarantee of efficient service supply. Inefficient infrastructure asset and service pricing sends distorted signals to users and investors and can cause inefficient use and investment, particularly in the electricity, water and road sectors. Insufficient competitive neutrality between publicly and privately owned infrastructure operators

also can undermine efficient markets. Inadequate treatment of externalities, including those generated by greenhouse gas emissions and congestion, also can compromise the efficient operation of competitive markets.

### Inefficient infrastructure service pricing — electricity, water, road and rail

When governments price infrastructure services below the full cost of provision to achieve social or political objectives it inhibits the operation of competitive markets and distorts price and investment signals received by consumers and investors. Despite reforms over the last decade, inefficient pricing remains a feature of many government provided or price controlled infrastructure services in Australia.

#### Electricity

Most jurisdictions continue to cap the tariffs households pay for electricity; such caps concern retailers as they may fall below the full economic cost of supply. Some submissions to the Productivity Commission's Review of National Competition Policy (2005) and to COAG's Energy Reform Implementation Group (2006a) indicated private infrastructure investors are unwilling to commit to new base load power stations in part because of significant sovereign risk that price caps and government investment in the sector can suppress profits below commercial levels.<sup>20</sup> Transparent subsidies to specific disadvantaged consumers, progressive taxation and/or targeted income support payments to such groups are likely to be more efficient methods of achieving social equity objectives than utility price caps for all consumers. This is because the latter provide the largest subsidies to the heaviest users of the service, who typically are high income consumers.<sup>21</sup> Furthermore, price caps inhibit consumers receiving efficient price signals, encouraging excessive electricity use. The Ministerial Council on Energy (MCE) has agreed a process which will see price caps removed when electricity markets are considered sufficiently competitive. COAG recommitted to this MCE reform program under the NRA.<sup>22</sup>

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20 The Business Council of Australia (2005) contends that electricity price restrictions depress supply-side investment signals for new generating capacity. This claim must be assessed seriously when most National Electricity Market states now need new base load capacity investment.

21 Transparent community service obligations could represent an effective instrument to address consumer welfare concerns relating to access to essential infrastructure services. Such a mechanism could allow social policy objectives to be met while not artificially suppressing prices.

22 The NRA's energy reform package committed governments to work collectively to strengthen the national energy market by recommitting to the ongoing MCE reform programme and a series of new reforms. The MCE's existing reform package includes phasing out household electricity price caps once retail electricity markets are fully competitive.

The increasing 'peakiness' of power demand, mainly due to the rapid uptake of air conditioners, is raising the proportion of generation capacity that operates for only a small proportion of the time. This trend reduces the overall capital efficiency of generating equipment, raising the average cost of generation. However, most households do not have electricity meters that can measure their electricity use throughout the day. This makes it impossible for retailers to introduce time-of-day pricing to account for the considerably higher cost of supplying peak time electricity. Interval pricing may allow consumers to moderate or spread their peak electricity demand and reduce their overall energy costs.<sup>23</sup> A range of other market regulations and structures also inhibit consumers and businesses from better tailoring their electricity demand to the actual cost of supplying them throughout the day or week.

In February 2006, under the NRA, COAG committed to the progressive national roll out of 'smart' electricity meters from 2007 to allow the introduction of time of day pricing and to allow users to better manage their demand for peak power, only where benefits outweigh costs for residential users and in accordance with an implementation plan that has regard to costs and benefits and takes account of different market circumstances in each State and Territory. The MCE was tasked with agreeing common technical standards for such meters and a timetable for their roll out from 2007. COAG also asked the MCE to develop a range of other demand side management policies to increase electricity markets' demand responsiveness.

## Water

Efficient pricing arrangements which enable full cost recovery are also essential to creating functioning water markets to manage Australia's scarce water resources better. Such arrangements are necessary to encourage private investors to invest in the water sector and to ensure current assets can be replaced and expanded in an efficient and sustainable manner. Notwithstanding a decade of NCP reforms and the subsequent introduction of the National Water Initiative (NWI) in 2004, few water users pay the full cost associated with supplying them water and the scarcity value of this water.<sup>24</sup> Central to the NWI is the establishment of functioning water markets to allow the scarcity value of water to be priced, promoting its allocation to the highest value uses. To date, about 4 per cent of permanent water entitlements is traded (Australian Bureau of Statistics 2006) though a much larger volume of water is traded temporarily. Progress has been slow, lagging behind COAG's agreed implementation

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23 Preliminary trials of smart meters in Queanbeyan, NSW, in 2006 tentatively indicate that consumers on average reduce their overall power bills

24 Nevertheless, legitimate debate exists regarding whether the full pricing of the scarcity value of water is the appropriate way to allocate essential water requirements to households. For example, the ACT has a two tier tariff which prices basic water allocations to households at a very low tariff and higher volumes at a more market orientated tariff.

timetable with many factors impeding rural water market development (Productivity Commission 2006b).

Progress in implementing cost reflective pricing has been faster in urban Australia than in rural areas. Under the NWI, COAG agreed that urban water business tariffs would move toward 'upper bound' pricing, recovering all operating costs in storing and delivering water and the cost of their capital assets, by 2008.<sup>25</sup> Considerable progress had already been made in this area under the NCP. However, urban water users generally will not be required to pay for the scarcity value of water under NWI. Governments typically prefer to ration scarce water via demand management strategies such as water restrictions. The NWI committed rural irrigation and water supply authorities to covering their 'lower bound' prices and moving towards 'upper bound' prices where practicable, but did not put a deadline on achieving these objectives.<sup>26</sup>

### Roads

Under the PAYGO (pay as you go) system, Australian heavy vehicles pay a combination of road user charges in the form of a fuel tax and registration fees to recoup estimated annual expenditure on roads attributable to their road use. The amount paid varies very approximately with the distance travelled and mass of heavy vehicles but not with their location.<sup>27</sup> Probably more importantly, the current road

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25 COAG committed to implementing upper bound pricing in urban areas and lower bound pricing in rural and regional systems (with a movement towards upper bound where practicable). Lower bound pricing are water charges sufficient to recover the operational, maintenance and administrative costs associated with storing and delivering water, externalities (the environmental and natural resources management costs attributable to and incurred by the water business), taxes and tax equivalents (not including income tax), the interest cost on debt, dividends and provision for future asset refurbishment/replacement. Upper bound pricing includes lower bound pricing plus provision for the cost of asset consumption and cost of capital.

26 As defined in previous footnote.

27 Currently, fuel taxes for heavy vehicles provide a rough proxy for distance travelled; the further a vehicle travels, the more fuel tax its owner pays. Registration charges provide an even rougher proxy for mass carried, but in general the largest heavy vehicles pay more registration than lighter trucks. However, the current charging system cannot capture the location of vehicles and so users do not receive price signals that reflect the marginal damage they impose on different types of road surface or by being on congested or uncongested routes at different times of the day, week or year.

transport charging, revenue allocation and investment system does not provide credible price or profit signals to potential public or private land transport investors.<sup>28</sup>

Several European countries now directly charge heavy vehicles for their road use. Direct charging of heavy vehicles based on their mass, distance travelled and location has the potential to provide more accurate price signals to operators, encouraging them to choose the most efficient routes, vehicles and travel times. Rail, air, and sea freight users already pay tariffs based on weight, distance travelled, time and location of services. Direct charging also could reform road investment approaches, allowing road investment to target areas of growing demand better. NSW is trialling a permit system allowing access to its roads for vehicles above the previous legal weight limit, enforcing route compliance using the Intelligent Access Program.<sup>29</sup>

While passenger vehicles also pay for their overall road use through fuel taxes and registration fees, Australian cities typically do not employ road user charging with location or time of day elements.<sup>30</sup> Instead they mostly rely on queuing to ration congested urban roads. In 2000, the Bureau of Transport and Regional Economics (BTRE) estimated the total cost of traffic congestion in Australia's major cities was around \$13 billion a year, predicting if nothing were done to address this problem the cost could rise to almost \$30 billion a year by 2015 (BTRE 2000). The BTRE plans to release updated data in April 2007. Under-pricing access to congested roads also is likely to reduce the viability of public transport services, aggravating traffic congestion. The Greater London Authority currently levies road use charges to ration congested road space and employs the revenue to improve public transport,

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28 While the PAYGO system may require heavy vehicles to repay their estimated share of additional spending on roads averaged over the last three years, it does not provide any indication of where new demand pressures are emerging or provide incentives for efficient and timely new investment going forward.

29 Transport Certification Australia expects to introduce the Intelligent Access Program (IAP) on behalf of the Australian Transport Council by mid 2007. IAP is a voluntary scheme that remotely monitors heavy vehicles using telematics services using the global Navigation Satellite System and other sensors to monitor parameters such as vehicle identification, route, temporal and speed compliance (Transport Certification Australia 2006). NSW high mass limit permit holders are required to join IAP when it comes on line.

30 Toll roads have been used to address congestion but typically do not use time of day charging. Experience has found they are best to be introduced within a coherently planned network and charging regimes to avoid inefficient diversion to non-toll roads and welfare losses by road users and taxpayers.

expanding alternative travel options. Sydney and Melbourne use parking levies in the CBD to discourage the use of private transport.<sup>31</sup>

Under the transport stream of the NRA, COAG asked the Productivity Commission to review the full financial, and if feasible economic and social costs of road and rail freight infrastructure to recommend options to COAG for transitioning to a consistent and competitively neutral pricing regime. Its final report was delivered to the Government and COAG in January 2007. In its discussion draft released in October 2006, the Commission found no compelling evidence that road freight is subsidised relative to rail, even accounting for externalities. It maintained that even if road charges were greatly increased rail would not derive much benefit because road and rail services only compete directly for about 10 to 15 per cent of the freight market. The Commission believed a more serious efficiency issue was the lack of connection between road charging and investment decisions. It noted developments in road pricing technology create the opportunity for location-based charges and anticipated that if an independent jurisdictional road fund created a link between such road charges and efficient investment it could generate significant potential efficiency gains (Productivity Commission 2006a).

In all these sectors, prices which do not reflect the full cost of supplying infrastructure services could be expected to create excessive consumer demand and undermine incentives for new investment. Electricity price caps on household bills, with other problems in this sector discussed in this paper, increase the possibility State governments will have to step in to fund new base load power stations in future, even though their stated preference is for private suppliers to make such new investments. Inappropriate water and road pricing also contributes to water shortages, inefficient road investment and growing urban congestion.

### Government ownership of assets — electricity and ports

Another aspect of Australia's infrastructure policy is that several State and Territory governments continue to own and operate key infrastructure including electricity, ports and rail assets, while in other jurisdictions such assets are privately owned and operated. Where governments continue to regulate their own and competing private or public assets, a perceived conflict of interest may arise for governments between their roles as infrastructure regulators and owners. As governments may have an incentive to use their regulatory and planning powers to protect returns on their

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31 Since 1992 Sydney has imposed parking levies in some areas of the city and used the proceeds to develop infrastructure which encourages public transport use. A recent study by the NSW Government found a higher proportion of passenger trips to these levied areas is by public transport. Melbourne imposed a levy of \$400 per annum on long stay car parks in the CBD in 2006 and will raise this to \$800 in 2007.

## Australia's infrastructure policy

assets, private sector operators may be unwilling to compete with government-owned enterprises in such circumstances.

While decisions on the ownership of assets is a matter for individual governments, as part of the NRA's CIRA all governments have committed to enhance the application of competitive neutrality principles to government business enterprises engaged in significant business activities in competition with the private sector.

### Electricity

The Productivity Commission's 2005 review of NCP and the draft discussion paper of the COAG Energy Reform Implementation Group (ERIG) (2006a) found some jurisdictions' continued ownership of electricity generation assets may hinder effective competition between generators within the National Electricity Market (NEM) and create a conflict of interest for their owners. In particular, industry participants' submissions to these reviews raised concerns that publicly owned utilities' investment and dividend decisions may not be fully commercial in all circumstances and claimed excessive government investment in electricity generation assets in some States has lowered rates of return to sub-commercial levels, discouraging new private investment in base load power (Productivity Commission 2005, Energy Reform Implementation Group 2006a).

In examining such issues, COAG's 2002 review of national energy markets (the Parer Review) also found insufficient competition among generators prevented the NEM from operating as intended, with generators in some jurisdictions able to exert market power at certain times, thereby contributing to heightened price volatility. These reports recommended government-owned generation businesses be further disaggregated and subsequently divested to encourage more effective competition and strengthen the confidence of private generators in the market's integrity. The Productivity Commission (2005) made similar recommendations. ERIG's draft discussion paper canvassed a range of measures to address this issue, including strengthening competitive neutrality between public and private electricity businesses.

### Ports

Virtually all multi-user Australian ports are owned by State governments, with the only significant exceptions being the Dalrymple Bay Coal Terminal in Queensland, the Port Waratah Coal Loader in Newcastle and the South Australian ports.<sup>32</sup> While most ports appear to operate quite well, some submissions to the Fisher Taskforce (2005) maintained State and Territory governments' dual role as port regulators and owners of port and bulk loading facilities may create a conflict of interest. This is because

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<sup>32</sup> Several privately owned ports handle bulk commodities exclusively for their owners.



public owners may have an incentive to block authorisation of new private ports, berths or loading facilities which would compete with state owned facilities. The Fisher Report (2005) also expressed concern that, through their control of port authorities and planning processes, state governments may inhibit new stevedores from entering ports to compete with the current stevedoring duopoly. While the high cost of developing new berths and availability of suitable sites may be constraints, in the correct policy environment many private operators such as the former P&O Ports successfully develop ports and berths overseas.

### Promoting competition via sales, unbundling and development processes

In Australia and internationally, government-owned monopoly infrastructure sometimes is privatised to maximise sales revenue rather than to maximise long-term service quality and minimise long-term prices to consumers.<sup>33</sup> Naturally, once a successful bidder has paid the highest price for infrastructure with market power in an open auction involving its competitors, it has a strong incentive, in fact an obligation to its shareholders, to maximise its profits by exploiting the asset's monopoly power. To prevent this, governments typically place such assets under access regimes and determine third party access conditions by arbitration. For example, Dalrymple Bay Coal Terminal in Queensland, which has some local market power, was privatised to the highest bidder and then placed under a state-based access regime to determine its coal loading charges.

A more efficient approach may be to canvass the market to determine the tariff at which potential owners would be willing to provide services using the monopoly asset, as well as repay the replacement cost of the asset and undertake any specified expansions. The successful bidder then would be the one willing to supply infrastructure services at the lowest long-term tariff. Many governments around the world use this approach to privatising infrastructure assets with monopoly power. Under the NRA's CIRA all jurisdictions have agreed to consider the use of competitive tendering to establish the terms and conditions for the supply of significant new services provided by government-owned monopoly infrastructure. If used, this should improve sales bid criteria, encourage competition for the market to promote efficient service delivery and reduce the need for 'heavy handed' regulation.

On occasions, governments have privatised infrastructure with significant market power without unbundling it into competitive activities or seeking competition for the

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<sup>33</sup> However, assets without monopoly power that operate in competitive markets can be sold to the highest bidder. The competitive market will discipline the new private owner to offer prices that return only normal profits and provide service quality at least as good as competing suppliers.

market.<sup>34</sup> Most Australian governments have unbundled integrated infrastructure monopolies before privatising them, as recommended by the Hilmer Report (1994). For example, Victoria and South Australia unbundled their integrated electricity monopolies before privatising them and Victoria legislated to prevent cross ownership of the competitive and monopoly components. As part of energy reform under the NRA, COAG agreed in February 2006 to amend the National Electricity Law to prevent cross ownership of electricity generation and transmission assets to ensure transmission system owners cannot use their control of these assets to favour energy deliveries from their own generators.

### Managing externalities — greenhouse gases and traffic related

Another common problem is that externalities generated by infrastructure may not be internalised appropriately into their market prices. If market prices then are used to appraise projects, this failure can result in under or over investment in such infrastructure.<sup>35</sup> With respect to greenhouse gases, some countries and regions have established carbon trading schemes to internalise the negative externalities in consumer prices. The Australian Government recently announced a Prime Ministerial Task Group on emissions trading. The Task Group will advise on the nature and design of a workable global emissions trading system in which Australia would be able to participate and on additional steps that might be taken, in Australia, consistent with the goal of establishing such a system.<sup>36</sup>

Negative externalities generated by road use include traffic accidents, air pollution and noise imposed on other road users and adjacent residential areas. While some road accident costs are internalised in insurance premiums other externalities may not be internalised in charges motorists pay. Instead, governments typically try to mitigate the worst effects of these externalities by regulatory responses, limiting speeds,

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34 For example, the NSW Auditor General reported that bids for the right to develop Sydney's Cross City Tunnel were decided at least in part on the basis of who would pay the NSW Government the most for the right to build the tunnel, rather than who would charge motorists the lowest tariff, plus pay for all required road connections. While this asset arguably does not have significant monopoly characteristics, the NSW Government agreed to increase its market power by offering, as part of the deal, to close off many above ground roads to funnel traffic into the tunnel.

35 To appraise alternative projects, private sector investors typically use financial or market prices but public sector investors should use economic or shadow prices, which include the impact of positive or negative externalities.

36 Australian governments currently attempt to deal with greenhouse gas emissions through a range of initiatives that require electricity generators to use different 'clean' fuel sources including wind, solar, hydro or natural gas to generate specified proportions of their output. However, recent reports have found that this response creates investment uncertainty and have questioned its effectiveness (Productivity Commission 2005, Energy Reform Implementation Group 2006a).

banning certain vehicles from particular areas and mandating the use of specific truck technologies (Productivity Commission 2006). If road use generates more of these externalities than alternative modes like rail or sea, a failure to internalise these externalities or adequately value their economic and social costs in project appraisals may result in over investment in road networks. COAG asked the Productivity Commission's road and rail freight pricing study to examine the feasibility of valuing and including externalities in road and rail charging regimes.

As part of the NRA's transport reform stream, COAG committed to reduce current and projected urban transport congestion, within current jurisdictional responsibilities, informed by a joint Commonwealth-state review into the main causes, trends, impacts and options for managing congestion focusing on national freight corridors, including an analysis of congestion charging approaches used around the world and their applicability to Australia. The urban transport congestion study was completed in early December 2006 and its findings will be considered by COAG at its first meeting in 2007.

### **Barriers to new service providers**

While competitive new suppliers now can enter many previously closed, typically government dominated infrastructure markets, this is not the case in all sectors. For example, Queensland has just announced full retail contestability for its electricity sector several years after most states and most urban water suppliers still operate as government-owned monopolies.<sup>37</sup> As mentioned above, the Fisher Report (2005) also flagged concerns that government ownership and planning of ports may be restricting the entry of competing loading facilities and services. By introducing more free-to-air television services, the Government's recent media reforms should increase broadcasting investment, expand choice for consumers and promote innovation and growth in Australia's television content providing industry. Technological developments such as mobile technology and high speed broadband also are increasing competition in this sector.

The NRA's CIRA contains initiatives aimed at improving competition and efficiency at nationally significant ports. Jurisdictions agreed to undertake public and transparent reviews of their significant ports, port authorities and handling facility operations to ensure they permit entry by competing supplies of port and related infrastructure service providers.

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<sup>37</sup> The Australian Competition Tribunal's 2006 decision to declare Sydney Water's supply system so water recycling company Services Sydney can supply recycled water to industrial customers should help promote competition in this sector. The NSW Government has now issued a draft undertaking covering these services.

## Regulatory and planning problems

Even when governments do everything possible to create competition in infrastructure markets, some pure monopoly network assets will remain; these assets usually must be regulated to prevent abuse of monopoly power and may require planning to ensure rational network development. Protracted and uncertain regulatory processes and weak infrastructure project appraisal and network planning can reduce infrastructure service productivity and overall community wellbeing.

Under the NRA COAG has agreed to a range of initiatives to streamline national infrastructure regulation and reduce the fragmentation of regulatory systems. A key outcome at the February 2006 COAG meeting was the commitment from all governments to move to a simpler and consistent national approach to the economic regulation of significant infrastructure. These commitments were set out in the CIRA. The CIRA promotes a light handed approach to regulation, encouraging the use of market mechanisms and commercial negotiations to resolve infrastructure access terms and conditions in the first instance. Where regulation is required for nationally significant infrastructure, including major ports, railways and other export-related infrastructure, the CIRA aims to provide a simpler and more consistent national approach.

## Tardy decision-making and lack of national consistency

Onerous regulatory frameworks and slow decision-making can distort investment decisions by unnecessarily increasing compliance costs and uncertainty for industry participants. Queues of ships at the Dalrymple Bay Coal Terminal in 2004-05 and long delays in some electricity transmission link investments, inter alia, resulted in criticism of Australia's third party access regulation regimes and their administration.<sup>38</sup> The length of time regulators take to make decisions, particularly when they know they are subject to administrative review, gaming of the regulatory process and the broad scope of merits review appear to be the main reasons for these delays.

The lack of national consistency in infrastructure regulation also can increase costs for industry participants and reduce efficiency. Many users of infrastructure networks including railways and road networks cross jurisdictional borders but regulations relating to their use are state-based and often are inconsistent. Despite some progress, after decades of efforts to harmonise road regulations between jurisdictions, many differences still persist.

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<sup>38</sup> The Queensland Competition Authority took 22 months to decide on an appropriate price for coal loading at Dalrymple Bay Coal Terminal. National Access Regime institutions and the courts took about five years to decide on a planned augmentation of transmission capacity between South Australia and NSW, ultimately deterring this investment.

In the CIRA, States and Territories agreed that all their third-party access regimes will include consistent objects clauses and pricing principles and six month binding time limits on regulatory decision-making. Merits review, where available, essentially will be limited to the information originally submitted to the regulator. The CIRA also commits jurisdictions to submitting state and territory infrastructure access regimes for certification as 'effective' under the National Access Regime (Part IIIA of the Trade Practices Act) by 2010 and submit all new access regimes as soon as practicable.

Under the CIRA, COAG also agreed to implement a national system of rail access regulation, based on the Australian Rail Track Corporation (ARTC) undertaking, for all track from Perth to Brisbane (subject to commercial negotiations). It also agreed to implement this approach to other identified major rail freight corridors, if cost benefit analysis indicated this was worth doing. The standard gauge line from Kalgoorlie to the Queensland-NSW border already is operating under an undertaking issued by the ARTC which owns or leases all lines on this route. The Australian Competition and Consumer Commission (ACCC) oversees the ARTC undertaking. Jurisdictions' commitment to submit state-based access regimes governing other significant export related rail facilities for certification under the National Access Regime also should help harmonise rail access regimes.

Under the transport reforms of the NRA, COAG also asked the Australian Transport Council (ATC) to oversee a five year programme to harmonise and reform rail and road regulation. This includes harmonising road safety regulation and implementing performance-based standards to facilitate road access by innovative vehicles that may impose less road damage. Under the best practice regulation reform stream, COAG asked the ATC to recommend measures to achieve a national approach to rail safety regulation.

The NRA also endorsed the MCE's existing commitment to transfer energy distribution and retailing regulation functions to the newly established Australian Energy Regulator and Australian Energy Market Commission on an agreed timetable, to make energy sector regulation more nationally consistent.

### **Strengthening network infrastructure planning — electricity transmission, road and rail corridors**

Historically, Australia has not had a strong record regarding planning and implementing national infrastructure networks. Jurisdictions' failure to coordinate railway gauges in the nineteenth century is probably our most spectacular failure; the standard gauge line still mainly links capital cities. Jurisdictions only recently

commenced work on coherent national transport corridor planning under AusLink.<sup>39</sup> Under the transport reforms of the NRA, COAG endorse the ATC's commitment to plan AusLink corridor strategies cooperatively by agreeing to complete corridor strategies by June 2007.

State-based electricity transmission grid owners and planners are not tasked with ensuring the most rational and cost efficient development of the overall National Electricity Market grid (Energy Reform Implementation Group 2006b). This almost certainly reduces the productivity of generation and transmission investment. Under the NRA, COAG agreed to strengthen the national character of the electricity transmission system and established ERIG to recommend, by the end of 2006, methods of achieving this. In November 2006, ERIG released a transmission discussion paper that canvassed establishing a national planning body to optimise transmission network investment in the National Electricity Market.<sup>40</sup>

### Stronger project appraisal for publicly provided infrastructure

Another challenge for governments investing in infrastructure is to ensure economic and social appraisal criteria dominate in prioritising projects. Weak and non-transparent public infrastructure appraisal can reduce potential productivity gains from infrastructure investment. In 2005, the ATC agreed to adopt more robust appraisal guidelines to assess alternative land transport projects and COAG endorsed this commitment under the NRA, and all governments agreed to adopt these guidelines for evaluating new public road and rail infrastructure projects. Cox (1994) estimated that investing in public road infrastructure on the basis of transparent and thorough economic analyses could raise GDP by 2.5 per cent over ten years. The recent Productivity Commission discussion draft *Road and Rail Freight Infrastructure Pricing* (2006) also stressed the importance of more transparent and robust investment appraisals of road projects.

## Implementing the National Reform Agenda

The Productivity Commission review of National Competition Policy (2005) and various international reviews of Australia highlight the success of Australia's recent microeconomic reform but stress the need for ongoing reform and its effective

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39 Commencing in 2004, AusLink, the Australian Government's long-term strategic plan for land transport infrastructure, is a cooperative approach to transport planning and funding by the Australian, State and Territory governments. The Australian Government's role focuses on inter-state connectivity with funding directed to road and rail infrastructure projects of national significance in a defined, integrated national network.

40 The National Electricity Market includes all States and Territories except Western Australia and the Northern Territory.

implementation and governance, including monitoring of reform progress (Productivity Commission 2006c).<sup>41</sup> In February 2006, COAG agreed in principle to establish an independent body, the COAG Reform Council (CRC) to report to COAG annually on progress in implementing the NRA. In July 2006, COAG further agreed that the CRC would have six members; the Chair appointed by the Australia, a deputy chair appointed by the states and territories and four members agreed by COAG (COAG July 2006).

In July 2006, COAG also agreed that specific reform proposals in the areas of transport, energy, and infrastructure regulation, reflecting the reform commitments agreed by COAG in February 2006 would be available for COAG's consideration in early 2007. At the July 2006 COAG meeting, the Commonwealth confirmed that it will provide funding to the States and Territories on a case-by-case basis once specific implementation plans have been developed, if funding is needed to ensure a fair sharing of the costs and benefits of reform. Payments to the States and Territories and, where appropriate, to local government, would be linked to achieving agreed actions or progress measures and to demonstrable economic benefits, and would take into account the relative costs and proportional financial benefits to the Commonwealth, States, Territories and local government of specific reform proposals. Any Commonwealth funding:

- could take the form of Commonwealth and/or shared funding for specific initiatives, and/or payments from the Commonwealth linked to results;
- would be in addition to other Commonwealth funding; and
- would be decided on by the Commonwealth.

COAG also agreed that funding implications, where appropriate, will be considered by all jurisdictions once each specific reform proposal has been substantively developed.

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41 'The challenge is to steadfastly implement action plans to achieve these goals. Australia has an admirable track record of implementing wide-ranging structural reforms over the past two decades even though its federal structure presents challenges of political coordination. Nonetheless, there is a concern that the commodity price boom could dampen the appetite for implementing reform going forward. To realise the large potential benefits from these reforms, the mission encouraged sustained and determined leadership from the Commonwealth government, arguing that this is an auspicious time to accelerate reforms by using some of the recent surge in revenues to spur action' (IMF 2006).  
'Australia has a strong track-record in pushing ahead with sensible reforms. Further reform is needed to underpin vigorous growth and sustainable prosperity in the face of population ageing' (OECD 2006).

## Australia's infrastructure policy

COAG agreed that each specific reform proposal will include, as a package, the actions that will be done jointly and the actions that will be done by individual jurisdictions.

COAG agreed that specific reform proposals will include information on the direct costs to jurisdictions for proposed actions, including any costs to address any significant economic adjustment costs.

COAG also agreed that once specific reform proposals have been considered by COAG on a case-by-case basis there will be an independent assessment of the relative costs and benefits of each of the reform proposals. Assessments would give due regard to economic, demographic, geographic and other differences between jurisdictions. The assessment would be undertaken by the CRC for jurisdictional consideration. Each jurisdiction would retain full discretion as to how they act upon the assessment from the CRC. The CRC would draw on the work of the Productivity Commission on assessing the potential benefits of the NRA.

## Expected impact of the National Reform Agenda

If fully implemented, the NRA should help address many of the pressing infrastructure market competition and regulation issues outlined above. The COAG National Reform Agenda aims to deliver significant economic and social rewards.

The Productivity Commission estimated that NCP yielded substantial benefits to the Australian economy, including a 2.5 per cent boost to GDP, a surge in productivity growth and strong growth in household incomes. In 2006, COAG asked the Productivity Commission to model the benefits of the NRA; the Productivity Commission will provide these results to COAG in early 2007. As they build on significant NCP reforms, NRA energy and transport reforms are likely to yield somewhat lower productivity benefits than NCP. However, when combined with wide ranging infrastructure and other regulatory reforms, the competition and regulation streams of the NRA could be expected to generate somewhat comparable gains to GDP.

## Conclusion

Most of Australia's present infrastructure policy problems are not caused by inadequate public investment; they mainly reflect the need for further reform to ensure competitive and efficient infrastructure markets, where competition is possible, and more efficient regulation of monopoly infrastructure. In the last 15 years, Australian governments' infrastructure policy has shifted systematically from directly providing virtually all infrastructure to creating competitive market and regulatory environments that allow competing suppliers to provide infrastructure efficiently. In creating this



environment it is essential governments appropriately deal with the monopoly power, public good characteristics and externalities associated with many infrastructure assets and services.

Australia's infrastructure reform currently is incomplete, with many sectors operating an inefficient half-way house between the direct provider and competitive supplier models. Government-owned infrastructure competing with private operators, prices which do not reflect the full cost of provision, uncompetitive market structures and artificial restrictions on new suppliers entering markets all undermine the operation of efficient, competitive infrastructure markets, including in water, electricity and possibly ports. This can inhibit timely and efficient investment. Regulatory processes also can be slow and economic and safety regulation varies between jurisdictions creating uncertainty and potentially delaying investment. In land transport and electricity, inadequate network planning and investment appraisal probably reduce their contribution to national productivity growth.

Over the past two decades, major infrastructure market reforms have delivered substantial benefits to the Australian economy; the NRA builds significantly on these initiatives to increase the efficiency of infrastructure service delivery going forward. It targets significant policy-related impediments to well-functioning infrastructure markets, particularly in the energy and transport sectors and infrastructure regulation. If the NRA is fully implemented it should make an important contribution to removing infrastructure supply constraints in the Australian economy and to increasing productivity growth and the wellbeing of the Australian population. The experience of the NCP indicates robust institutional arrangements are necessary to ensure this occurs.

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## APPENDIX

### Public goods and monopoly networks

#### Why governments often provide pure public goods

While most goods or services consumed in an economy, such as water, electricity and food, are 'rival' or private goods, that can be consumed by only one person, the services provided by uncongested road networks and TV spectrums are non-rival or **public goods**, as many people can consume them without preventing others from doing so. An extra car travelling along an uncongested highway does not reduce the availability of the highway to others; turning on the television does not prevent someone else receiving the signal. The other characteristic of public goods is that it is difficult or impossible to exclude people from their use. For example, with current technology it is virtually impossible to prevent people from or directly charge them for using footpaths, street lighting, non-arterial roads or TV spectrum.

Infrastructure services with strong public good characteristics usually are unattractive for private providers, as it is not possible to exclude the public from their use or levy charges on consumers. Hence, unless the government subsidises private providers in some way, private ownership is likely to result in under-provision of pure public goods. However, in the case with TV spectrum, private broadcasters can obtain a return from advertising.

Hence, while competing providers can supply electricity, gas, railways and telecommunications, governments have retained a dominant role in providing roads. Toll roads are not pure public goods because operators can exclude users who do not pay. Australia has seen a trend towards more private sector road projects in capital cities including CityLink and EastLink in Melbourne and Westlink M7 and the Cross City Tunnel in Sydney. At present for the great majority of local and arterial roads directly charging for access is not yet feasible so continued public provision is necessary. However, new electronic tolling technologies have the potential to turn formerly public good roads into private roads on which charges can be levied more broadly.

#### Managing natural monopoly networks

Infrastructure networks are often natural monopolies because:

- they usually supply products that cannot be traded beyond a limited geographical region, so networks in other regions or countries cannot provide competition;

- the most efficient scale of producing the service often equals or exceeds total market demand, so the market has room for only one efficient producer. Although many large-scale industries, like petrochemicals, oil refining and steel, demand lumpy, mostly sunk investments and may have declining marginal costs of production over a certain output range, their products are tradeable. Imports can compete with domestic producers and producers can export production in excess of market demand;
- they usually involve very high initial investment costs but very low costs for extra connections to an existing network. Hence networks' marginal cost of supplying new connections will fall steeply, giving networks owners an overwhelming commercial advantage over potential new competitors. Infrastructure networks are a classic example of increasing returns to scale, with the average cost of providing the infrastructure service falling as the number of customers expands, providing increasing profits since prices charged to consumers are kept constant.

Investments in networks like water pipes, railways, cable networks and highways are typically 'sunk costs' with little or no re-sale value or alternative use, reducing the threat from 'hit-and-run' competition providing a credible threat to incumbent providers. On the other hand, satellite dishes, microwave towers, switching stations, passenger aircraft, locomotives and rolling stock can be sold if new entrants to the business subsequently want to leave the market.



# Improving the investment climate in APEC economies

Roy Nixon<sup>1</sup>

The World Bank has identified investment as the key driver of growth and poverty reduction. An investment climate with few barriers is most likely to ensure investment is plentiful and used efficiently. In APEC economies, domestic investment makes up nearly three-quarters of all investment and therefore has the greatest potential to lift growth. Many studies have measured barriers to foreign direct investment at the border but surprisingly few have measured barriers 'behind-the-border' to domestic investment. We need to understand much more about behind-the-border barriers to investment in APEC and their impact to be able to assist APEC developing member economies make better informed policy choices when removing barriers to investment. Recent APEC experience with investment climate reform is briefly examined for any thematic lessons and whether there could be a better way to undertake such reform in the future. Specific work under way in APEC is discussed in the final section.

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1 The author is from the Foreign Investment and Trade Policy Division, the Australian Treasury. He is also the Convenor of the APEC Investment Experts Group. This article has benefited from comments and suggestions provided by Ian Beckett, Nina Davidson, Paul Kennelly and Kim Salisbury. The views in this article are those of the author and not necessarily those of the Australian Treasury.

## Introduction<sup>2</sup>

Michael Porter, the Bishop William Lawrence University Professor, based at Harvard Business School, has stated:

Almost everything matters for competitiveness. The schools matter, the roads matter, the financial markets matter and customer sophistication matters. True competitiveness, then, is measured by productivity. Productivity allows a nation to support high wages, attractive returns to capital, a strong currency – and with them, a high standard of living. What matters most are not exports per se or whether firms are domestic or foreign-owned, but the nature and productivity of the business activities taking place in a particular country.

There is now almost universal agreement that a strong correlation exists between the investment climate and growth and poverty reduction. The World Bank defines the investment climate as ‘the location-specific factors that shape the opportunities and incentives for firms to invest productively, create jobs and expand’ (World Bank 2005b). Another way of looking at the ‘location-specific factors’ referred to by the World Bank is as barriers presented by government policies and behaviours that exercise decisive influence over such things as security of property rights, regulation and taxation, provision of infrastructure, the functioning of financial and labour markets and the rules determining corporate and public governance.

## Investment in APEC

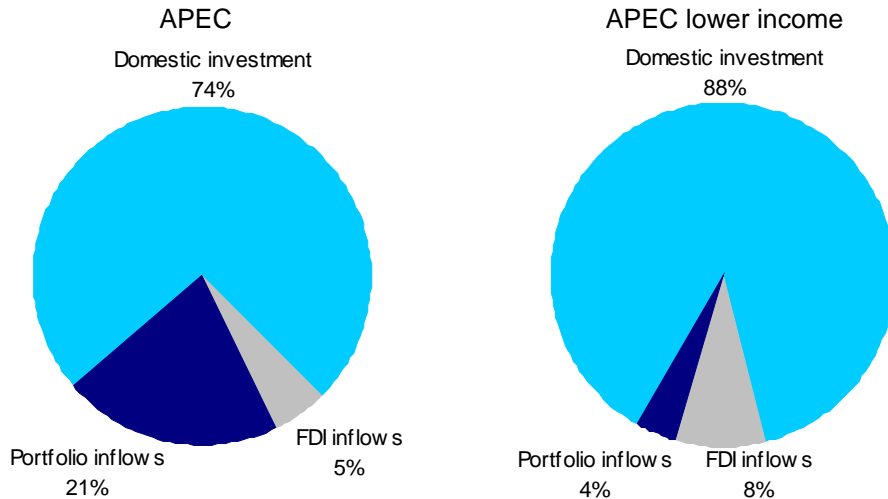
Foreign savings – which can be either foreign direct investment (FDI) or foreign portfolio investment – or domestic savings, finance investment. The vast majority of APEC investment is domestic investment, particularly in lower income APEC economies where domestic investment comprised 88 per cent of gross fixed capital formation over the period 2002 to 2004 (Chart 1). Lower income APEC economies tend to receive more FDI than foreign portfolio investment which is hardly surprising given the lower level of sophistication of their financial markets relative to more developed APEC economies.

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2 This section draws extensively on a study commissioned by APEC by the Centre for International Economics (see APEC/CIE 2006).

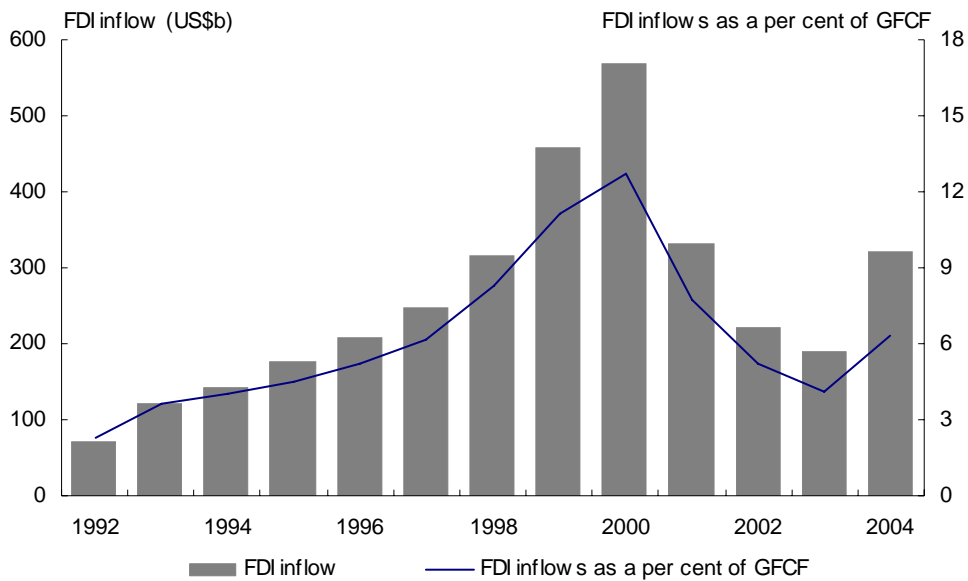


**Chart 1: Composition of investment in APEC**  
(average 2002 to 2004)



Note: APEC lower income economies are those classified as low income or lower-middle income by the World Bank (China, Indonesia, Papua New Guinea, Peru, Philippines, Thailand and Vietnam).  
Source: APEC/CIE 2006, p 14.

**Chart 2: FDI inflows into APEC economies**



Note: FDI inflows into APEC economies were not uniform across the APEC region.  
Source: APEC/CIE 2006, p 15 based on UNCTAD data.

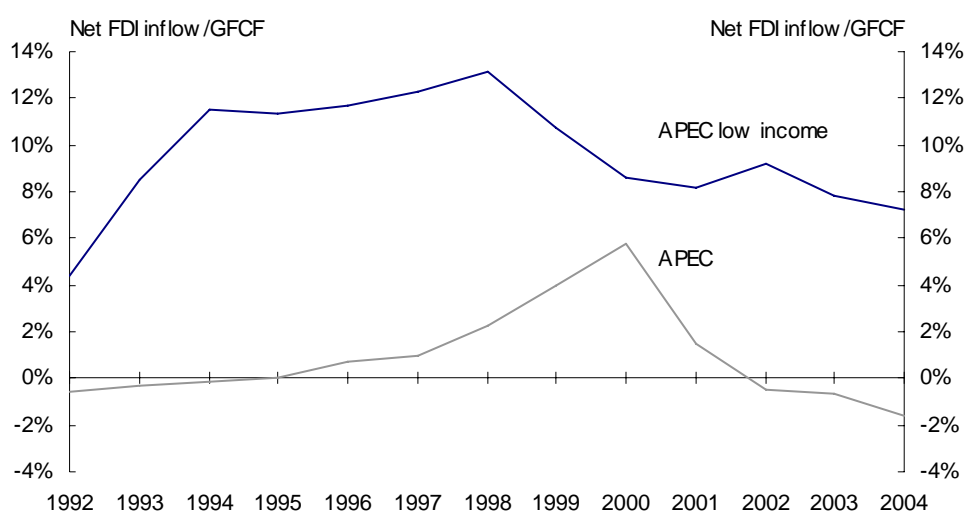
The significance of FDI inflows as a source of financing for both APEC and the rest of the world rose during the 1990s before tumbling from 2001 to about 4.5 per cent of GFCF in 2003 (Chart 2). FDI inflows have started to rise again and reached about

## Improving the investment climate in APEC economies

6 per cent of GFCF in 2004. For lower income APEC economies, preliminary UNCTAD figures show a significant rise in FDI inflows in 2005 from about \$US67 billion in 2004 to \$US87 billion.

More FDI is now flowing out of the region than into it (Chart 3). Within APEC, FDI flows typically move from developed economies to developing economies which is what economic theory would suggest, with lower income economies potentially having many more profitable investment opportunities and a higher expected marginal product of capital.

**Chart 3: FDI inflows less FDI outflows for APEC member economies**



Source: APEC/CIE 2006, p 18 based on UNCTAD data.

APEC lower income economies save about 10 per cent more than they invest, with the excess flowing abroad. Indications of this trend are the large current account surpluses that exist in most lower income APEC economies (several are in the 5-10 per cent range) matched by large current account deficits in APEC developed economies: Australia, United States and New Zealand all recorded deficits in excess of 5 per cent of GDP in 2004. The paradox of APEC lower income economies effectively financing the current account deficits of certain APEC developed economies through their surpluses suggests that it is not the lack of domestic savings that is constraining investment.

## Barriers to investment in APEC economies

### FDI barriers

There has been plenty written about barriers to FDI including suggested ways in which to quantify the various restrictions that prevail. (See Productivity Commission 2001, OECD 2003, UNCTAD 2005b and APEC/CIE 2006.) The methodology used in these studies has been criticised for a number of conceptual and practical impediments and there is room for further work and improvement. Despite these problems with the methodology, the unmistakable key message coming through this work is that APEC economies have substantial barriers to FDI albeit with considerable variation in the level of restrictiveness.<sup>3</sup> These barriers are in the form of limits on equity and control of businesses in particular sectors; prior screening or licensing regimes; and an array of operational restrictions that affect the movement of labour, level of domestic content and board membership and senior management. A study of impediments to FDI in the financial sector conducted by the APEC Business Advisory Council (ABAC 2004) which was based on surveying APEC businesses, amply demonstrates the range of restrictions foreign investors face in many APEC economies.

There is significant convergence of informed opinion about the potential benefits of lowering FDI barriers in APEC economies. First there would be both stimulus to intra-APEC FDI flows and encouragement for FDI from outside the region to enter. Second there would be a productivity benefit based on FDI bringing important skills and technology. Third, there could also be a flow-on effect encouraging more domestic investment throughout the region.

The magnitude of these benefits depends on the degree of liberalisation in each particular economy. An approach often adopted in measuring the impact of lowering FDI barriers is to employ a scenario under which the reduction in FDI barriers in each economy is to the level of the most open economy. The APEC/CIE study, using previous estimates based on partial indicators<sup>4</sup>, found that under such a scenario:

- FDI levels across APEC would increase by about 20 to 30 per cent (Nicolletti et al, 2003);

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3 The scale of barriers is from 0 to 1 with 0 being fully open. The APEC average according to APEC/CIE is 0.36 and the range for those economies measured is from below 0.2 to a little under 0.7 – readers interested in examining this in more detail should look at Chart 3.2 in APEC/CIE (2006).

4 The APEC/CIE study notes that calculating the potential impact of lowering FDI barriers would ideally capture the linkages between different types of investment, rates of return and economic activity. As no such framework has been developed, only partial indicators linking barriers, investment and growth are available.

### Improving the investment climate in APEC economies

- a 1 per cent increase in FDI could increase productivity of domestic firms and GDP by up to 1.6 per cent (see Klein, Aaron and Hadjimichael 2001 for a summary of estimates);
- GDP would be boosted by 2 to 3 per cent in APEC economies (or about \$600 billion in the APEC region) even taking an estimate of productivity growth at the low end of the zero to 1.6 per cent range, such as 0.1 per cent;
- lower income economies would likely experience a greater increase in FDI as their barriers are currently relatively high, indicating more compelling reasons for them lowering FDI barriers; and
- the impact of growth on poverty could reduce the number of people living on less than \$1 per day by about 20 per cent (Adams 2003, using World Bank estimates).

### Understanding the impact of behind-the-border barriers

Lowering FDI barriers in APEC economies can bring substantial economic and social gains. But behind-the-border barriers are key to improving outcomes in APEC. Behind-the-border barriers are policy or institutional shortcomings that impede investment and thereby stop an economy from achieving optimal growth and productivity. These policy failings and institutional inadequacies include issues relating to legal certainty in the economy, poor public and corporate governance, inadequate competition, too much and overly complex regulation in product and labour markets, poor infrastructure development (including access to finance), uncertainty and lack of transparency in administration.

While the importance of behind-the-border barriers is becoming well known in APEC, quantifying the impacts has not been done. Outside APEC, there have been attempts to quantify behind-the-border barriers at a macroeconomic level including their incidence, prevalence, impact on the cost of doing business and effect on risk and complexity. It is possible to speculate that behind-the-border barriers will have a more negative impact on domestic investment including returns, level of risk and the creation of economic rents for particular investors. Case studies of the success stories in certain economies have advanced what we know about the impact of easing behind-the-border barriers but there are still many gaps in our knowledge which warrant further study. Not well understood are the relationships *between* different behind-the border barriers.

We need to generate the same level of debate about the impact of removing behind-the-border barriers as has been generated by the attempts to measure the impact of removing barriers to FDI. As the APEC/CIE study recently concluded:

Two things are required to capture the benefits of removing behind-the-border barriers. Firstly, a formal way of assessing the impacts of these impediments would improve knowledge and increase transparency. Secondly, a process by which the assessment and quantification of barriers in an economy wide framework can occur is also required. This process would generate wide public debate and would aid the removal of these impediments.

## The importance of investment climate reform

The World Bank Group and others have put a significant amount of analytical effort into understanding the investment climate and the importance of reform. There has been an increase in the number of institutions producing measures of the impact of government policies on:

- the costs of doing business;
- risk through policy uncertainty, lack of transparency and macroeconomic instability; and
- the regulation of market entry and exit and anti-competitive behaviour.

The World Bank leads the way with its Investment Climate surveys, Doing Business project, Governance Indicators and World Development Indicators. Other institutions that have produced general measures of competitiveness, risk or lack of freedom to invest include the World Economic Forum, Transparency International, Heritage Foundation, Fraser Institute, International Institute for Management Development and the Economist Intelligence Unit.

## Determining investment reform priorities: some case studies

The hopeless quest to identify a consensus where there is none should be abandoned in favour of a debate on the policy changes needed to achieve a rounded set of objectives encompassing at least the level, growth, and distribution of income, as well as preservation of a decent environment. (Williamson 2000)<sup>5</sup>

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5 John Williamson was credited with inventing the term 'Washington Consensus' which he claimed originally meant the lowest common denominator of policy advice addressed by the Washington-based institutions (including the World Bank) to Latin American countries as of 1989. However, he noted that the subsequent use of the term came to signify neo-liberal or market fundamentalist policies.

The World Bank seems to have heeded Williamson's advice. In advising on how to determine priorities for investment climate reform, World Bank methodology has become more context-specific, sectoral and more targeted. For example, the World Bank's Investment Climate surveys are based on detailed questioning of investors that helps identify some of the most important issues. There are recent examples of the World Bank using value chain analysis to develop targeted action programmes in particular sectors. The World Bank Group's Doing Business indicators benchmark and rank the cost and quality of business regulations for key crosscutting investment climate issues. Finally, as Michael Klein, Vice President of Private Sector Development at the World Bank/International Finance Corporation recently wrote, 'As with change management in firms, the best we may be able to do is to generate interesting case studies that help sharpen judgment and inform policymakers about the process and impact of reforms.' (See World Bank/IFC 2006, p ix.)

The World Bank's investment climate reform work in Indonesia and the Philippines (see Box 1) offers some interesting insights into the process of reform in these two APEC economies. Previous reform efforts tended to be concentrated around periods of political change and/or financial or economic crisis. More recently the case for getting investment reform onto the agenda was built around the case study information coming out of the World Bank, together with several years of hard benchmark data from various surveys and the Doing Business project which showed Indonesia and the Philippines were slipping in the rankings. In both cases the judgment was that swift action was required. Second, reform momentum dissipates fairly quickly if there is not the institutional structure in place to implement and coordinate the reform process<sup>6</sup> effectively – this suggests that various domestic institutions play a vital role in nurturing ongoing support for reform and its implementation.

Third, in the early stages of reform there is a need for a certain amount of public education and persuasion to generate 'buy-in' for reform. In that regard, the Philippines seems to have opted for a narrower and more structured dialogue with the private sector and other stakeholder groups on its multi-faceted action agenda on competitiveness. Such consultation is clearly necessary as the role of the private sector in implementation is important and in any event can elicit new ideas. Finally, previous reform initiatives, even if they are well designed, can be ineffective or undone by poor implementation and monitoring.

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6 Interestingly, in the first half of 2006, Indonesia introduced three new policy reform packages designed to accelerate economic growth – Policy Package for Improving the Investment Climate, Policy Package for the Acceleration of Infrastructure Development and Financial Policy Sector Package.

### **Box 1: Investment climate reform in Indonesia and the Philippines**

The Asian Development Bank and World Bank commenced a major study of the Indonesian investment climate in the second half of 2003 with a survey covering 713 manufacturing establishments. A major report, *Improving the Investment Climate in Indonesia*, was published in May 2005. At the firm level, the ADB/WB Investment Climate Survey found some matters required serious attention with the most severe business obstacles identified being macroeconomic instability, economic and regulatory policy uncertainty and corruption. Other problems included poor or difficult access to finance, poor electricity supply, labour regulations (more so than skills), and severe problems at the sub-national level of government heightened by recent decentralisation. Similar problems featured in the comparison between Indonesia and other economies. The World Bank *Doing Business* reports provided benchmarked data which clearly showed some of these issues were actually getting worse and Indonesia's relative performance in the region was deteriorating.

In late 2005, the Indonesian Government seemingly accepted that much more needed to be done (Ikhsan 2005) in the areas of fiscal reform, trade liberalisation, financial sector reform, tax, labour and business regulation and lowering jurisdictional risk. There was clear recognition of the need to improve coordination of reform initiatives and to focus more on a microeconomic reform agenda. Indonesia's self-assessment concluded that there were gaps between political will and implementation on the one hand and a need for more hands-on policy to improve the investment climate at the central and regional levels of government on the other hand.

The Philippines features have much in common with those described for Indonesia. Again, the World Bank and the ADB conducted an Investment Climate Survey in 2003 and the World Bank produced a detailed assessment report in 2005 (see World Bank 2005c). This report noted that the Philippines had enormous growth potential and while it had instituted a number of reforms in the 1980s and 1990s these had produced only modest growth. The main reasons behind this lower than expected growth were poor fiscal conditions and low institutional quality. High uncertainty about future macroeconomic stability raised borrowing costs for the private sector, thus increasing resources were swallowed up to meet debt servicing requirements (as high as 37 per cent of revenues by 2004). This both crowded out private sector activity and delayed crucial public investment in infrastructure and institutional development. Business surveys confirmed the high costs to business of unreliable infrastructure, contract enforcement, crime and security, bribes and regulatory compliance which could represent as much as 26 per cent of revenues. The Philippines ranking also slipped in nearly every independent benchmark indicator related to competitiveness, ease of doing business, corruption and human development.

### **Box 1: Investment climate reform in Indonesia and the Philippines (continued)**

In 2006, the Philippines began to take notice of its apparently inexorable slide down the world competitiveness rankings and convened a National Competitiveness Summit in October 2006. The Summit was intended to highlight commitments derived from both the private and public sectors to improve the country's competitiveness. The initial objective was to develop an Action Agenda for Competitiveness which will contain the short- and medium-term action points that both private and public sector institutions must execute. As a working target, the aim is to lift the Philippines' competitiveness ranking in a number of benchmarking publications from the bottom third to the top third by 2010. The Action Agenda developed at the Summit agreed to focus initially on sources of competitiveness, namely: competitive human resources; efficient public and private sector management; effective access to financing; improved transaction flows and costs; seamless infrastructure network; and energy cost-competitiveness and self-sufficiency.

## **What is APEC doing to promote investment climate reform?**

In seeking to meet this challenge of improving the investment climate in APEC member economies, the APEC Investment Experts Group (IEG) has recognised the need to do more work in a number of important areas:

- the need to go further with its existing work on barriers to domestic and foreign investment, both at-the-border and behind-the-border, and to identify clearly what is at stake if economies maintain high barriers;
- assisting developing member economies in making more optimal policy choices when considering the process of reform of their domestic investment climates; and
- listening to the views of business about the investment climate and building and maintaining effective public-private dialogues.

### **Behind-the-border barriers**

A second stage of the APEC/CIE study on investment barriers has been approved for funding by APEC. As a first step, we need to build a picture of behind-the-border barriers in each APEC economy by pulling together existing information into a coherent framework. The World Bank's annual Doing Business survey, the core study for this exercise, lists among these barriers: weak property rights, corruption, poor regulation and lack of competition policy. There are many linkages between these. In



looking at such information, it would be useful to consider the cost, the barriers and the linkages between different behind-the-border barriers.

IEG's initial aim is to report behind-the-border barriers to investment as a series of indicators – an information set from which users can draw conclusions. The next step will be to gather and analyse success stories of APEC members (for example, from China, Indonesia, the Philippines, Viet Nam and Australia) as a means of reinforcing the importance of removing these barriers. The final step will be to produce a stocktake of what institutional mechanisms are available in each APEC member economy that can create and nurture support for reform of the policies that operate as behind-the-border barriers. Analysis of the capacity of such institutions to undertake reform might be expected to increase the demand for institutions to be established and maintained.

IEG is by no means the only APEC forum working on structural reform (for example, the Economic Committee together with certain competition-related working groups is pursuing a broad structural reform agenda) but this stage 2 study could be useful in facilitating discussions in/with other APEC forums concerning the relative importance of particular behind-the-border barriers, their impacts, and potential reform paths for collaborative action by APEC economies.

### Guiding policy choices when undertaking investment reform

The World Bank experience with investment climate reforms indicates that there is no standard process or one-size-fits-all approach. Measurement or benchmarking helps to diagnose constraints and identify the reform priorities and build momentum for reform. Best practice approaches to reducing business costs from regulation, reducing risk from policy uncertainty and increasing competition are helpful guides from which developing economies can learn. We should also welcome new approaches and be prepared to use pilots and sector-specific interventions as learning and demonstration tools when reforms face great uncertainty or strong opposition.

Issues for policymakers to consider include: a need for more analysis of the complementarities across reform areas (to help inform packaging and sequencing reforms, especially in countries with low institutional capacity); which reforms can be bundled and which should not be; which reforms need support by action in other areas; and with limited reform capacity, which measures will deliver an early harvest in terms of policy credibility and certainty?

One approach which APEC Ministers believe is worthy of further study and collaboration is the OECD Policy Framework for Investment (PFI) – see Box 2.

The PFI is a new concept for approaching investment policy. Compared with more traditional instruments which are based on a foreign investment/domestic investors divide, the general aim of the PFI is to improve the general business environment and create a genuine level playing field for all investors. The PFI integrates all the relevant regulatory variables that are essential to the establishment of a friendly investment policy environment with a view to achieving global consistency and enhancing possible synergies between various policy initiatives. It supports the efforts of governments to encourage sustainable economic growth built on private investment.

### **Box 2: The Policy Framework for Investment**

The Policy Framework for Investment (PFI) is a component of the OECD Initiative on Investment for Development and was launched in Johannesburg in November 2003. The objective of the PFI is to mobilise private investment that supports economic growth and sustainable development. Thus it aims to contribute to the prosperity of countries and their citizens as well as to support the fight against poverty. The PFI proposes a set of questions for governments to consider in ten policy fields identified in the 2002 UN Monterrey Consensus on Financing for Development as critically important for improving the quality of a country's environment for investment. The PFI was completed in April 2006 and endorsed by OECD Ministers on May 24 2006. The PFI has been developed as a partnership process. It has involved about 60 economies (30 OECD and 28 non-OECD) including 15 APEC economies.

The PFI is a tool that economies can adapt in order to benchmark their policies for investment against broadly accepted international practices. It highlights ten domains that, beyond stable macroeconomic conditions, have a strong bearing on the investment climate. These are: investment policy; investment promotion and facilitation; trade policy; competition policy; tax policy; corporate governance; responsible business conduct; human resource development; infrastructure development and financial services; and public governance.

Each of the policy areas considered under the PFI comes with a series of probing questions to test for quality and coherence, based on non-OECD (and OECD) experiences, as well as the established principles embodied in international agreements. To take just a few examples, questions in the investment policy chapter relate to the broader benefits for domestic and foreign investors alike of regulatory transparency, property rights protection and fair treatment for all investors. The PFI asks whether trade policies that restrict imports act as an obstacle to investment in both the host and home countries by increasing the cost of doing business and by shrinking the size of markets. In the field of competition policy, it tests whether the principles in operation are used in support of the broader investment strategy.

More information: OECD (2006a) and OECD (2006b).

The PFI also gives a greater weight to self-examination and policy dialogue as compared to more traditional peer pressure mechanisms. It recognises that host economies should identify their achievements and shortcomings and that they should test possible solutions to existing problems. The PFI is not prescriptive and has ample room to accommodate individual country situations, cultural traditions and local constraints. But the PFI also embodies a wealth of experience accumulated over the years and offers examples of best practices and solutions to problems that have proven to be effective in many countries. It therefore provides a useful reference point for conducting investment policy reforms.

As a next step IEG is planning to organise a high-level public-private dialogue on the PFI in Melbourne in March 2007 to exchange views between, inter alia, high-level policymakers, international organisations, donor banks and business people on how this new tool could help to improve the investment climate in the APEC region. Central to the discussion in Melbourne will be a dialogue on how individual economy PFI assessments will be undertaken, based on some initial methodologies developed with respect to a number of APEC developing member economies. There will also be some exploration of the potential for the PFI as a tool for regional 'peer learning' and 'peer dialogue'.

### Dialogue with the APEC business community

Enhanced dialogue and close collaboration with the business community are essential to improving the environment for investment. Mutual participation of the IEG Convenor and ABAC representatives in their respective meetings has greatly enhanced interaction between IEG and ABAC in the past two years. For example, the IEG has considered carefully the 'Barriers and Impediments to Foreign Direct Investment (FDI): Checklist and other Sectors and Recommended Policy Response' developed by ABAC as an important input from business communities. As a next step, the IEG will conduct a comprehensive survey to identify high-priority investment barriers, building on various surveys including those of the World Bank, the World Economic Forum and the International Institute for Management Development (IMD) and organise a symposium back-to-back with the second ABAC meeting to be held in Tokyo in 2007. The survey will seek to identify the priority policy issues with the participation of the business community. Another issue for study is the scope for public-private dialogues and their involvement in improving the investment climates in specific APEC economies, including an assessment of existing dialogues in APEC economies.

## Conclusion

This article has sought to demonstrate that an improved investment climate is crucial to sustainable development. Broadly speaking, APEC economies have significant barriers to FDI although the level of restrictiveness varies considerably. Behind-the-border barriers constitute the greatest impediment to that growth but quantification of their impacts and of the interplay between barriers is not well understood. Improved understanding will allow APEC economies to determine reform priorities that are most likely to enhance the investment climate. APEC's Investment Experts Group is striving to meet this challenge through quantitative research, assessment of international best practice policy frameworks and a more complete exchange of ideas with business.

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# Evidence on the child care market

Ian Davidoff<sup>1</sup>

What is the current state of the child care sector? This paper answers this question focusing on the issues of access and affordability.

The available evidence indicates that, contrary to popular perceptions, there is not an emerging crisis in the sector; supply is generally keeping pace with demand and child care has remained affordable.

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1 The author is from Social Policy Division, the Australian Treasury. The article has benefited from comments and suggestions provided by Rob Heferen, Amanda Kirby, Sarah Lendrum, Neha Malhotra, Fergus Pope and Hector Thompson. The views in this article are those of the author and not necessarily those of the Australian Treasury.

## Introduction

With the heightened demand for child care services in Australia over the last decade, has come growing concern about the accessibility and affordability of child care. This paper draws on a range of data sources to assess the veracity of these concerns.

Access to affordable child care is an important means of achieving valuable social outcomes.

Most notably, child care facilitates the labour market participation of parents with young children. The theoretical model of the relationship between child care and female labour force participation predicts that just as an increase in the wage rate increases the probability of employment, an increase in child care costs decreases the probability of employment. The international empirical literature bears out this negative relationship, although the range of responses reported for both participation in the labour force and hours of work vary widely (Andersen and Levine 1999). In Australia, the results are similarly ambiguous, but there is an established negative relationship between child care costs and female labour participation (Dorion and Kalb 2005, Rammohan and Whelan 2006).

Child care also plays an important role in improving the educational and developmental outcomes of children. Along with the growing recognition that the early years in the lives of children are critical for their development, a growing body of evidence shows that quality child care can support children's social-emotional functioning. International longitudinal studies suggest that high-quality child care can stimulate early cognitive and language development, and may even have a compensatory influence for children from less advantaged backgrounds (Vandell, Henderson and Wilson 1988, Sweinhart et al, 1993).

Given the importance of these outcomes, a critical and timely question is: What is the current state of the child care market?

The available evidence indicates that in recent years, the supply of formal child care (which includes long day, family, after school and occasional care) has generally kept pace with demand. At the same time, child care has generally remained affordable.

## Data

The data for this paper is drawn from a variety of sources, including the Australian Bureau of Statistics (ABS), the Department of Family and Community Services and Indigenous Affairs (FaCSIA) and the Household Income and Labour Dynamics (HILDA) survey.



The ABS conducts a regular survey about the use of, and demand for, child care for children aged 0-12 years (ABS 2006). The most recent survey was conducted throughout Australia in June 2005, and included a sample of 32,249 households, of which 94 per cent responded.

In 2004, the Department of Family and Community Services conducted its regular Census of Child Care Services (FaCS 2005). The census provides details of child care users, staff and carers and operational details of child care services. Eighty-eight per cent of the estimated 8,989 child care service providers in the country participated in the census, including 85 per cent of private long day care services, 97 per cent of community long day care providers and 98 per cent of family day care schemes.

The HILDA survey is a longitudinal survey which gathers data on three main areas: economic and subjective wellbeing, labour market dynamics and family dynamics (Melbourne Institute 2005). In each of the four annual waves of the survey (the first of which began in 2002) the HILDA survey asked households with children 14 years of age and under that had used or thought about using child care in the last 12 months to assess how severe a difficulty they faced with various child care issues. Approximately 1,000 parents responded to the questions in each wave, ranking their responses on a scale ranging from 0 (not a problem at all) to 10 (very much a problem).<sup>2</sup> In the present analysis, in deciding whether a household experienced a problem or not, a cut-off score of 7 or above is used.<sup>3</sup>

## Context

Almost half of all Australian women with children 0-4 years of age are in paid employment (ABS 2006a) and 48 per cent of children under the age of 11 now attend some form of child care (ABS 2006).

The proportion of children using formal child care has increased over time, from 14 per cent using formal care in March 1996 to 23 per cent in June 2005, as indicated in Chart 1 below. During this period, the proportion of children using long day care nearly doubled, and now accounts for just under half of all formal care. Usage of informal care fell in the same period, from 36 per cent of children in 1996 to 33 per cent nearly ten years later (ABS 2006).

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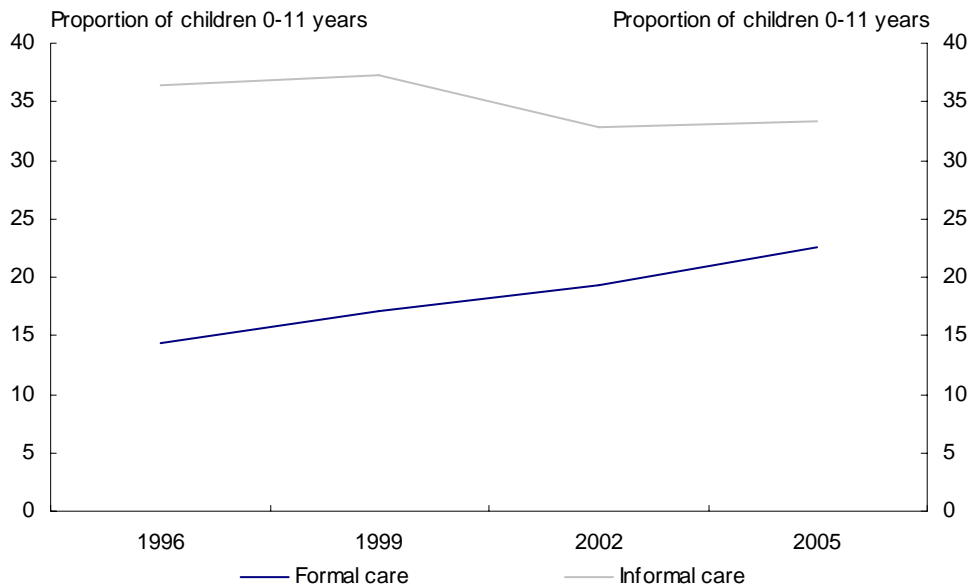
2 The small response rate to the child care questions relative to the size of the household sample (approx 8,000) calls for some caution in interpreting the relevant findings. However, the response rates are not systematically skewed by location, family type, age of children or any other criteria.

3 Cassells (2005) uses the same cut-off.

## Evidence on the child care market

The average amount of time individual children spend in care has also increased. Across all formal care types (and weighted according to use across types) the average child used 25 hours of care in 2004, compared with 20 hours in 1999 (FaCS 2004).

**Chart 1: Estimated number of children attending child care in Australia**  
Usage of childcare



Note: Children may use both types of care.  
Source: ABS (2006).

The increased use of formal child care has been mirrored by the Government expanding provisions to ensure child care remains affordable and accessible. In 2000, the Government introduced the Child Care Benefit (CCB). The CCB replaced both Childcare Assistance and the Childcare Cash Rebate and allows for varying levels of benefit, largely dependent on family income levels, for up to 50 hours of approved care per week. To improve affordability further, in 2005 the Government introduced the Child Care Tax Rebate (CCTR), a non-refundable tax offset, which covers 30 per cent of out-of-pocket child care expenses (up to a maximum of \$4,000 per child) for eligible families.<sup>4</sup>

In the 2006-07 Budget the Government expressly targeted the accessibility of child care by removing the cap on the number of outside school hours, care and family day care places.

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<sup>4</sup> Families are eligible if they receive CCB and meet the CCB work/study/training test. Families can claim the rebate in the tax year after child care expenses have been paid.

## Access

Measuring unmet demand for child care is not a straightforward task. No consolidated waiting list for child care centres exists; and even if it did, it is unlikely that it would provide reliable evidence about shortages. Parents often list their child on the waiting lists at a number of centres simultaneously and also do not always remove their child from those lists once suitable care is found.

In the absence of a single reliable method of gauging child care accessibility, a range of measures have to be used.

## Utilisation rates

Utilisation rates refer to the total child care hours paid for as a percentage of the total hours available. They gauge access by pitting capacity against use. According to FaCSIA data (2004), between 2002 and 2004, average utilisation rates in long day care fell from 88 to 85 per cent. Over the same period, utilisation rates in family day care centres fell 9 percentage points to 68 per cent. Given that more families are now using child care, these results suggest that there has not been a recent under-provision of formal child care places.

The spare capacity in the formal child care market (15 per cent long day care; 32 per cent family day care) also suggests that there is adequate scope for dealing with future spikes in demand.

At the aggregate level utilisation rates do not provide information on any potential spatial mismatch between places demanded and those provided; however, this issue is explored in more detail below.

## Survey evidence

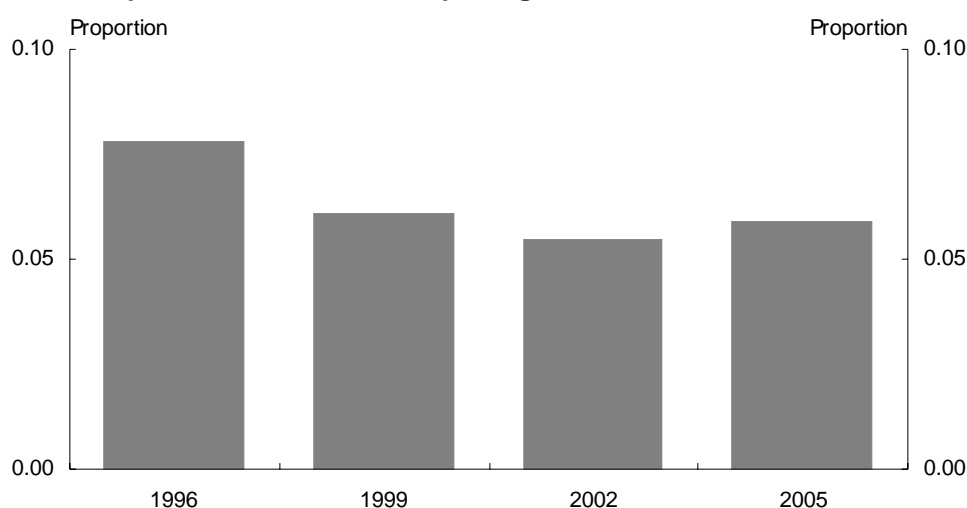
The ABS Child Care Survey measures the adequacy of child care provision by asking parents of children within and outside the existing child care system whether or not they require additional care in a random four-week period. As shown in Figure 2, in 2005, only 6 per cent of children required additional formal care, less than had been recorded in 1996 (8 per cent) and the same as in 1999 and 2002. Of this 6 per cent, only one-third of parents said that they had not used additional care because child care providers were booked out or otherwise unavailable. Moreover, for the majority of children for whom additional formal care had been required in the survey period, only an additional one or two days of care were required over the four weeks.

These findings are broadly supported by data collected as part of the HILDA survey. The proportion of parents reporting difficulties with accessing child care for the hours needed has been stable in recent years, accounting for approximately 20 per cent of

parents who use (or are considering using) child care.<sup>5</sup> Over the four year period, the proportion of parents reporting no difficulties is consistently the highest response category at between 30 and 40 per cent of all respondents, while the proportion reporting great difficulties remained less than 10 per cent.

The differences in the level of response to concerns about accessibility across the HILDA and ABS surveys (6 per cent versus approximately 20 per cent reporting difficulties) may be explained by a number of factors, including differences in the precise questions asked of respondents, as well as differences in interpreting responses.<sup>6</sup> However, all things else being equal, the ABS survey is likely to provide a more reliable indicator of parental difficulties due to its larger sample size.

**Chart 2: Proportion of households reporting need for additional formal child care**



Note: Households refers to those with children 12 and under who used or thought about using formal child care.  
Source: ABS (2006).

### Additional considerations

Notwithstanding the above evidence, there is a perception that there is a shortage of formal child care places. One factor which may explain this is spatial variation in the

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5 The responses also include people who used informal care (that is, family or paid nannies). Restricting the analysis to those individuals who did access formal child care runs the risk of biasing the analysis in favour of satisfied users. In different waves of the survey, of all households who indicated that they had multiple problems with child care, approximately 5 per cent were not using any form of care at all. This strongly suggests that households may not be using a type of care (or any care) because of problems they face using that type of care.

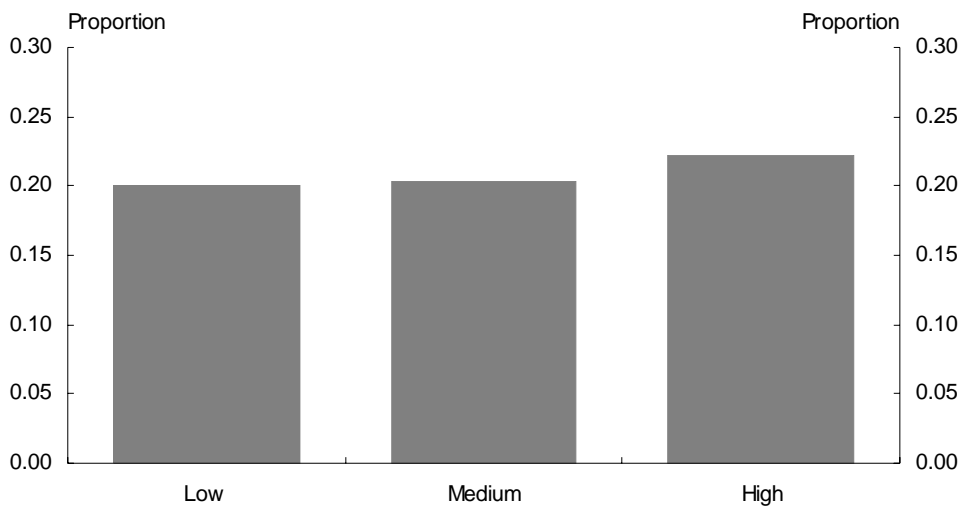
6 For example, using a cut-off score of 10 (very much a difficulty) for the HILDA data would produce similar results to those in the ABS survey.

supply of formal child care places. For example, insufficient supply of formal child care places has been reported in inner urban areas, where the alternative commercial use of available sites may bring greater returns on investment, while oversupply is reported in lower income outer urban areas (Horin 2006, AFR 2006).

However, the best available evidence from the HILDA survey suggests that this spatial variation may not be pronounced. The survey data does not include a variable differentiating between inner and outer urban areas (only inner and outer regional areas). Instead Chart 3 reports on difficulties urban parents encountered accessing child care for the hours needed, broken down by income categories. On balance of probability, high-income parents are likely to live in higher income inner urban areas, while the reverse is likely to be true for low-income parents.

As Chart 3 shows, although the proportion of high-income urban parents reporting difficulties with gaining access to child care is slightly higher than that of low-income parents in urban areas, the difference across income groups is marginal (and not significant).

**Chart 3: Urban households experiencing difficulties accessing child care**  
(proportion of total urban households)



Notes: Household income categories per annum: low = less than \$40k; medium = \$40-80k; high = more than \$80k; Households with children 14 and under who used or thought about using child care to undertake paid work; Urban indicates that household lives in a major city.  
Source: HILDA (wave 4).

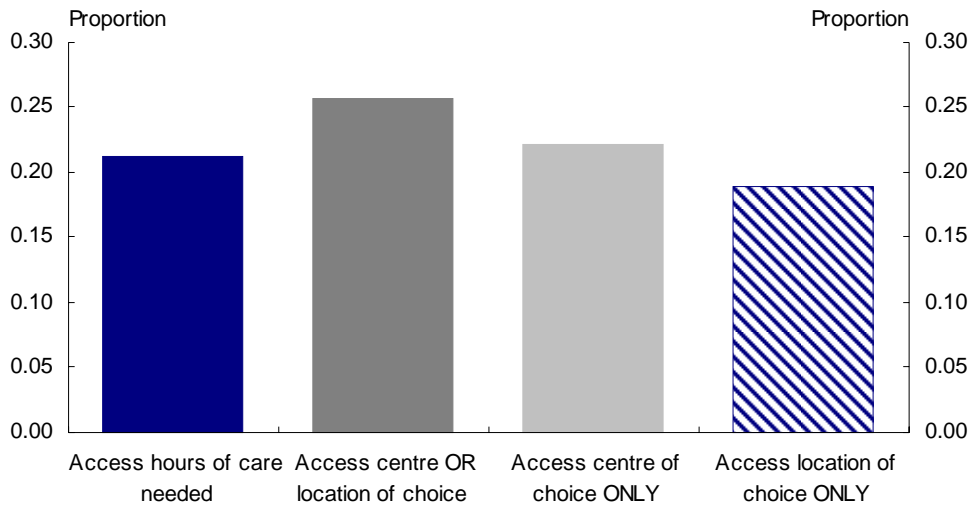
The reported shortage of child care places in urban areas may also be a function of consumer choice. That is, some parents may be able to access child care places, but not their preferred type of child care. In some instances, community care is preferred over corporate-provided care, while for others, care at the workplace is preferred over that near the family home.

Evidence on the child care market

Chart 4 lends weight to this possibility. It shows that the proportion of parents in urban areas who report difficulties gaining access to their preferred child care service (that is ‘the child care centre of choice’ or child care in their ‘preferred location’) is in fact greater than the proportion of parents who report difficulties with accessing sufficient hours of care.<sup>7</sup> The fact that the proportion of parents reporting difficulties with their preferred centre exceeds the proportion reporting difficulties with getting access to the number of hours of care they require, suggests that unmet consumer preferences represent more of a problem for parents than access itself.

Moreover, the data suggests that problems with choice or location do not typically explain any broader problems with access that parents may encounter. More than 40 per cent of parents who indicated that they had difficulties with access in general did not indicate that they had difficulties with accessing either their centre of choice or their location of choice. In other words, for many parents, difficulties with securing their preferred type of child care do not preclude them from accessing the amount of care that they require.

**Chart 4: Households experiencing difficulties accessing preferred child care**  
(proportion of total urban households)



Notes: Households refers to those with children 14 and under who used or thought about using child care to undertake paid work. Urban indicates that household lives in a major city.  
Source: HILDA (wave 4).

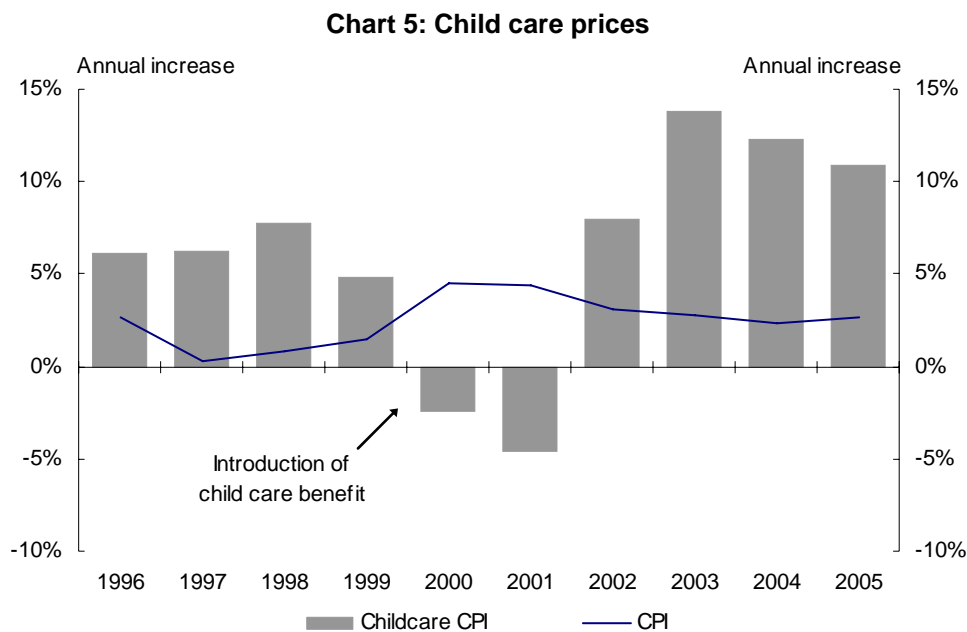
<sup>7</sup> To address the concern that the results of the joint response category (that is, choice or location) are overstated because the same respondent has two opportunities to satisfy the condition of experiencing difficulty, Chart 4 also graphs the proportion of urban parents reporting difficulties gaining access to their centre of choice and their location of choice separately. The results show that choice, even defined narrowly, is at least as much a concern amongst urban parents as access.

## Affordability

Like access, child care affordability can best be gauged by assessing a number of measures, including the amount of disposable income absorbed by child care costs and survey evidence.

### Share of net income

As indicated in Chart 5, below, over the last ten years the growth in the price of child care has outstripped headline inflation. The price of child care (which refers to the cost parents incur after CCB has been taken out) has grown at just under 7 per cent per year, while inflation averaged below 3 per cent per annum over the same period.



Source: ABS (2006b).

However, just as housing affordability is not only affected by house prices, but also changes in employee remuneration and borrowing costs, child care affordability is similarly not just a function of child care prices.

A common indicator of child care affordability is child care costs (fees charged less government assistance) as a percentage of net family income. In April 2006, the Australian Institute of Health and Welfare (AIHW) released a report, based on ABS

## Evidence on the child care market

data, in which child care is measured as a share of net family income, which includes any Centrelink payments and allowances which are considered taxable.<sup>8</sup>

The AIHW analysis does not take into account the CCTR, which covers 30 per cent of out-of-pocket expenses for approved child care where parents meet the CCB work/training/study test. It also does not factor in the recent expansion of the Job Education and Training Child Care Special Fee Assistance Programme (JET), which is designed to assist parents receiving income support with the cost of child care by paying most or all of the 'gap fee'.

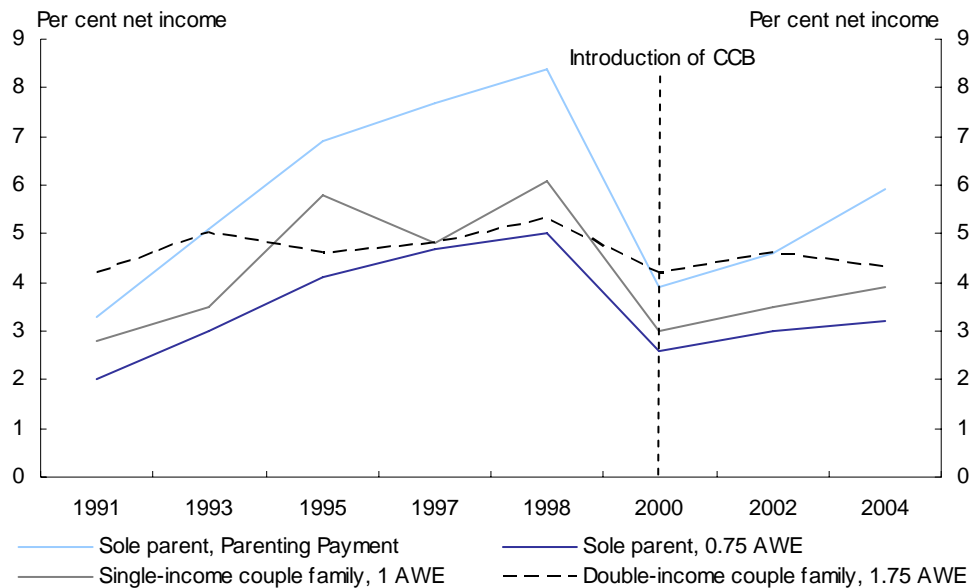
Nevertheless, the key findings of the AIHW report are that between 2000 and 2004, child care affordability remained largely unchanged for middle and upper income families and decreased slightly for low-income families.

Chart 6 below represents these trends graphically. A persistent problem with presenting a snapshot of affordability in a market characterised by a range of services (for example, community versus private long day care) and a diverse consumer base, is choosing a permutation of service and consumers which is representative of the broader population of users. In recognition of this, Chart 6 focuses on the costs of 20 hours of private long day care as a proportion of net income for different categories of income earners.

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8 Thus the calculation of net income includes: gross income; Family Tax Benefits Parts A and B; Parenting Payment; Pharmaceutical Allowance; Pensioner Education Supplement; Education Entry Payment; Low-income Rebate; Pensioner Rebate; and CCB.



**Chart 6: Cost of 20 hours of private long day care as proportion of net income**

Sources: ABS (2006), AIHW (2006).

Note: Net income includes any Centrelink payments and allowances which are considered taxable.

Long day care accounts for just under 50 per cent of formal child care usage. Most concerns about child care affordability relate to privately provided care, and hence representing the affordability of this type of care implicitly accounts for other less expensive types of care as well. In 2004, the median amount of care per week paid for by parents was 23 hours. The median, rather than the mean, best captures the hours of care paid for by the typical parent, as it is not sensitive to outliers, such as parents who work full-time who have no family or friends to help them with care responsibilities. Finally, the typical number of children any family has in private long day care at any point in time is one, which is true of 82 per cent of Australian families using private child care (FaCS 2004).

In addition to showing that the share of net income spent on child care has generally remained unchanged, the most notable feature of Chart 6 is that the proportion of income spent on child care is also at an affordable level. In 2000, peak welfare groups the Brotherhood of St Laurence and the Australian Council of Social Services each independently benchmarked child care affordability. This benchmarking suggested that low-income families should be paying no more than 5 to 6 per cent of their disposable income on the cost of care (Powlay 2000). In Chart 6, the share of disposable income absorbed by child care costs is within this upper bound for all family types, for all periods after 2000.

For families using 20 hours of private long day care earning 1.75 average weekly earnings, the share of net income spent on child care costs between 2000 and 2004

## Evidence on the child care market

remained around the 4 per cent level. For single-income families earning average wages (where the non-working parent is studying), the proportion of net income spent on child care has increased slightly from 3 to 4 per cent.

For low-income households, represented by the broken lines in Chart 6, the relative decline in affordability is gauged by the share of income spent on child care by sole parents. The proportion of net income spent on child care for sole parents earning below-average incomes dropped notably with the introduction of CCB in 2000, and has since remained around the 3 per cent level. For sole parents receiving Parenting Payment, the proportion of net income spent on care dropped even more precipitously upon the introduction of CCB and has subsequently increased 2 percentage points to 6 per cent.

However, for this list group, the exclusion of JET Child Care provisions from the analysis would have biased the AIHW findings, making child care today seem less affordable than it might really be. The recently expanded JET programme was designed to assist recipients of certain Centrelink payments, particularly those on Parenting Payment.<sup>9</sup>

## Survey evidence

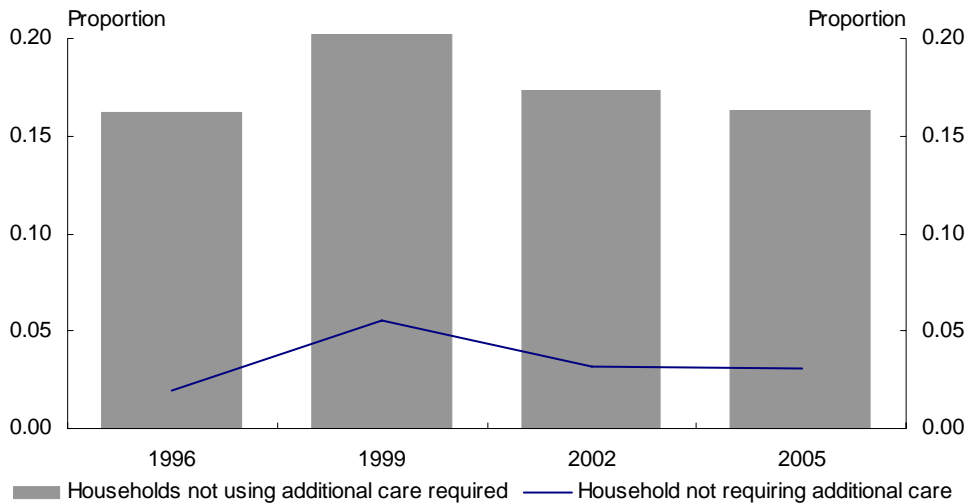
Survey evidence about affordability supports the above analysis, suggesting that at the aggregate level parents are not overly concerned with the cost of care. As indicated in Chart 7, in the recent ABS survey, only 3 per cent of parents who indicated that they did not require additional child care did so because of problems with the cost of care. More notably, cost considerations only accounted for 16 per cent of children for whom additional care was required.

These findings are broadly reinforced by data collected as part of the HILDA survey. The proportion of all parents reporting difficulties with the cost of child care has been stable in recent years, and remains around 25 per cent of the population of parents who use (or consider using) child care. The proportion of parents reporting no difficulties in the HILDA data is also consistently higher than that reporting difficulties, while the proportion reporting great difficulties is 10 per cent or less of all respondents.

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<sup>9</sup> As a tax offset, the omission of the CCTR from the above analysis would not significantly alter our understanding of the way low-income families really experienced child care costs in recent years.

**Chart 7: Households reporting difficulties with the cost of formal child care**  
(proportion of households)

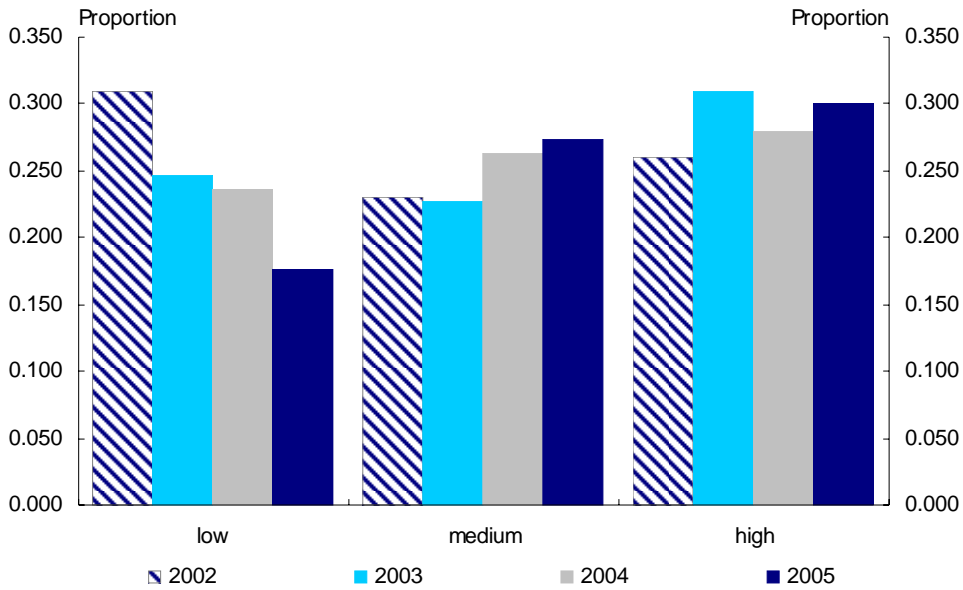


Note: Households refers to those with children 12 and under who used or thought about using formal child care.

Source: ABS (various).

When the same data is disaggregated by broad income categories the conclusions that can be drawn are essentially the same: as shown in Chart 8, for all income groups, the proportion of parents experiencing difficulties with the affordability of care hovers around 20 per cent and never exceeds 31 per cent. It is also interesting to note that although the AIHW analysis shows the proportion of net income spent on child care has recently increased for parents earning below-average incomes, the HILDA evidence suggests that low income families have increasingly experienced fewer difficulties with the cost of care over time. In 2002, the proportion of households earning less than \$40,000 per annum reporting difficulties was just over 15 per cent, compared with 30 per cent in 2002. This drop may reflect a lagged response to the introduction of CCB, which is progressively targeted. However, further analysis of the relationship between working hours, type of care used and changes in wages not captured by broad income categories is needed before drawing more concrete conclusions from the data.

**Chart 8: Proportion of households reporting difficulties with affordability**



Note: Household income categories per annum: low = less than \$40k; medium = 40-80k; high = more than \$80k; Households refers to those with children 14 and under who used or thought about using child care to undertake paid work.  
 Source: HILDA (all waves).

## Conclusion

Based on the best available recent evidence, child care in Australia remains accessible and affordable at the aggregate level.

Survey evidence does not support the thesis that while the overall provision of child care places is adequate, there is a mismatch between consumer demand and supply within specific regions. Instead, the evidence suggests that broad concerns about child care access might mask consumer choice, with parents expressing more disquiet about not being able to access their preferred type of child care rather than child care per se. As the child care industry matures, parents' preferences for type and location of care should increasingly be matched by market provision.

Income-based and survey evidence also suggests that in recent times child care costs have remained constant as share of net income and affordable for most users.

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## Australian net private wealth

Treasury has published annual estimates of Australian net private sector wealth since the *Economic Roundup*, Summer 1990. This article updates previous estimates and provides preliminary estimates for net private sector wealth as at June 2006.<sup>1</sup>

The market value of Australian net private sector wealth grew by 19.0 per cent in the year to 30 June 2006. In real terms (that is, after allowing for inflation), wealth grew by 15.4 per cent. Real wealth per Australian grew by 13.9 per cent.

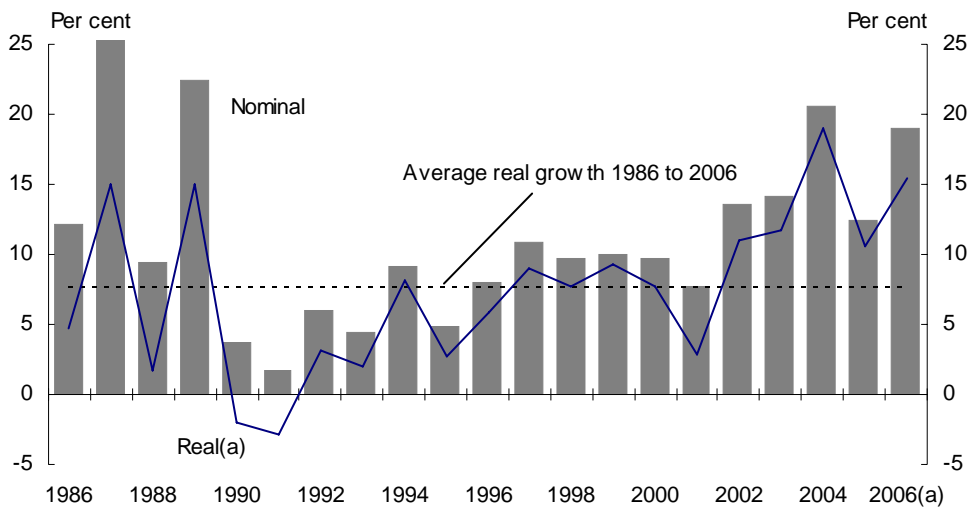
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<sup>1</sup> This release includes data released on or prior to 15 November 2006.

## Movements in Australian private sector wealth in 2005-06<sup>2</sup>

Through the year to 30 June 2006, Australian net private sector wealth at market value grew by 19.0 per cent in nominal terms, 15.4 per cent in real terms and 13.9 per cent in real per capita terms. The growth rate in nominal net private sector wealth during the year to June 2006 was below the record growth in the year to June 2004, but was still considerably higher than the average of the past two decades (Chart 1). Tables 1 through 5 provide further details.

**Chart 1: Growth in Australian net private sector wealth at market value**



(a) Real wealth is determined using the consumption deflator. This includes the transitional impacts of The New Tax System.  
Source: Australian Treasury.

In current prices, Australian net private sector wealth was approximately \$7,464 billion at market value as at 30 June 2006. This represents around \$361,000 per Australian and 7.7 times the value of the annual nominal gross domestic product of the economy. Real net wealth per Australian has increased for 15 consecutive years and has risen by over \$150,000 since June 2001.

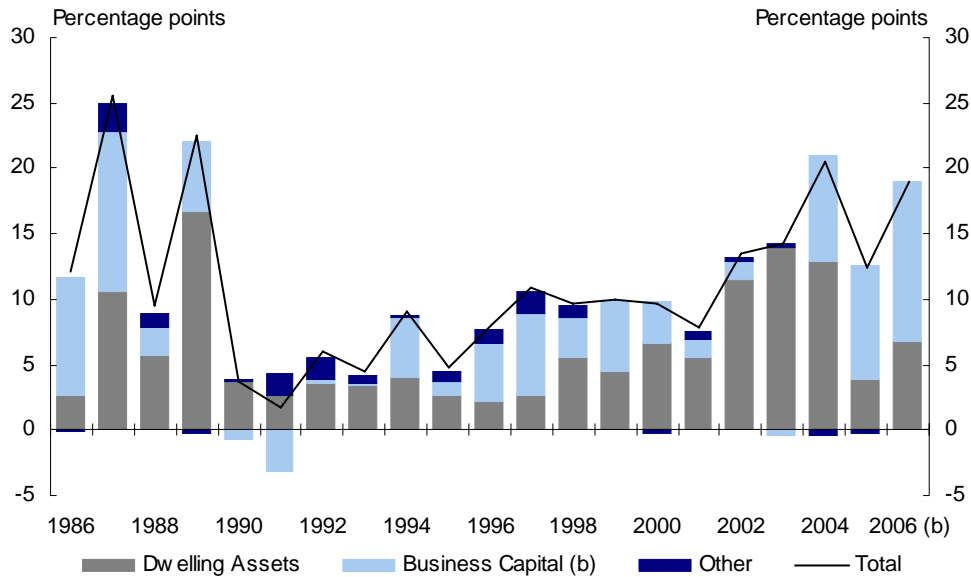
In the year to June 2006 the main influence on wealth was business assets (including Australian investment abroad and excluding foreign liabilities), which contributed 12.2 percentage points, following large increases in 2004 and 2005. The rise in business assets coincided with a large increase in the value of the stock market. The ASX 200 rose by 18.6 per cent in the year to June 2006, the third consecutive year of greater than 16 per cent growth. Movements in non-rural business assets, which make up over 80

<sup>2</sup> Details on the methodology of the wealth estimates can be found in the Summer 1990 and Summer 2006 editions of *Economic Roundup*.



per cent of total business assets, reflect changes in stock market prices and are, therefore, quite volatile.<sup>3</sup>

**Chart 2: Contributions to growth in nominal Australian net private sector wealth at market value<sup>(a)</sup>**



(a) Over the year to June 30.

(b) Includes Australian investment abroad and excludes foreign liabilities.

Source: Australian Treasury.

The other main influence on wealth over the period was growth in the market value of dwelling assets, contributing 6.7 percentage points to the growth in private wealth (Chart 2). This contribution is much smaller than in the early years of the current decade, but has accelerated slightly since 2004-05, reflecting greater increases in house prices since the December quarter of 2005. The ABS House Price Index for established houses in capital cities increased by 7.0 per cent in the year to June 2006, still well below the double-digit rises experienced in 2003 and 2004. Two-thirds of this increase was due to the increase in house prices in Perth, which rose by 38.1 per cent in the year to June 2006.

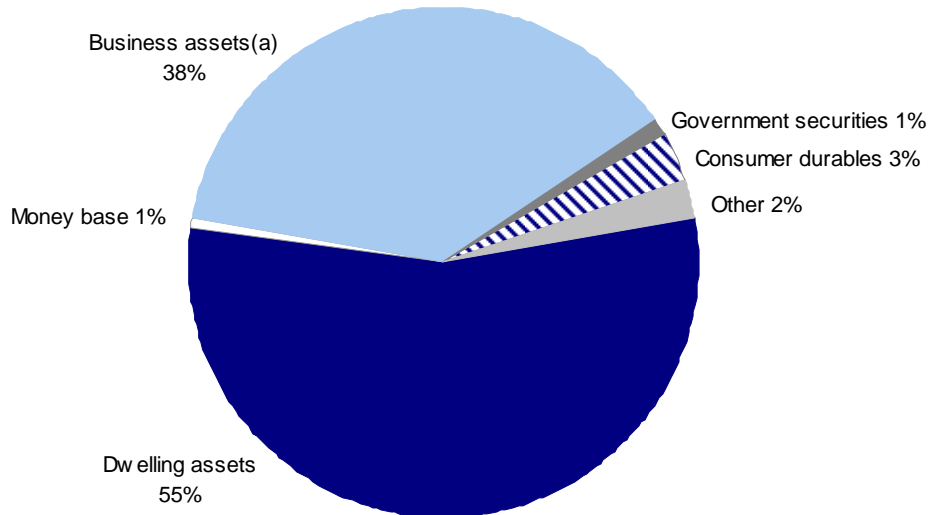
3 It is assumed that the market valuations of listed and non-listed companies move together.

## Australian net private wealth

### Composition of Australian net private wealth by asset type

The composition of wealth at market value by asset type changed slightly during the year to 30 June 2006 (Chart 3). Dwelling assets comprised a smaller proportion of Australian net private sector wealth (down 4 percentage points compared with 2004) while the share of business assets rose (up 5 percentage points).

**Chart 3: Composition of Australian net private sector wealth by asset type**



(a) Includes Australian investment abroad and excludes foreign liabilities.  
Source: Australian Treasury.

**Table 1: Nominal private sector wealth at market value**

As at June	\$billion								\$000s
	Dwelling assets	Business assets	Consumer durables	Government securities	Money base	Australian investment abroad	Foreign liabilities	Total wealth	Wealth per person
1960	216	32.9	6.2	7.4	18	0.4	-3.6	68.6	6.5
1961	23.3	35.1	6.4	7.5	17	0.5	-3.2	73.4	6.9
1962	25.8	35.5	6.4	8.3	18	0.5	-3.4	77.2	7.1
1963	27.1	38.4	6.8	9.3	18	0.7	-4.2	82.3	7.4
1964	31.2	44.6	7.1	9.8	2.1	0.9	-5.5	92.9	8.2
1965	34.0	43.3	7.8	10.0	2.1	0.8	-4.9	96.1	8.3
1966	36.1	47.9	8.1	10.8	19	10	-5.2	103.9	8.8
1967	37.7	50.4	8.6	11.7	2.1	10	-6.1	108.9	9.0
1968	41.4	73.4	9.2	12.3	2.2	16	-9.5	134.6	11.0
1969	46.7	85.6	10.1	13.0	2.4	15	-10.7	153.0	12.2
1970	53.9	86.3	11.2	12.5	2.7	1.7	-10.3	162.9	12.7
1971	61.5	86.0	12.5	13.7	2.8	2.1	-11.4	172.7	13.2
1972	70.8	96.3	13.9	16.2	3.0	2.8	-14.8	194.3	14.6
1973	86.3	97.6	15.7	16.5	4.0	2.5	-15.1	214.4	15.9
1974	113.4	93.1	19.3	14.5	4.5	2.1	-13.2	241.7	17.6
1975	128.6	84.2	24.5	17.4	4.1	2.7	-13.5	257.3	18.5
1976	147.8	93.4	29.8	20.1	5.1	3.1	-19.2	291.0	20.7
1977	164.6	94.5	34.5	21.7	6.3	4.1	-20.4	318.0	22.4
1978	176.8	108.3	38.0	25.9	5.9	4.9	-22.5	352.0	24.5
1979	199.7	125.7	41.0	29.1	6.4	6.2	-25.9	399.1	27.5
1980	232.9	168.4	46.3	30.5	6.9	7.1	-35.0	476.6	32.4
1981	277.8	204.4	51.9	33.4	7.6	7.4	-42.9	562.3	37.7
1982	302.3	193.3	58.2	34.5	8.7	9.5	-49.6	583.7	38.4
1983	322.3	224.3	65.5	44.3	9.1	11.8	-62.3	646.5	42.0
1984	359.4	253.1	71.1	60.2	10.2	13.9	-70.4	733.9	47.1
1985	406.4	302.8	76.6	59.8	11.8	19.8	-90.9	828.1	52.5
1986	428.7	382.1	87.8	46.2	13.0	33.5	-110.2	928.9	58.0
1987	526.4	514.1	98.0	55.1	14.1	49.4	-144.2	1,166.8	71.7
1988	592.6	541.6	104.2	59.5	15.8	65.2	-161.5	1,277.4	77.3
1989	805.5	633.0	112.1	48.3	16.7	78.1	-196.7	1,564.5	93.0
1990	864.6	636.3	117.9	43.3	17.7	85.5	-219.5	1,621.6	95.0
1991	907.1	605.7	123.6	64.9	18.7	84.3	-238.0	1,649.9	95.5
1992	966.5	613.5	126.1	91.2	19.1	100.2	-257.6	1,748.8	100.0
1993	1,027.1	611.8	132.5	95.4	20.5	124.0	-279.1	1,827.2	103.4
1994	1,099.4	708.3	137.9	91.7	22.0	148.8	-315.8	1,993.5	111.7
1995	1,151.9	736.8	144.7	99.0	23.5	169.0	-343.0	2,089.2	115.6
1996	1,197.6	847.1	150.4	116.6	24.5	178.7	-372.0	2,256.8	123.3
1997	1,255.7	1,008.1	152.9	142.0	34.1	218.2	-428.4	2,501.0	135.1
1998	1,393.2	1,104.2	158.3	162.4	31.4	285.4	-514.3	2,742.2	146.6
1999	1,517.5	1,282.1	165.6	156.1	31.8	312.8	-575.8	3,015.0	159.3
2000	1,716.5	1,392.8	170.4	147.1	28.1	420.3	-695.8	3,308.9	172.8
2001	1,899.6	1,488.9	188.2	147.0	29.6	465.0	-789.6	3,566.5	183.7
2002	2,308.2	1,571.0	195.8	144.9	34.9	462.5	-816.4	4,050.3	206.2
2003	2,874.6	1,609.0	204.8	143.9	35.1	474.5	-882.1	4,624.7	232.7
2004	3,471.8	2,020.7	212.6	115.4	37.2	570.6	-1,017.4	5,575.8	277.5
2005	3,685.2	2,557.0	223.4	88.5	38.7	560.0	-1,053.1	6,270.8	308.3
2006(a)	4,105.2	3,366.1	234.7	74.9	41.3	711.4	-1,247.1	7,464.4	362.3

(a) Preliminary figures.

Australian net private wealth

**Table 2: Contributions to annual percentage change in nominal private sector wealth at market value**

As at June	Dwelling assets	Business assets	Consumer durables	Government securities	Money base	Australian investment abroad	Foreign liabilities	Total wealth
1961	2.5	3.2	0.3	0.1	-0.1	0.1	0.6	7.0
1962	3.4	0.5	0.0	1.1	0.1	0.0	-0.3	5.2
1963	1.7	3.8	0.5	1.3	0.0	0.3	-1.0	6.6
1964	5.0	7.5	0.4	0.6	0.4	0.2	-1.6	12.9
1965	3.0	-1.4	0.8	0.2	0.0	-0.1	0.6	3.4
1966	2.2	4.8	0.3	0.8	-0.2	0.2	-0.3	8.1
1967	1.5	2.4	0.5	0.9	0.2	0.0	-0.9	4.8
1968	3.4	21.1	0.6	0.6	0.1	0.6	-3.1	23.6
1969	3.9	9.1	0.7	0.5	0.1	-0.1	-0.9	13.7
1970	4.7	0.5	0.7	-0.3	0.2	0.1	0.3	6.5
1971	4.7	-0.2	0.8	0.7	0.1	0.2	-0.7	6.0
1972	5.4	6.0	0.8	1.4	0.1	0.4	-2.0	12.5
1973	8.0	0.7	0.9	0.2	0.5	-0.2	-0.2	10.3
1974	12.6	-2.1	1.7	-0.9	0.2	-0.2	0.9	12.7
1975	6.3	-3.7	2.2	1.2	-0.2	0.2	-0.1	6.5
1976	7.5	3.6	2.1	1.0	0.4	0.2	-2.2	13.1
1977	5.8	0.4	1.6	0.5	0.4	0.3	-0.4	9.3
1978	3.8	4.3	1.1	1.3	-0.1	0.3	-0.7	10.7
1979	6.5	4.9	0.9	0.9	0.1	0.4	-1.0	13.4
1980	8.3	10.7	1.3	0.4	0.1	0.2	-2.3	19.4
1981	9.4	7.6	1.2	0.6	0.1	0.1	-1.7	18.0
1982	4.4	-2.0	1.1	0.2	0.2	0.4	-1.2	3.8
1983	3.4	5.3	1.3	1.7	0.1	0.4	-2.2	10.8
1984	5.7	4.5	0.9	2.5	0.2	0.3	-1.3	13.5
1985	6.4	6.8	0.7	-0.1	0.2	0.8	-2.8	12.8
1986	2.7	9.6	1.4	-1.6	0.1	1.7	-2.3	12.2
1987	10.5	14.2	1.1	1.0	0.1	1.7	-3.7	25.6
1988	5.7	2.4	0.5	0.4	0.1	1.4	-1.5	9.5
1989	16.7	7.2	0.6	-0.9	0.1	1.0	-2.8	22.5
1990	3.8	0.2	0.4	-0.3	0.1	0.5	-1.5	3.6
1991	2.6	-1.9	0.4	1.3	0.1	-0.1	-1.1	1.7
1992	3.6	0.5	0.2	1.6	0.0	1.0	-1.2	6.0
1993	3.5	-0.1	0.4	0.2	0.1	1.4	-1.2	4.5
1994	4.0	5.3	0.3	-0.2	0.1	1.4	-2.0	9.1
1995	2.6	1.4	0.3	0.4	0.1	1.0	-1.4	4.8
1996	2.2	5.3	0.3	0.8	0.0	0.5	-1.4	8.0
1997	2.6	7.1	0.1	1.1	0.4	1.8	-2.5	10.8
1998	5.5	3.8	0.2	0.8	-0.1	2.7	-3.4	9.6
1999	4.5	6.5	0.3	-0.2	0.0	1.0	-2.2	9.9
2000	6.6	3.7	0.2	-0.3	-0.1	3.6	-4.0	9.7
2001	5.5	2.9	0.5	0.0	0.0	1.4	-2.8	7.8
2002	11.5	2.3	0.2	-0.1	0.1	-0.1	-0.8	13.6
2003	14.0	0.9	0.2	0.0	0.0	0.3	-1.6	14.2
2004	12.9	8.9	0.2	-0.6	0.0	2.1	-2.9	20.6
2005	3.8	9.6	0.2	-0.5	0.0	-0.2	-0.6	12.5
2006(a)	6.7	12.9	0.2	-0.2	0.0	2.4	-3.1	19.0

(a) Preliminary figures.

**Table 3: Real private sector wealth at market value<sup>(a)</sup> (2004-05 \$billion)**

As at June	Dwelling assets	Business assets	Consumer durables	Government securities	Money base	Australian investment abroad	Foreign liabilities	Total wealth
1960	229.7	349.9	65.9	78.7	19.1	4.3	-38.3	729.5
1961	240.4	362.1	66.0	77.4	17.5	5.2	-33.0	757.2
1962	266.2	366.2	66.0	85.6	18.6	5.2	-35.1	796.4
1963	275.5	390.3	69.1	94.5	18.3	7.1	-42.7	836.6
1964	310.4	443.7	70.6	97.5	20.9	9.0	-54.7	924.1
1965	326.6	415.9	74.9	96.0	20.2	7.7	-47.1	923.0
1966	335.2	444.7	75.2	100.3	17.6	9.3	-48.3	964.7
1967	338.8	452.9	77.3	105.1	18.9	9.0	-54.8	978.5
1968	360.4	638.9	80.1	107.1	19.2	13.9	-82.7	1,171.6
1969	391.8	718.2	84.7	109.1	20.1	12.6	-89.8	1,283.8
1970	431.5	690.8	89.7	100.1	21.6	13.6	-82.4	1,304.0
1971	460.6	644.0	93.6	102.6	21.0	15.7	-85.4	1,293.3
1972	500.6	680.8	98.3	114.5	21.2	19.8	-104.6	1,373.7
1973	566.9	641.2	103.1	108.4	26.3	16.4	-99.2	1,408.5
1974	652.7	535.8	111.1	83.5	25.9	12.1	-76.0	1,391.1
1975	628.4	411.5	119.7	85.0	20.0	13.2	-66.0	1,257.4
1976	627.6	396.6	126.5	85.4	21.7	13.2	-81.5	1,235.7
1977	631.5	362.6	132.4	83.3	24.2	15.7	-78.3	1,220.1
1978	626.6	383.8	134.7	91.8	20.9	17.4	-79.7	1,247.5
1979	646.8	407.2	132.8	94.3	20.7	20.1	-83.9	1,292.7
1980	682.9	493.8	135.8	89.4	20.2	20.8	-102.6	1,397.5
1981	745.5	548.5	139.3	89.6	20.4	19.9	-115.1	1,509.0
1982	738.7	472.3	142.2	84.3	21.3	23.2	-121.2	1,426.3
1983	713.7	496.7	145.0	98.1	20.2	26.1	-138.0	1,431.6
1984	748.2	526.9	148.0	125.3	21.2	28.9	-146.6	1,527.9
1985	792.6	590.5	149.4	116.6	23.0	38.6	-177.3	1,615.0
1986	780.2	695.4	159.8	84.1	23.7	61.0	-200.6	1,690.5
1987	877.4	856.9	163.3	91.8	23.5	82.3	-240.3	1,944.7
1988	917.5	838.5	161.3	92.1	24.5	100.9	-250.0	1,977.8
1989	1,170.9	920.1	163.0	70.2	24.3	113.5	-285.9	2,274.2
1990	1,188.7	874.9	162.1	59.5	24.3	117.6	-301.8	2,229.5
1991	1,191.6	795.7	162.4	85.3	24.6	110.7	-312.6	2,167.4
1992	1,235.7	784.4	161.2	116.6	24.4	128.1	-329.4	2,235.9
1993	1,281.8	763.5	165.4	119.1	25.6	154.7	-348.3	2,280.3
1994	1,360.3	876.4	170.6	113.5	27.2	184.1	-390.7	2,466.5
1995	1,397.2	893.7	175.5	120.1	28.5	205.0	-416.1	2,534.2
1996	1,423.4	1,006.8	178.8	138.6	29.1	212.4	-442.1	2,682.2
1997	1,468.6	1,179.1	178.8	166.1	39.9	255.2	-501.0	2,925.1
1998	1,600.9	1,268.8	181.9	186.6	36.1	327.9	-591.0	3,150.9
1999	1,733.8	1,464.8	189.2	178.3	36.3	357.4	-657.9	3,444.7
2000	1,924.7	1,561.7	191.1	164.9	31.5	471.3	-780.2	3,710.2
2001	2,031.9	1,592.6	201.3	157.2	31.7	497.4	-844.6	3,814.9
2002	2,413.8	1,642.9	204.8	151.5	36.5	483.7	-853.8	4,235.6
2003	2,941.6	1,646.5	209.6	147.3	35.9	485.6	-902.7	4,732.5
2004	3,508.5	2,042.0	214.8	116.6	37.6	576.6	-1,028.1	5,634.7
2005	3,660.1	2,539.6	221.9	87.9	38.4	556.2	-1,045.9	6,228.0
2006(b)	3,952.1	3,240.5	225.9	72.1	39.8	684.9	-1,200.6	7,186.0

(a) Real wealth is calculated by dividing nominal wealth by the household consumption deflator.

(b) Preliminary figures.

Australian net private wealth

**Table 4: Real private sector wealth per person at market value<sup>(a)</sup>  
(2004-05 \$ per person)**

As at June	Dwelling assets	Business assets	Consumer durables	Government securities	Money base	Australian investment abroad	Foreign liabilities	Total wealth
1960	21,924	33,393	6,293	7,511	1,827	406	-3,654	69,628
1961	22,435	33,796	6,162	7,221	1,637	481	-3,081	70,674
1962	24,393	33,564	6,051	7,847	1,702	473	-3,215	72,989
1963	24,769	35,098	6,215	8,500	1,645	640	-3,839	75,222
1964	27,367	39,121	6,228	8,596	1,842	789	-4,824	81,488
1965	28,240	35,964	6,479	8,306	1,744	664	-4,070	79,819
1966	28,340	37,604	6,359	8,479	1,492	785	-4,082	81,567
1967	28,134	37,611	6,418	8,731	1,567	746	-4,552	81,268
1968	29,385	52,097	6,530	8,730	1,562	1,136	-6,743	95,536
1969	31,265	57,307	6,762	8,703	1,607	1,004	-7,163	102,430
1970	33,702	53,960	7,003	7,816	1,688	1,063	-6,440	101,856
1971	35,246	49,287	7,164	7,851	1,605	1,204	-6,533	98,974
1972	37,625	51,176	7,387	8,609	1,594	1,488	-7,865	103,255
1973	41,980	47,477	7,637	8,026	1,946	1,216	-7,345	104,293
1974	47,560	39,046	8,094	6,081	1,887	881	-5,536	101,368
1975	45,235	29,617	8,618	6,120	1,442	950	-4,749	90,505
1976	44,724	28,263	9,017	6,082	1,543	938	-5,810	88,056
1977	44,500	25,548	9,327	5,867	1,703	1,108	-5,515	85,971
1978	43,638	26,731	9,379	6,393	1,456	1,209	-5,554	86,882
1979	44,561	28,049	9,149	6,493	1,428	1,383	-5,779	89,055
1980	46,472	33,602	9,239	6,086	1,377	1,417	-6,984	95,099
1981	49,955	36,756	9,333	6,006	1,367	1,331	-7,714	101,115
1982	48,646	31,106	9,366	5,552	1,400	1,529	-7,982	93,930
1983	46,363	32,265	9,422	6,373	1,309	1,697	-8,962	92,998
1984	48,027	33,822	9,501	8,045	1,363	1,857	-9,408	98,072
1985	50,200	37,403	9,462	7,387	1,458	2,446	-11,228	102,291
1986	48,707	43,412	9,975	5,249	1,477	3,806	-12,520	105,537
1987	53,945	52,685	10,043	5,647	1,445	5,063	-14,778	119,574
1988	55,498	50,722	9,759	5,572	1,480	6,106	-15,125	119,631
1989	69,636	54,724	9,691	4,176	1,444	6,752	-17,005	135,253
1990	69,659	51,265	9,499	3,489	1,426	6,889	-17,685	130,649
1991	68,943	46,035	9,394	4,933	1,421	6,407	-18,089	125,398
1992	70,634	44,836	9,216	6,665	1,396	7,323	-18,826	127,806
1993	72,552	43,216	9,360	6,739	1,448	8,759	-19,715	129,069
1994	76,185	49,083	9,556	6,354	1,525	10,311	-21,884	138,143
1995	77,316	49,454	9,712	6,645	1,577	11,343	-23,022	140,228
1996	77,734	54,984	9,762	7,568	1,590	11,599	-24,146	146,485
1997	79,311	63,672	9,657	8,969	2,154	13,782	-27,058	157,965
1998	85,556	67,809	9,721	9,973	1,928	17,526	-31,583	168,398
1999	91,609	77,399	9,997	9,424	1,920	18,883	-34,760	182,011
2000	100,488	81,538	9,976	8,612	1,645	24,605	-40,734	193,711
2001	104,666	82,036	10,370	8,100	1,631	25,621	-43,506	196,510
2002	122,896	83,645	10,425	7,715	1,858	24,625	-43,468	215,652
2003	148,022	82,852	10,546	7,410	1,807	24,433	-45,422	238,140
2004	174,624	101,637	10,693	5,804	1,871	28,700	-51,173	280,451
2005	179,946	124,857	10,908	4,321	1,890	27,344	-51,422	306,199
2006(b)	191,820	157,285	10,967	3,500	1,930	33,241	-58,272	348,782

(a) Real wealth is calculated by dividing nominal wealth by the household consumption deflator.

(b) Preliminary figures.

**Table 5: Nominal private sector wealth at replacement cost**

As at June	\$billion								\$000s	Per cent
	Dwelling assets	Business assets	Consumer durables	Government securities	Money base	Australian investment abroad	Foreign liabilities	Total wealth	Wealth per person	Growth in total wealth
1960	40.9	34.0	6.2	7.5	18	0.4	-4.3	86.6	8.3	
1961	43.9	36.9	6.4	7.7	17	0.5	-3.7	93.5	8.7	8.0
1962	45.9	38.4	6.4	8.2	18	0.5	-3.7	97.5	8.9	4.3
1963	48.8	41.0	6.8	8.9	18	0.7	-4.7	103.3	9.3	5.9
1964	52.7	45.0	7.1	9.6	2.1	0.9	-6.8	110.6	9.8	7.1
1965	57.5	47.8	7.8	10.1	2.1	0.8	-5.1	121.1	10.5	9.5
1966	60.3	51.6	8.1	10.8	19	10	-5.9	127.9	10.8	5.6
1967	62.7	54.6	8.6	11.6	2.1	10	-7.1	133.5	11.1	4.4
1968	65.8	64.2	9.2	12.2	2.2	16	-12.1	143.1	11.7	7.2
1969	68.7	71.5	10.1	13.2	2.4	15	-13.3	154.1	12.3	7.7
1970	72.5	75.7	11.2	13.6	2.7	17	-12.7	164.6	12.9	6.8
1971	77.5	80.2	12.5	14.6	2.8	2.1	-13.5	176.1	13.5	7.0
1972	85.0	87.6	13.9	16.1	3.0	2.8	-16.7	191.6	14.4	8.8
1973	95.2	93.4	15.7	17.3	4.0	2.5	-17.4	210.7	15.6	10.0
1974	113.2	105.5	19.3	17.9	4.5	2.1	-15.5	247.0	18.0	17.2
1975	134.9	118.9	24.5	20.3	4.1	2.7	-13.0	292.4	21.0	18.4
1976	155.7	134.2	29.8	23.0	5.1	3.1	-20.8	330.0	23.5	12.9
1977	177.4	148.9	34.5	25.3	6.3	4.1	-18.8	377.7	26.6	14.5
1978	196.7	166.8	38.0	27.9	5.9	4.9	-21.0	419.3	29.2	11.0
1979	214.1	187.3	41.0	32.4	6.4	6.2	-27.3	460.2	31.7	9.8
1980	229.7	216.7	46.3	35.5	6.9	7.1	-43.6	498.7	33.9	8.4
1981	262.7	245.1	51.9	39.4	7.6	7.4	-53.1	561.0	37.6	12.5
1982	296.0	281.1	58.2	42.9	8.7	9.5	-80.6	615.7	40.5	9.8
1983	320.9	309.8	65.5	50.9	9.1	11.8	-99.8	668.2	43.4	8.5
1984	339.8	332.2	71.1	64.1	10.2	13.9	-107.5	724.0	46.5	8.4
1985	386.1	371.0	76.6	64.3	11.8	19.8	-123.3	806.3	51.1	11.4
1986	422.1	406.3	87.8	48.1	13.0	33.5	-125.3	885.6	55.3	9.8
1987	479.4	451.6	98.0	57.4	14.1	49.4	-140.5	1,009.3	62.1	14.0
1988	598.7	517.2	104.2	60.1	15.8	65.2	-172.2	1,189.0	71.9	17.8
1989	752.3	605.2	112.1	51.4	16.7	78.1	-213.1	1,402.7	83.4	18.0
1990	815.7	635.0	117.9	45.7	17.7	85.5	-240.1	1,477.4	86.6	5.3
1991	848.1	621.7	123.6	64.0	18.7	84.3	-251.4	1,508.9	87.3	2.1
1992	881.3	614.6	126.1	83.2	19.1	100.2	-258.9	1,565.5	89.5	3.8
1993	909.3	636.3	132.5	85.0	20.5	124.0	-290.0	1,617.6	91.6	3.3
1994	979.8	660.1	137.9	90.3	22.0	148.8	-298.2	1,740.7	97.5	7.6
1995	1,054.7	692.2	144.7	96.9	23.5	169.0	-323.4	1,857.5	102.8	6.7
1996	1,084.2	721.0	150.4	113.6	24.5	178.7	-325.9	1,946.5	106.3	4.8
1997	1,184.1	758.3	152.9	128.2	34.1	218.2	-341.4	2,134.4	115.3	9.7
1998	1,326.8	808.8	158.3	141.5	31.4	285.4	-391.2	2,361.0	126.2	10.6
1999	1,441.0	856.6	165.6	142.3	31.8	312.8	-410.4	2,539.7	134.2	7.6
2000	1,603.7	913.4	170.4	136.2	28.1	420.3	-474.6	2,797.4	146.1	10.1
2001	1,754.6	955.5	188.2	137.2	29.6	465.0	-519.4	3,010.7	155.1	7.6
2002	2,073.3	1,016.4	195.8	137.0	34.9	462.5	-546.6	3,373.3	171.7	12.0
2003	2,379.8	1,105.1	204.8	131.6	35.1	474.5	-619.0	3,711.9	186.8	10.0
2004	2,768.2	1,224.8	212.6	111.2	37.2	570.6	-641.2	4,283.4	213.2	15.4
2005	2,919.3	1,365.6	223.4	83.8	38.7	560.0	-626.5	4,564.3	224.4	6.6
2006(a)	3,176.9	1,502.4	234.7	73.9	41.3	711.4	-646.3	5,094.3	247.3	11.6

(a) Preliminary figures.





## What's new on the Treasury website

The Treasury's website, [www.treasury.gov.au](http://www.treasury.gov.au), includes past issues of the *Economic Roundup*. Some of the other items posted on the website since the previous issue of Roundup that may be of interest to readers are listed below.

What's new on the Treasury website

## Budget statements

### *Mid-Year Economic and Fiscal Outlook 2006-07 (December 2006)*

<http://www.treasury.gov.au/contentitem.asp?NavId=&ContentID=1214>

The updated economic and fiscal outlook, prepared in accordance with the *Charter of Budget Honesty Act 1998*, remains sound. The Australian economy is expected to grow modestly in 2006-07, despite the severe drought adversely affecting the farm sector and related industries. An underlying cash surplus of \$11.8 billion is forecast for 2006-07, marginally stronger than the 2006-07 Budget forecast.

### *Tax Expenditures Statement 2006*

<http://www.treasury.gov.au/contentitem.asp?NavId=035&ContentID=1211>

The statement provides details of concessions, benefits and incentives delivered to taxpayers through the tax system. This assists transparency and encourages public scrutiny of government programmes delivered through the tax system. The statement lists around 270 tax expenditures and estimates their value over an eight year period, from 2002-03 to 2009-10.

## Background papers

### Background papers for G-20 meeting

<http://www.treasury.gov.au/contentitem.asp?NavId=035&ContentID=1192>

The background notes were prepared by the Australian G-20 Secretariat for the Meeting of the Group of Twenty Finance Ministers and Central Bank Governors in Melbourne on 18-19 November 2006. They cover energy and minerals, demographic change and reform of the International Monetary Fund and World Bank.

### Comparative review of the Australian auditor independence requirements

<http://www.treasury.gov.au/contentitem.asp?NavId=035&ContentID=1184>

The comparative review compares the Australian auditor independence requirements with those in Canada, the European Union, the United Kingdom and the United States. The review was prepared by Treasury and released on 15 November 2006 by the Parliamentary Secretary to the Treasurer.

## Corporate and Financial Services Regulation Review Proposals Paper

<http://www.treasury.gov.au/contentitem.asp?NavId=037&ContentID=1189>

The paper reflects views gathered on the April 2006 *Corporate and Financial Services Regulation Review Consultation Paper*, such as suggestions to improve regulation of financial services, company reporting obligations, auditor independence, corporate governance, fundraising, takeovers and compliance. The paper was released on 16 November 2006 by the Parliamentary Secretary to the Treasurer.

## *Streamlining Prudential Regulation: Response to 'Rethinking Regulation'*

<http://www.treasury.gov.au/contentitem.asp?NavId=035&ContentID=1199>

This document seeks views about proposals on prudential regulation in the report *Rethinking Regulation*, as well as outstanding recommendations of the HIH Royal Commission. In addition to implementing recommendations from various reports, the Government has identified further areas where it considers that the prudential regulation framework can be improved. The document was released by the Minister for Revenue and Assistant Treasurer.

## Pocket brief

### Pocket brief to the Australian tax system (November 2006)

<http://www.treasury.gov.au/contentitem.asp?NavId=035&ContentID=866>

The brief provides notes on the breakdown between Commonwealth, State and local Government tax revenue, the tax breakdown, major tax expenditures, history of tax instruments, income tax rates, GST and excise rates.



## Sources of economic data

The following table provides sources for key economic data. Australian Bureau of Statistics (ABS) data can be obtained over the internet at <http://www.abs.gov.au>. The Reserve Bank of Australia information is available at <http://www.rba.gov.au>. Similarly, OECD information is available at <http://www.oecd.org>. Information on individual economies is also available via the IMF at <http://www.imf.org>.

### International economy

Output, current account balance and interest rates	OECD Main Economic Indicators
Consumer price inflation	ABS cat. no. 6401.0

### National accounts

Components of GDP, contributions to change in GDP	ABS cat. no. 5206.0
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### Incomes, costs and prices

Real household income	ABS cat. nos. 5204.0 and 5206.0
Wages, labour costs and company income	ABS cat. nos. 5204.0, 5206.0 and 6302.0
Prices	ABS cat. nos. 6401.0 and 5206.0
Labour market	ABS cat. no. 6202.0

### External sector

Australia's current account, external liabilities and income flows	ABS cat. nos. 5368.0, 5302.0 and 5206.0
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## Past editions of *Economic Roundup*

Details of articles published in the past two editions of the *Economic Roundup* are listed below:

### Spring 2006

The 100<sup>th</sup> Economic Roundup

Managing prosperity

The Participation Modelling Project

Older men bounce back: the re-emergence of older male workers

Reflections on the global economy and the Australian mining boom

Does Australia's geography affect labour productivity?

Budget policy and risk expenditures

An economic survey of developing countries in the Pacific region

Greater international links in banking — challenges for banking regulation

2005-06 in review: high terms-of-trade, low unemployment

Index of *Economic Roundup* feature articles, speeches and submissions by topic, 1988-2006

### Winter 2006

A brief history of Australia's tax system

Future Fund and fiscal policy

Implications of China's re-emergence for the fiscal and economic outlook

How international investment income flows affect Australia's balance of payments

Australia's manufactures exports

Australia's services exports

The Indonesian economy after the Boxing Day tsunami and Treasury's role in the Government Partnerships Fund

Key themes from the Treasury Business Liaison Programme — April to July 2006

Copies of these articles are available from the Treasury. Written requests should be sent to Manager, Domestic Economy Division, The Treasury, Langton Crescent, Parkes, ACT, 2600. Telephone requests should be directed to Ms Amy Burke on (02) 6263 2756. Copies may be downloaded from the Treasury web site <http://www.treasury.gov.au>.

## Correction to *The 100th Economic Roundup*, Spring 2006

A typographical error on page 113 of the Spring 2006 issue of *Economic Roundup* led to an incorrect reference to a World Bank study. The top line of the page should have read 'Solomon Islands is ranked in the bottom quartile in two of the six measures' rather than 'in four' as published.