



**Comparing the Income Gap between
Australia and New Zealand:
A 2025 Taskforce analytical report
2010 update**

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Preface

Comparing the income gap between Australia and New Zealand: 2010 is an update of the material provided to the 2025 Taskforce in 2009. The data and analysis have been prepared to assist the Taskforce in preparing their reports for the Government.

The 2025 Taskforce was set up by the New Zealand Government to recommend ways of improving productivity to help New Zealand close the income gap with Australia by 2025. The Taskforce, chaired by Dr Don Brash, was appointed for an initial term of three years. Other Taskforce members are Dr Bryce Wilkinson, Judith Sloan, and David Caygill.

The 2025 Taskforce released its first report on 30 November 2009. Subsequent reports are due on 31 October 2010 and 31 October 2011.

This report provides key economic and demographic data that measures the widening gap in economic performance between New Zealand and Australia. Data presented are from 1972 onwards, as it is generally accepted that the gap has widened since this time.

The report also compares New Zealand and Australia in three key areas related to productivity measurement – namely labour productivity, labour utilisation, and capital intensity – as the Taskforce attempts to determine factors that have contributed to the widening of the income gap between the two countries. Data used for this analysis are presented from 1987 onwards, due to data availability. While the productivity series go back further on the OECD website for some of the variables, their sources are unknown.

The data presented in this report have been compiled to directly compare New Zealand and Australia. Because of the discrepancies and lack of information about the OECD series, data directly from the Statistics New Zealand and Australian Bureau of Statistics websites has been used in preference to the OECD data.

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2 September 2010

Standards and further information

Percentage changes

Percentage movements are, in a number of cases, calculated using data of greater precision than published. This could result in slight variations.

Changes of base

Where consecutive figures have been compiled on different bases and are not strictly comparable, a footnote is added indicating the nature of the difference.

Source

All data is compiled by Statistics New Zealand, except where otherwise stated. Both administrative and survey data has been used in this report.

Liability

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1 Key economic and demographic statistics

Data revisions since the last report

Since the last report published in November 2009, there have been significant revisions to the Australian National Accounts as well as minor revisions to the New Zealand National Accounts. The Organisation for Economic Co-operation and Development (OECD) purchasing power parities have also been revised.

Revisions to Australian and New Zealand National Accounts

Revised annual national accounts for Australia were published in December 2009. The accounts incorporated new international frameworks and updated classifications:

- System of National Accounts 2008 (SNA08)
- Balance of Payments and International Investment Position (sixth edition) (BPM6)
- Australian and New Zealand Standard Industry Classification 2006 (ANZSIC06)
- Standard of Economic Sector Classifications of Australia 2008 (SESCA08).

As a result of these revisions, the level of current price gross domestic product (GDP) is 2.5–3.0 percent higher for the years from 1972 to 2006. For the June 2007 and June 2008 years GDP is 4.4 percent higher than previously published.

The New Zealand National Accounts have also been revised due to:

- incorporating new survey data from 2006 onwards
- incorporating revisions from the balance of payments
- incorporating revisions to government accounts data
- revisions to GDP (2001–08) resulting from incorporating new dwellings data from the 2006 Census of Population and Dwellings
- upwards revisions to historical estimates of GDP (back to 1972), resulting from a review of the treatment of holiday homes and unallocated dwellings used to produce the rented and owner-occupied dwellings estimates within the national accounts.

The historical revision has raised the level of current price GDP by approximately 1 percent. For the March 2008 year GDP is 2.1 percent higher than previously published.

The Australian Bureau of Statistics was one of the first statistical agencies in the world to implement the SNA08 and BPM6. For the next few years Australian and New Zealand GDP statistics will be compiled on different bases, which will affect the comparability of GDP and that of other measures that use GDP, including productivity statistics.

Statistics New Zealand is currently implementing ANZSIC06 into its economic statistics and is due to release the first New Zealand annual national accounts based on ANZSIC06 in late 2011. Subject to the availability of resources, including funding, New Zealand will consider adopting the SNA08 and BPM6 changes not earlier than 2013. We understand that this timeframe is similar to, if not earlier than, those currently suggested by the European Union, United States, and Canadian statistical offices.

Revisions to OECD purchasing power parities

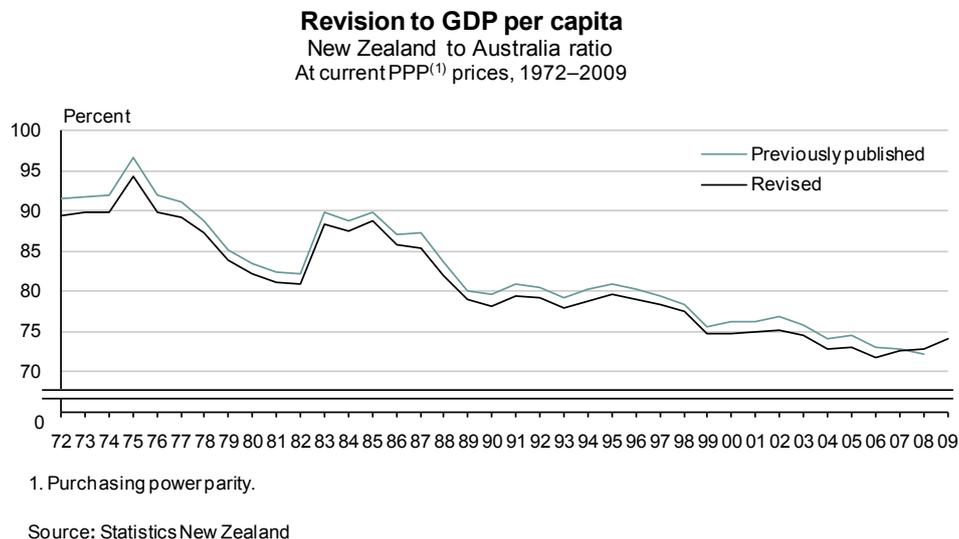
Purchasing power parities (PPPs) are the rates of currency conversion that equalise the purchasing power of different countries by eliminating the differences in price levels between countries. In their simplest form, PPPs are price relatives that show the ratio of the prices in national currencies of the same goods or service in different countries. The most well recognised and widely used PPPs are those calculated by the Joint OECD-Eurostat PPP Programme. They have been used in this report.

The OECD has revised the PPPs for Australia and New Zealand to incorporate the new benchmark data for 2005 and 2008 calendar years. This revision has resulted in changes to the PPPs for New Zealand for the 2006, 2007, and 2008 calendar years (these PPPs are applied to the March 2006/07, 2007/08, and 2008/09 years). As a result of the PPP revisions, New Zealand GDP and GDP per capita expressed in US dollars is 2.5 percent higher for 2006/07 and 2.8 percent higher for 2007/08.

Caution on GDP per capita comparisons with Australia

Because of the revisions noted above, current price GDP per capita comparisons between Australia and New Zealand should be interpreted with caution. The graph below implies that the gap between Australia and New Zealand has widened through the 1971 to 2009 period, but because there are now conceptual differences in the way GDP is calculated, the data are not strictly comparable. Additionally, the revisions to PPPs for 2007 and 2008 are in New Zealand's favour, and suggest that the gap between Australia and New Zealand is beginning to decline. GDP and PPPs for both countries may change when final data is compiled.

Figure 1



Gross domestic product

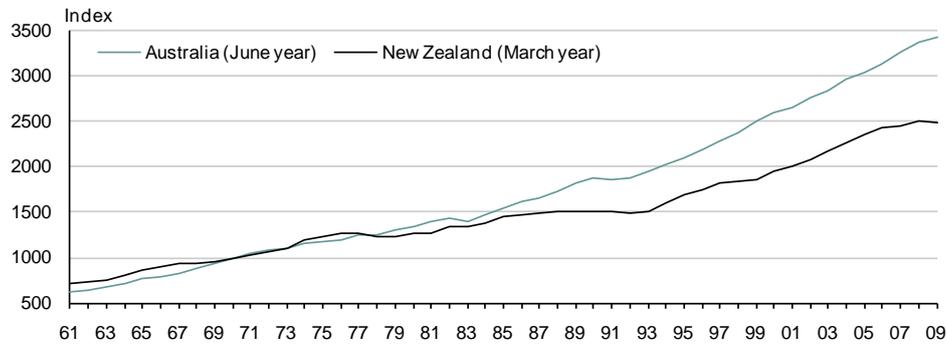
Figure 2 shows growth in real GDP from 1961 to 2009. Over this time period, Australia's economy grew by 448 percent, while New Zealand's grew by 248 percent (annual average growth rates of 3.6 percent and 2.6 percent, respectively). The two countries followed similar growth paths from the 1960s to the mid-1980s. New Zealand's economic performance stalled in the mid-1980s while Australia continued to grow. Between 1985 and 1993, Australia grew by 26 percent while New

Zealand grew by only 4 percent. Since 1993, both countries have grown at a similar pace; with Australia averaging annual GDP growth of 3.6 percent, compared with 3.2 percent for New Zealand.

Figure 2

Real GDP for Australia and New Zealand

1961–2009
Base:1970 (=1000)



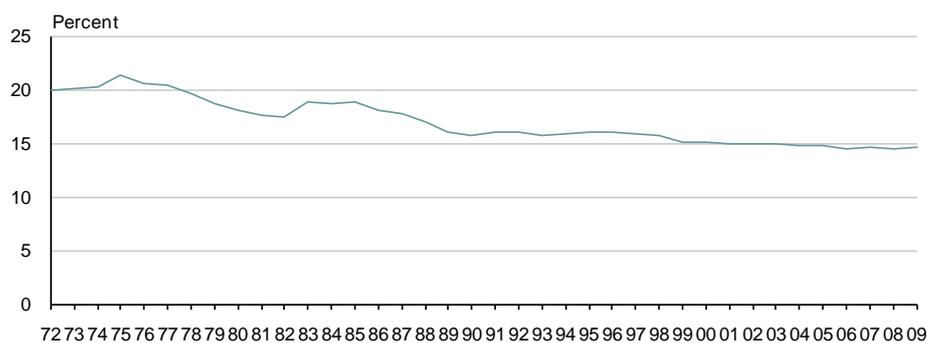
Source: Statistics New Zealand and Australian Bureau of Statistics.

Through the 1970s, New Zealand's GDP was around 20 percent of that of Australia. However, New Zealand's GDP declined steadily through the 1980s to become 16 percent of Australia's GDP in 1989. The improvement in 1983 was due to a fall in Australia's GDP for that year, when their real GDP declined by 2.3 percent. The decline since 1989 has been more gradual and since 2006 New Zealand's GDP has been around 14.5 percent of Australia's GDP. In current prices, in 2009, Australia's GDP was US\$850 billion compared with New Zealand's US\$124 billion.¹

Figure 3

New Zealand to Australia GDP ratio

At current PPP⁽¹⁾ prices, 1972–2009



1. Purchasing power parity.

Source: Statistics New Zealand and Australian Bureau of Statistics.

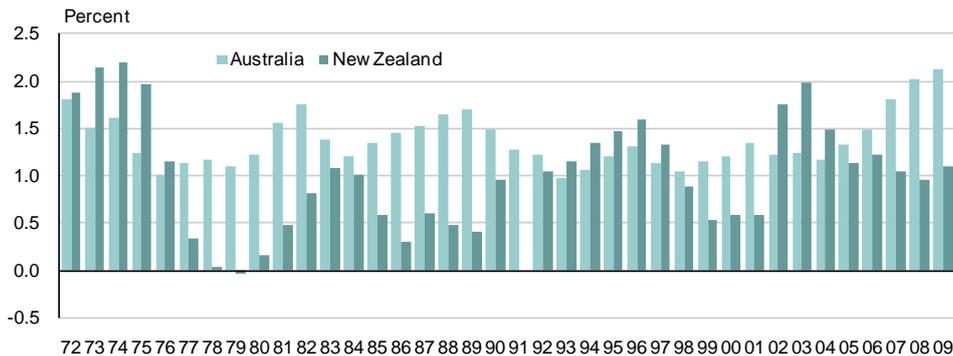
¹ Estimated using OECD purchasing power parities for 2009.

Population

Australia's usually resident population at 30 June 2009 was estimated to be 22.0 million, up from 13.3 million in 1972. This was an increase of 65 percent. New Zealand's population rose more slowly than Australia's. In 2009 it was 4.3 million, up from 2.9 million in 1972, an increase of 47 percent.

Figure 4

Annual percentage population change for Australia and New Zealand
Usually resident population, 1972–2009



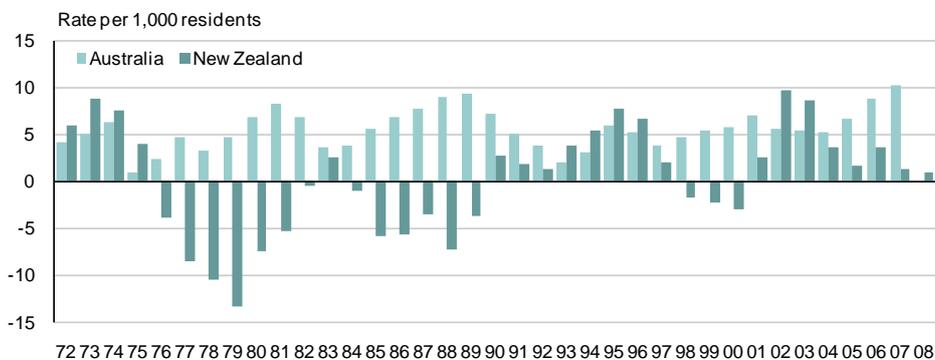
Note: No figure given for New Zealand for 1991 due to break in time series. New Zealand changed from a de-facto to estimated resident count in 1991.

Source: Organisation for Economic Co-operation and Development Factbook 2010.

New Zealand outpaced Australia in population growth in the early 1970s, again in the early 1990s, and for a brief period during the early 2000s. However, for the rest of the time the Australian population grew more strongly. The difference in growth rates was particularly noticeable from 1977 to 1991, when Australia grew by 22 percent and New Zealand by 10 percent. New Zealand's lower growth rate was primarily due to an outflow of permanent and long-term migrants during those years, with many of these migrants moving to Australia.

Figure 5

Net migration rates for Australia and New Zealand
1972–2008⁽¹⁾

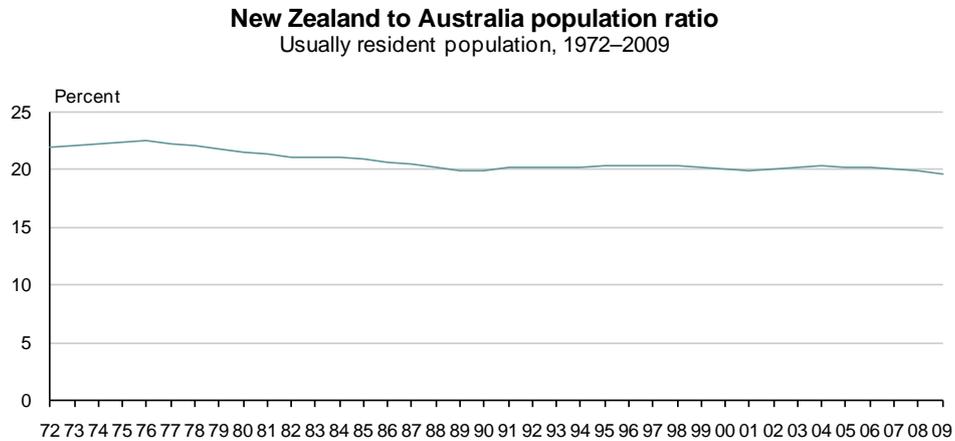


1. No value for Australia for 2008.

Source: Organisation for Economic Co-operation and Development Factbook 2010.

New Zealand's slower population growth and low net migration led to a fall in the ratio of people living in New Zealand compared with Australia, from 22.5 percent in 1976 to around 20 percent from 1990 onwards.

Figure 6



Source: Statistics New Zealand and Australian Bureau of Statistics.

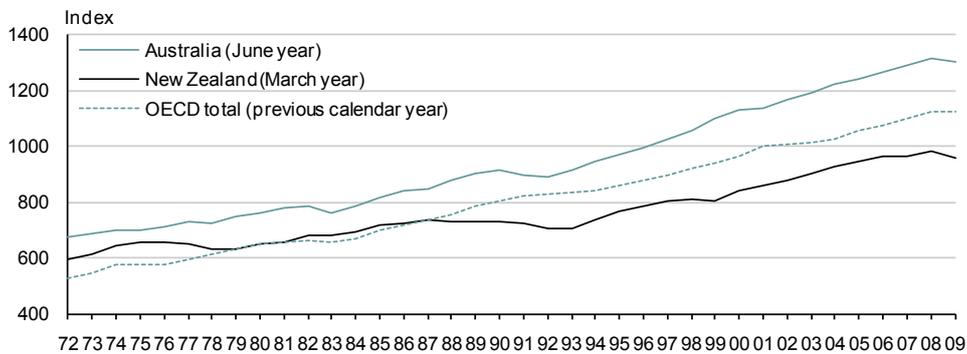
GDP per capita

Australia's real GDP per capita grew at an annual average of 1.8 percent per year between 1972 and 2009, while New Zealand's grew at 1.3 percent per year. New Zealand's GDP per capita growth was faster than Australia's for a short period in the early 1970s. Australia experienced two brief periods of decline, when GDP per capita fell by 3.8 percent in 1983, and by 2.3 percent between 1990 and 1992. New Zealand also had two periods of decline but they were over a longer time period. Between 1975 and 1978, New Zealand's GDP per capita fell by 3.5 percent. New Zealand lost ground again between 1987 and 1992 when GDP per capita declined by 4.4 percent. The recent global recession² had a stronger impact upon New Zealand than Australia. New Zealand's GDP per capita fell by 2.4 percent for the year ended March 2009, while Australia's GDP per capita declined by 0.9 percent for the year ended June 2009.

² Recession is defined simply as consequential falls in real GDP.

Figure 7

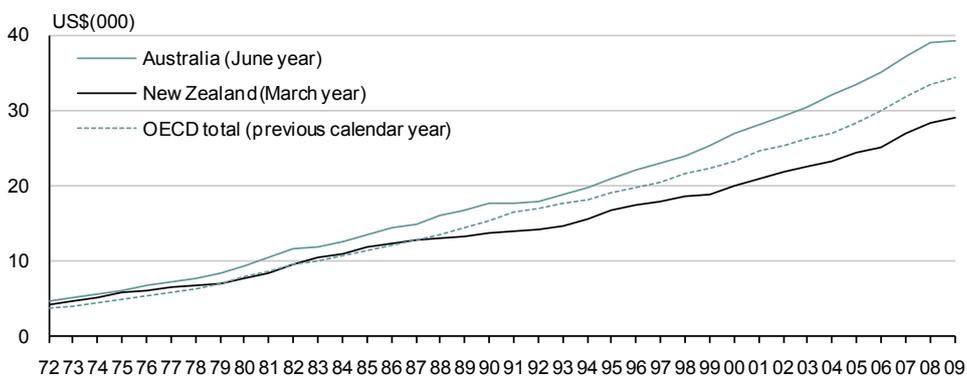
Real GDP per capita for Australia, New Zealand, and OECD⁽¹⁾
 At 2000 PPP⁽²⁾ prices, 1972–2009
 Base: OECD 2000 (=1000)



1. Organisation for Economic Co-operation and Development.
 2. Purchasing power parity.
 Source: Statistics New Zealand, Australian Bureau of Statistics, and OECD Factbook 2010.

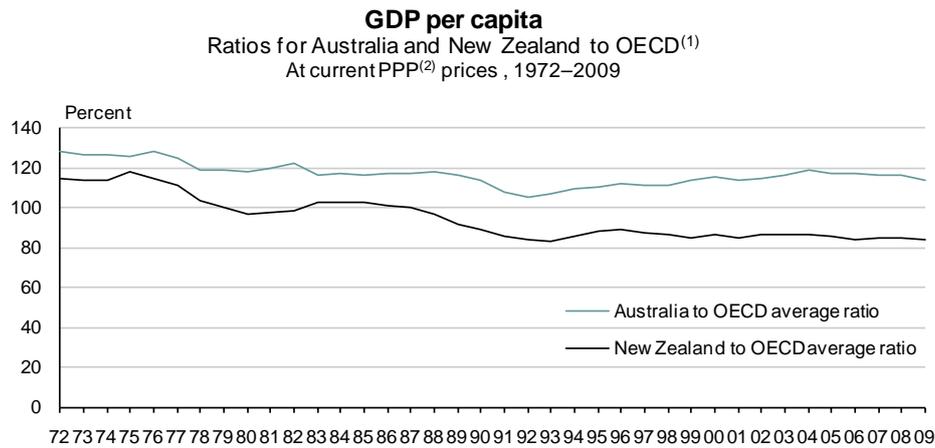
Figure 8

GDP per capita for Australia, New Zealand, and OECD⁽¹⁾
 At current PPP⁽²⁾ prices in US dollars
 1972–2009



1. Organisation for Economic Co-operation and Development.
 2. Purchasing power parity.
 Source: Statistics New Zealand, Australian Bureau of Statistics, and OECD Factbook 2010.

Figure 9



1. Organisation for Economic Co-operation and Development.

2. Purchasing power parity.

Source: OECD Factbook 2010, Australian Bureau of Statistics, Statistics New Zealand.

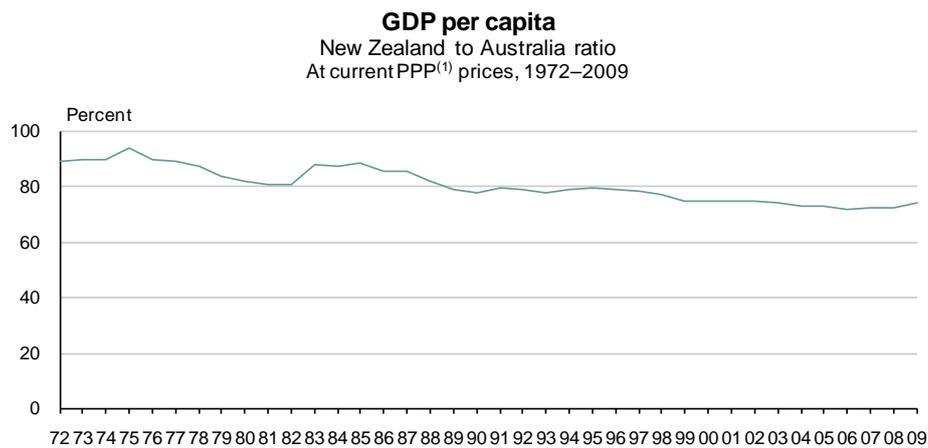
While real GDP per capita is a useful measure for economic growth rates, purchasing power parities can be applied to current price GDP per capita to compare economic well-being across countries.

Australia's current price GDP per capita has consistently been higher than the average of the OECD-member countries. From a high of 129 percent of the OECD average in 1972, and 4th-highest ranking among OECD member countries, Australia's GDP per capita dropped to a low point of 106 percent in 1992. It then rose again consistently, to reach 118 percent of the OECD average in 2004. In recent years it has been gradually falling and is now 14 percent higher than the OECD average. In 2009, Australia was ranked 9th in the OECD.

From being around 15 percent higher than the OECD average during the early 1970s, and 8th ranking in the OECD, New Zealand's GDP per capita dropped below the OECD average in 1979. GDP per capita remained around the OECD average until 1987, but declined from 1988 to a low of 83 percent in 1993. Since 1994, GDP per capita has varied between 84 percent and 89 percent of the OECD average. In 2009, New Zealand's was ranked 22nd in the OECD.

New Zealand's GDP per capita compared with Australia's fluctuated between 1972 and 1985, averaging 13 percent below Australia's GDP per capita over that period. Between 1985 and 1990, New Zealand dropped sharply, to be 22 percent behind Australia's GDP per capita. It stayed around that level for the 10 years from 1989 to 1998, but has dropped further since then to be 28 percent below Australia in 2006. Figure 10 shows some improvement over the last three years, mainly due to an improvement in purchasing power parity for New Zealand since 2007. In 2009, New Zealand's GDP per capita was 26 percent below that of Australia.

Figure 10



1. Purchasing power parity.

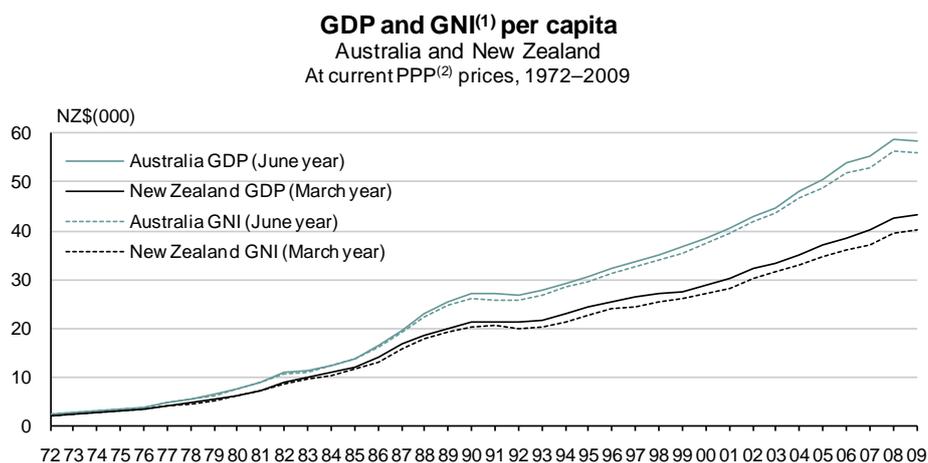
Source: Statistics New Zealand and Australian Bureau of Statistics

Gross national income

Another useful measure used to compare New Zealand’s performance with that of Australia is gross national income (GNI). GNI comprises GDP plus net receipts and payments of wages and salaries and property income between New Zealand and the rest of the world (similarly, Australia and the rest of the world). GNI was previously known as gross national product (GNP).

GNI per capita shows the same pattern as GDP. However, the New Zealand-Australia differential is around 2 to 3 percent greater for GNI than it is for GDP per capita.

Figure 11

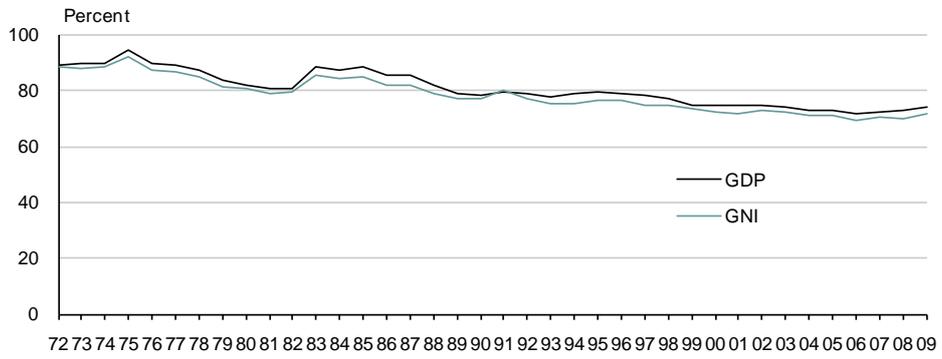


1. Gross national income.
2. Purchasing power parity.

Source: Statistics New Zealand and Australian Bureau of Statistics

Figure 12

GDP and GNI⁽¹⁾ per capita comparison
 New Zealand to Australia ratio
 At current PPP⁽²⁾ prices, 1972–2009



- 1. Gross national income.
- 2. Purchasing power parity.

Source: Statistics New Zealand and Australian Bureau of Statistics

2 Labour productivity, labour utilisation, and capital intensity

Caveats

The data presented in this chapter of the report were compiled to directly compare New Zealand and Australia between 1987 and 2009. They are not all of a standard that Statistics NZ would publicly disseminate as official statistics, for two main reasons:

- They are being used for a purpose they were not designed for.
- Lack of data availability, resulting in the methodology not being as robust as desired.

Concepts

The three indicators presented in this report are:

- labour productivity
- labour utilisation
- capital intensity.

When GDP is used as the measure of income, then income per capita can be decomposed into the first two of those indicators.

GDP per capita = (GDP per hour worked) x (hours worked / population)

This can also be expressed as:

income per capita = (labour productivity) x (labour utilisation)

However, both labour productivity growth and labour utilisation can be decomposed into additional factors.

labour productivity growth =

(growth rate in capital deepening) x (growth rate in multifactor productivity)

Capital deepening, or capital intensity, is a further area in which differences between New Zealand and Australia could directly lead to differences in income per capita. Capital deepening refers to the growth in capital inputs relative to labour input. Capital intensity could also be used to describe this, and in addition, could refer to the level of capital in the economy.

Differences in multifactor productivity (MFP) growth rates will also impact directly on income per capita. MFP is the growth rate in output which is unaccounted for by the growth in a combined labour and capital input measure. It could result from a number of factors, such as improved production techniques, better management processes, and economies of scale. Given that MFP is essentially a residual measure, it will also reflect mismeasurement and misclassification of either the output or input measures. MFP statistics are not presented in this report.

Labour utilisation =

(total hours / total employment) x

(total employment / total labour force) x

(total labour force / working-age population) x

(working-age population / total population).

Most of the variables cancel out in this equation, and we are left with:

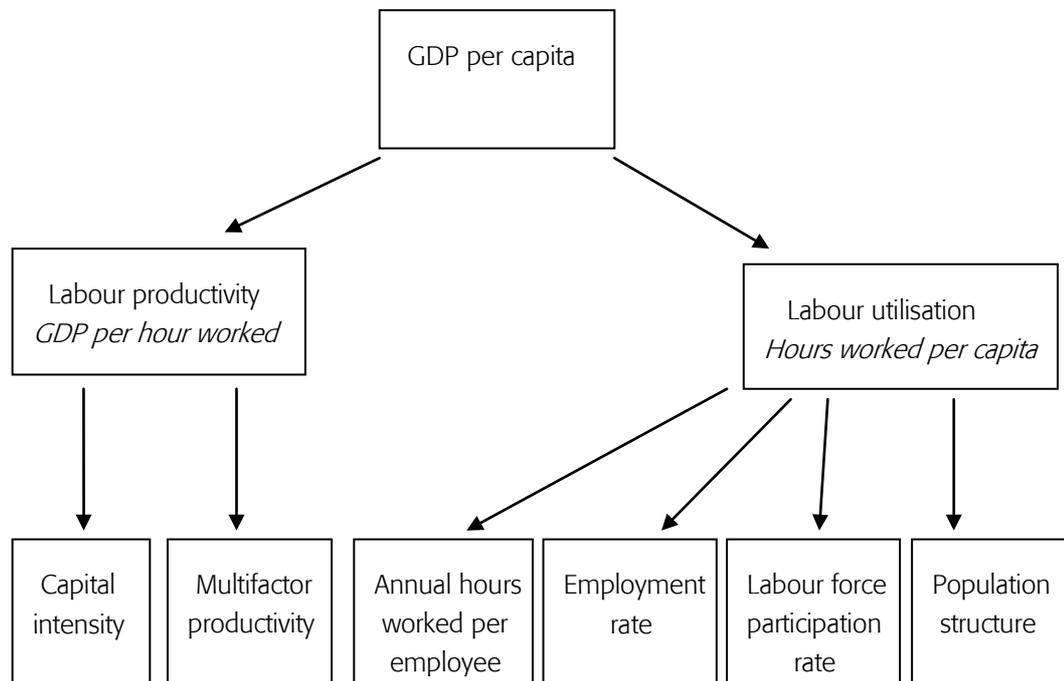
Labour utilisation = total hours / total population.

In other words, labour utilisation is a function of:

- annual hours worked per employee
- the employment rate (calculated as 1 minus the unemployment rate)
- the labour force participation rate
- the population structure.

The breakdown of GDP per capita into its components is presented in figure 13 below.

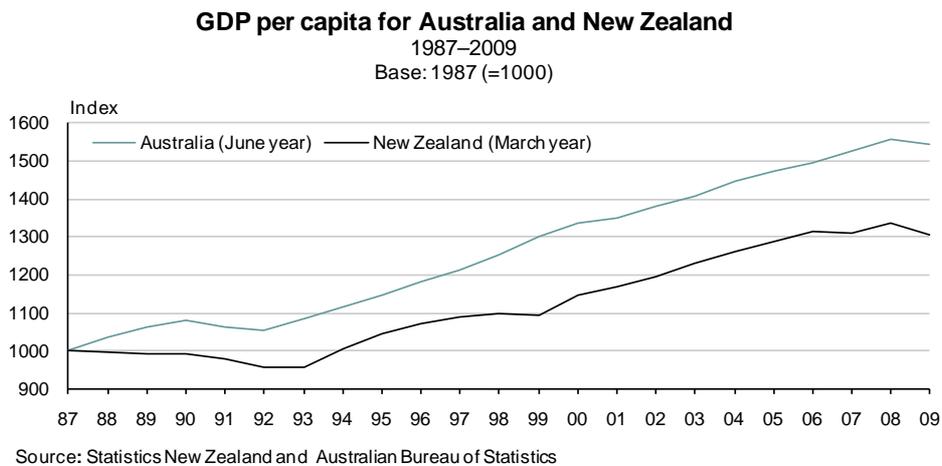
Figure 13 Components of GDP per capita



GDP per capita

Figure 14 shows the growth in GDP per capita, from 1987 to 2009, for both New Zealand and Australia. This re-presents figure 7 on a 1987-base to enable comparison with the productivity series that follow in this section. The Australian series grows faster than the New Zealand series from the beginning. The main years of divergence are the late 1980s through to 1993, and the 1998–99 period. Australia's GDP per capita grew at an average of 2.0 percent per year from 1987 to 2009, while New Zealand's grew at 1.2 percent per year.

Figure 14



Labour productivity

Labour productivity is defined as the ratio of a volume measure of output to a volume measure of labour input. A common approach is to divide a volume measure of GDP by an index of hours worked. Such an approach has been used in the majority of this report, the exception being the measured sector data in New Zealand, which utilises hours paid data as the unit of labour input.

Table 1 below displays the data sources used in compiling these series.

Table 1

Sources of data for labour productivity

Variable	New Zealand	Australia
Output	Chain-volume GDP	Chain-volume GDP
	Source: National accounts	Source: National accounts
Labour input		
	Total economy	Actual hours worked
	Source: Household Labour Force Survey	Source: Labour Force Survey
Measured sector	Hours paid / usual hours	Actual hours worked
	Source: Various Statistics NZ labour market data	Source: Labour Force Survey
Non-measured sector	Actual hours worked	Actual hours worked
	Source: Household Labour Force Survey	Source: Labour Force Survey

The labour input data within this report utilises official measured / market sector data from Statistics NZ and the Australian Bureau of Statistics (ABS), supplemented with published labour force survey

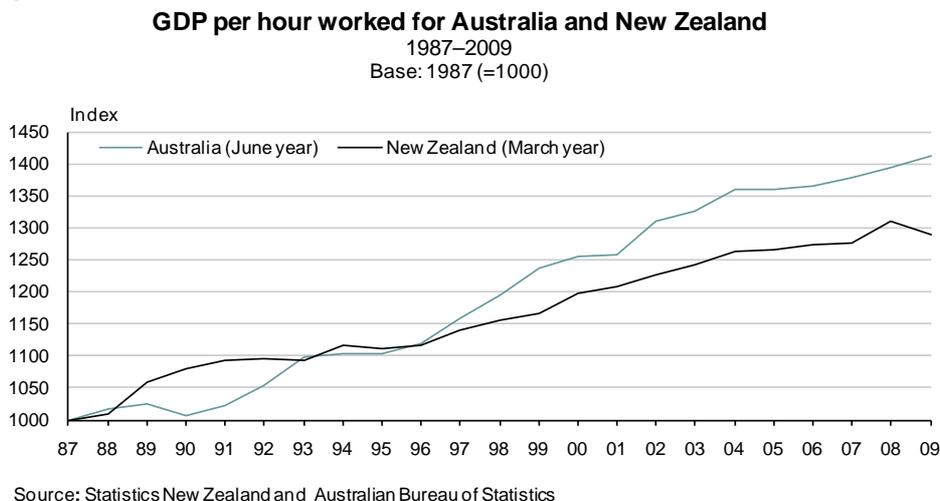
data for the non-measured sector. The total economy data are sourced entirely from the labour force surveys, rather than an aggregation of the measured and non-measured sectors.

The labour force survey data are the most appropriate to use for total economy productivity measurement. They are currently the only data sources on hours covering the total economy in both New Zealand and Australia. While the data are not as robust at industry level, particularly in New Zealand, they are a suitable measure at the total economy level.

Total economy labour productivity

Figure 15 shows total economy labour productivity (GDP per hour worked) for both Australia and New Zealand.

Figure 15



Total economy productivity in Australia has been growing faster than New Zealand, averaging growth of 1.6 percent annually, against New Zealand's 1.2 percent. The disparity is particularly evident in the post-1996 period, during which time Australia's GDP per hour worked grew at an average rate of 1.8 percent, with New Zealand lagging behind at 1.1 percent.

The measured sector and the non-measured sector

To gain further insight into the differences between Australian and New Zealand productivity performance (and the income gap), the full economy comparison (see figure 15) is split into the measured sector, which forms the basis for official published productivity measures, and the non-measured sector.

Formerly, the industry coverage of the measured sector was identical in New Zealand and Australia. However, in late 2009, the ABS published the first set of national accounts and productivity statistics under a new industry classification, ANZSIC06. As part of the productivity dataset, an ANZSIC06 aggregate series was published, which closely corresponds to the ANZSIC96 market sector. While the ANZSIC96 series was discontinued in 2008, the ANZSIC06 series will continue indefinitely. Therefore, to enable the data in the report to be updated, the ABS ANZSIC06 series has been used.

The table below outlines which industries are in the measured / market sector, and which are in the non-measured sector, for both Statistics NZ and the ABS.

Table 2

Industries in the measured sector

New Zealand – ANZSIC96	Australia – ANZSIC06
Measured sector	
A – Agriculture, forestry, and fishing	A – Agriculture, forestry, and fishing
B – Mining	B – Mining
C – Manufacturing	C – Manufacturing
D – Electricity, gas, and water	D – Electricity, gas, water, and waste services
E – Construction	E – Construction
F – Wholesale trade	F – Wholesale trade
G – Retail trade	G – Retail trade
H – Accommodation, cafes, and restaurants	H – Accommodation and food services
I – Transport and storage	I – Transport, postal, and warehousing
J – Communication services	J – Information media and telecommunications
K – Finance and insurance	K – Finance and insurance services
P – Cultural and recreational services	R – Arts and recreation services
Non-measured sector	
L – Property and business services	L – Rental, hiring, and real estate services M – Professional, scientific, and technical services N – Administrative and support services
M – Government administration and defence	O – Public administration and safety
N – Education	P – Education and training
O – Health and community services	Q – Health care and social assistance
Q – Personal and other community services	S – Other services
<i>Ownership of owner-occupied dwellings</i>	<i>Ownership of dwellings</i>
<i>Taxes less subsidies on production</i>	<i>Taxes less subsidies on production</i>
<i>Goods and services tax</i>	<i>Goods and services tax</i>
<i>Financial intermediation services indirectly measured (FISIM)*</i>	
*In Australia, FISIM has been allocated to industry and is therefore not identified separately within the non-measured sector.	
Note: Components in italics are not part of the industries in the non-measured sector. This is because they have output (value added) recorded in the national accounts, but no corresponding labour input. Non-measured sector and total economy labour productivity data that include them are therefore not consistent in the coverage of the numerator and denominator.	

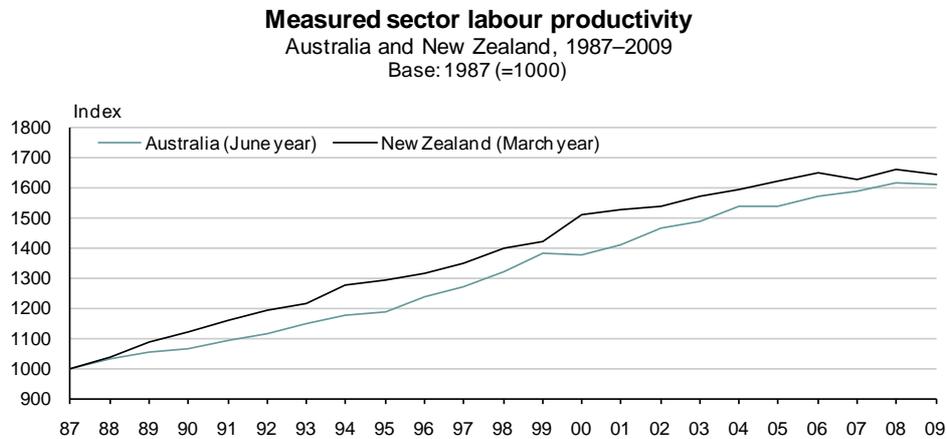
The industry coverage of the measured sector used in this report is narrower than that used by Statistics NZ in official productivity data.

From 1990 to 2007, the measured sector contributed an average of 65 percent of the New Zealand economy and 63 percent of the Australian economy.

Measured sector labour productivity

Figure 16 displays the measured sector performance of both countries.

Figure 16



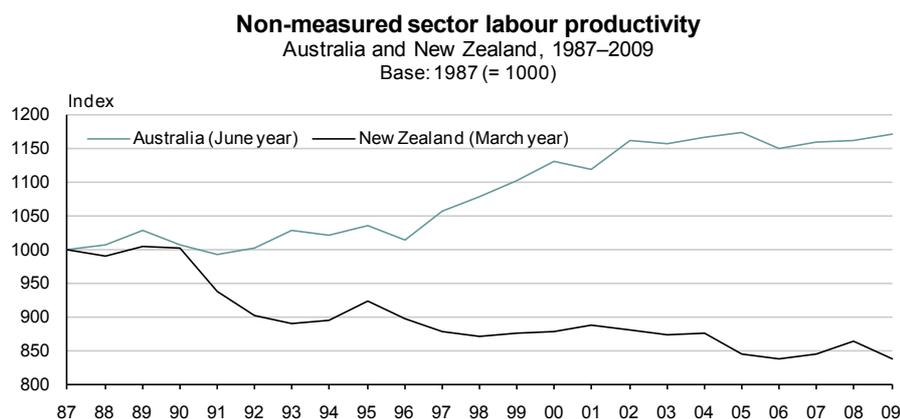
Source: Statistics New Zealand and Australian Bureau of Statistics

As can be seen, the countries track each other very closely from 1987 through to 2009, although New Zealand has had its nose in front throughout this period. New Zealand's measured sector labour productivity grew by 2.3 percent per year, slightly ahead of Australia's growth of 2.2 percent.

Non-measured sector labour productivity

Figure 17 shows the labour productivity performance of the non-measured sector. Included in the non-measured sector are the components that are not allocated to a specific industry, or for which there is no labour input (ie those in italics in table 2).

Figure 17



Source: Statistics New Zealand and Australian Bureau of Statistics

Figure 17 shows differences in the growth paths of Australia and New Zealand, notably since 1990. Over the entire 1987–2009 time series, Australia's non-measured sector productivity increased by 0.7 percent per year, while New Zealand's declined by 0.8 percent per year. From 1996 to 2009, Australia's rise has been even stronger, at 1.1 percent per year. During this period, the decline slowed to 0.5 percent annually in New Zealand. Over any considerable period within the 1987–2009

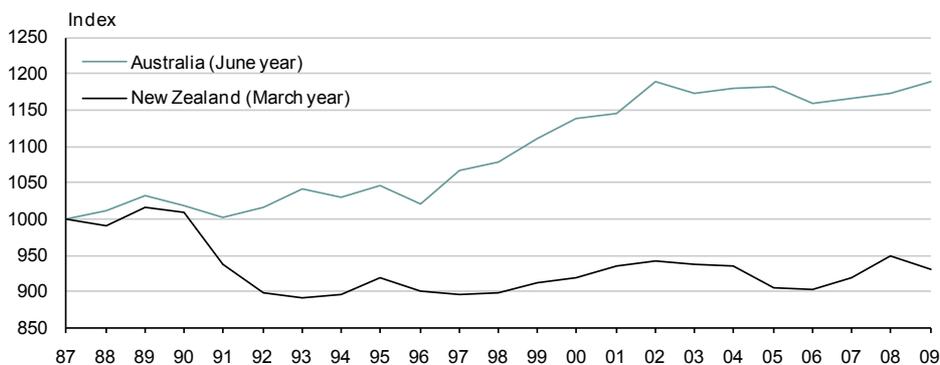
timeframe the trends are clear – Australia’s non-measured sector productivity continued to increase while New Zealand’s declined.

Industry-based non-measured sector labour productivity

Figure 18 presents labour productivity for the industries in the non-measured sector. The ownership of owner-occupied dwellings industry is excluded from this, because it has no labour input. Also excluded are the unallocated components (GST for Australia and New Zealand, and FISIM in New Zealand), and taxes less subsidies on production. Again, there is no labour input for these components. Therefore, this is a more accurate measure of labour productivity for the non-measured sector than that shown in figure 17.

Figure 18

Industry-based non-measured sector labour productivity Australia and New Zealand, 1987–2009 Base: 1987 (=1000)



Source: Statistics New Zealand and Australian Bureau of Statistics

Again, there is a considerable gap in the non-measured sector productivity performance of Australia and New Zealand. However, in this case, New Zealand’s decline in productivity was less severe. Australia has been growing at 0.8 percent per year, while New Zealand has been declining by 0.3 percent per year. As with the full non-measured sector, the gap opened up from 1990, and continued to widen through that decade. In New Zealand, the decline occurred in the early years of the series. From 1993 onwards the decline was arrested, and growth has averaged 0.3 percent annually.

Further information on the non-measured sector productivity growth performance of Australia and New Zealand is available in a paper co-authored by The Treasury and Statistics NZ *Taking on the West Island – How Does Our Productivity Performance Stack Up?*. The paper was presented at the New Zealand Association of Economists Conference in July 2010, and an updated version will be available on both the Treasury and Statistics NZ websites in early September 2010. The paper attempts to reconcile the observed puzzle, which holds over different timeframes from 1978, of New Zealand slightly outperforming Australia in measured sector productivity growth, while Australia is well ahead on the total economy comparison.

Average annual growth rates

Table 3 displays the average annual growth rates, from 1987 to 2009, in output, labour input and labour productivity for each of the sectors above.

Table 3

Labour productivity average annual growth rates

1987 to 2009

	Total economy		Measured sector		Non-measured sector		Non-measured sector (industry contributions)	
	Australia	New Zealand	Australia	New Zealand	Australia	New Zealand	Australia	New Zealand
Output	3.4	2.3	3.4	2.4	3.6	2.2	3.7	2.7
Labour input	1.8	1.1	1.1	0.1	2.8	3.0	2.8	3.0
Labour productivity	1.6	1.2	2.2	2.3	0.7	-0.8	0.8	-0.3

New Zealand's total economy labour productivity growth has been lower than Australia's since 1987. Both New Zealand's output growth and labour input growth were weaker across the total economy. In the measured sector, the labour productivity growth rates were very similar. In fact, New Zealand's was slightly higher, largely due to very low labour input growth of 0.1 percent annually. However, in the non-measured sector, a different picture emerges: New Zealand's labour productivity has been declining, while Australia's has grown, albeit at quite a slow rate. Comparing the numerator and denominator of the productivity equation, it is Australia's much stronger output growth that has created the productivity growth divergence. Labour input growth rates have been relatively similar. Labour input growth in New Zealand presents a startling dichotomy – labour input has been almost stagnant in the measured sector, while it has grown at 3.0 percent annually in the non-measured sector. In Australia, non-measured sector growth has also been higher, but the disparity is not as evident. It should be noted that some of the industries within the non-measured sector use an output growth = input growth convention. This will bias the labour productivity growth towards zero.

In summary, New Zealand has underperformed Australia in total economy labour productivity growth since 1987. In fact, the gap has opened up entirely since 1996, as the two countries matched each other from 1987–96. However, this does not imply that the actual **levels** of labour productivity were identical in 1987 – data from the OECD indicates that Australia's level of labour productivity has been higher than New Zealand's over this entire period. Underlying the difference in total economy growth rates, New Zealand's performance in the measured sector has been the equivalent of Australia's over the 22 years, and has even been slightly better. However, for the 35–40 percent of the economy covered within the non-measured sector, Australia has significantly outperformed New Zealand, and this is reflected in the total economy comparison. The non-measured sector gap opened in 1990, and has continued to widen in the two decades since. Productivity growth in this sector of the economy has been weakly positive in Australia, while New Zealand has experienced a productivity decline.

Labour utilisation

As noted in the concepts section of this chapter, labour utilisation (measured in annual hours worked per capita) is calculated by multiplying:

- annual hours worked per employee
- the employment rate (employed proportion of the labour force)
- the labour force participation rate (labour force as a proportion of the total working-age population)
- the population structure (working-age population as a proportion of total population).

The graphs and tables below compare New Zealand with Australia across these measures of labour utilisation. The measures cover the total economy, and are available annually from 1987 to 2009. The labour productivity measure is consistent with that presented above, with labour input data (hours worked) sourced from the Household Labour Force Survey.

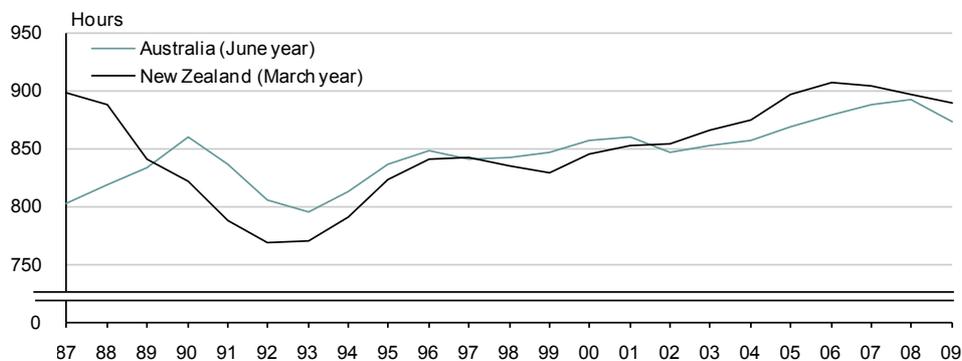
Given that GDP per capita growth is significantly stronger in Australia than in New Zealand, and yet labour productivity growth is only slightly stronger, the implication is that labour utilisation growth has been faster in Australia.

Annual hours worked per capita

Figure 19 shows annual hours worked per capita for Australia and New Zealand.

Figure 19

Labour utilisation level (annual hours worked per capita)
Australia and New Zealand, 1987–2009



Source: Statistics New Zealand and Australian Bureau of Statistics

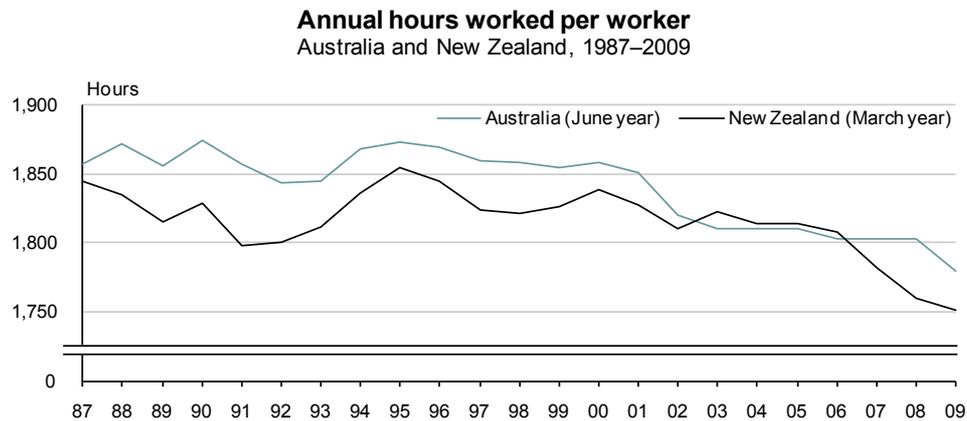
New Zealand's level of labour utilisation was significantly higher at the start of the series. However, through to 1990 New Zealand's labour utilisation level fell markedly, while Australia's rose steadily to overtake New Zealand. New Zealand's labour utilisation continued to fall until 1992 as the economy experienced labour shedding and unemployment rose to a record high of 10.3 percent in the June 1992 year. Since 1990, the countries' labour utilisation levels have been relatively similar. By 2009, both countries were almost identical, with just under 900 hours worked in paid employment annually, on average, by every man, woman, and child in the country.

Comparing 1987 with 2009, New Zealand's level of labour utilisation has remained stagnant, while Australia's has increased from a starting point of just over 800 hours.

From a peak in 2006, New Zealand's labour utilisation has consistently declined through to 2009. The New Zealand decline can be attributed to factors that include the amendment to the Holidays Act, which introduced a mandatory four weeks annual leave for employees from 1 April 2007 (up from three weeks before that). Also, the New Zealand economy was in recession during the March 2009 year, resulting in unemployment rising steadily over the year.

Annual hours worked per head of population can be broken down into components.

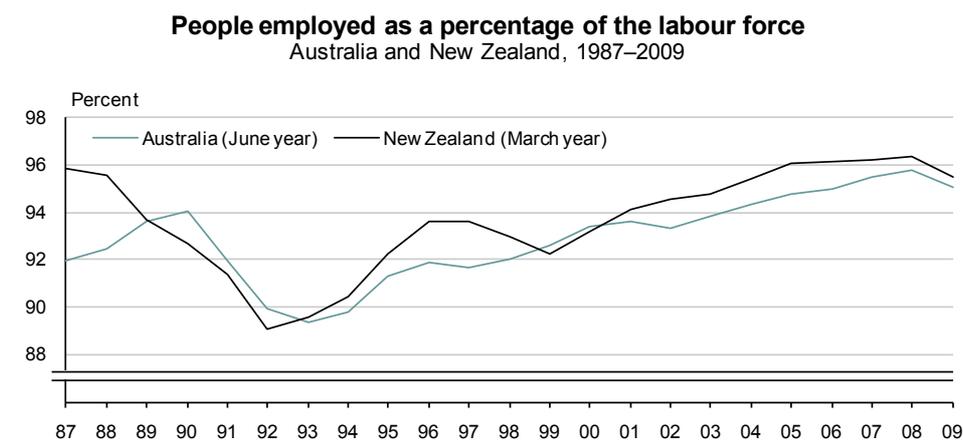
Figure 20



Source: Statistics New Zealand and Australian Bureau of Statistics

Australia was slightly ahead of New Zealand in annual hours worked per worker, until 2002 (see figure 20). The gap was at its widest in 1991, when Australians worked approximately 60 hours more on average in that year. New Zealand then snuck ahead of Australia until 2006, but tailed off very significantly from 2007 onwards. In 2009, Australian workers averaged 1,780 hours in the year, while New Zealanders averaged 1,750 hours.

Figure 21



Source: Statistics New Zealand and Australian Bureau of Statistics

New Zealand has generally remained ahead of Australia in the proportion of its labour force that is employed; that is, New Zealand had a lower unemployment rate across the period (see figure 21). Both countries dipped in the late 1980s to early 1990s as unemployment rates rose quickly, but since then the situation has improved. In 2008, New Zealand recorded its highest proportion of

people employed as a percentage of the total labour force, 96.3 percent. In the same year, Australia also recorded its highest proportion, 95.8 percent. However, in 2009 both countries dropped by 0.8 percentage points, as unemployment began to increase.

Figure 22

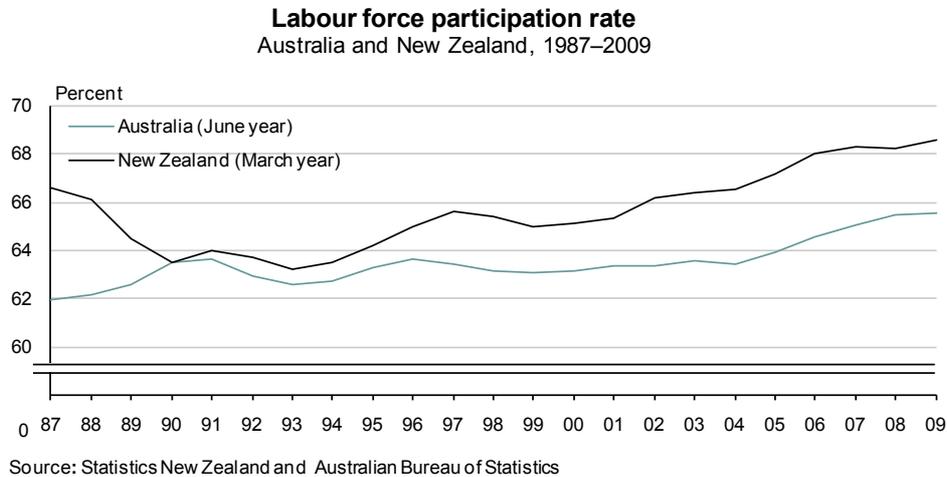
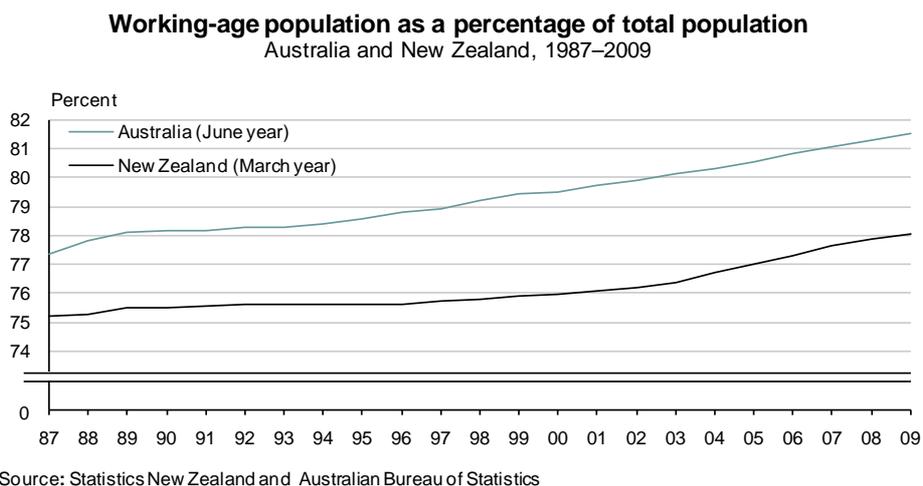


Figure 22 presents the labour force participation rates for Australia and New Zealand. New Zealand's participation rate has been higher than Australia's in every year. Following a dip in the late 1980s for New Zealand, the two rates tracked each other very closely until the mid-1990s. However, New Zealand pulled away, and from 1999 to 2007 quite remarkably, the labour force participation rate grew every year. Australia's participation rate was constant until 2004, but increased steadily from that point on.

Figure 23



The final component of labour utilisation is the working-age population (15 years and above) as a proportion of the total population. Australia's population age structure has been 'older' than New Zealand's since 1987, and has been monotonically increasing over this time (see figure 23). New Zealand's population age structure was relatively constant until 2000, but since 2002, New Zealand's working-age population ratio has grown at a faster rate than that of Australia.

Conclusion on labour utilisation

The labour utilisation data shows that Australia has utilised its labour more effectively than New Zealand since 1987. But in fact, it was a case of Australia catching up, as its level of labour utilisation (annual hours worked per capita) was below New Zealand's in 1987. This catch-up was rapid, taking just two years, from 1987–89. Since then, the labour utilisation levels have tracked reasonably closely, with New Zealand ahead in 2006, but dropping off since then to record an almost identical result as Australia in 2009.

Of the four components that make up labour utilisation, New Zealand has generally had lower annual hours worked per person in employment, and a lower working-age population as a proportion of the total population. Offsetting this, New Zealand has had a higher labour force participation rate since 1987. Within that labour force, New Zealand has enjoyed a higher proportion of people in employment for most of the 22-year time series (ie a lower unemployment rate). The exceptions to this were the late 1980s to early 1990s, and also 1999/2000.

Capital intensity

When comparing the capital intensity of the New Zealand economy against the Australian economy, both the growth rate in capital intensity and the level of capital intensity need to be considered.

Two key indicators of capital intensity presented in this report are:

1. Growth rate measures:

- the capital stock to hours worked ratio (for the whole economy)
- the capital to labour ratio (for the measured sector).

All measures of capital input and labour input are in volume terms.

As mentioned above, this does not give any information on the level of capital.

2. Level measure:

- gross fixed capital formation (GFCF) as a proportion of GDP.

These are measured in current prices.

Growth rate measures

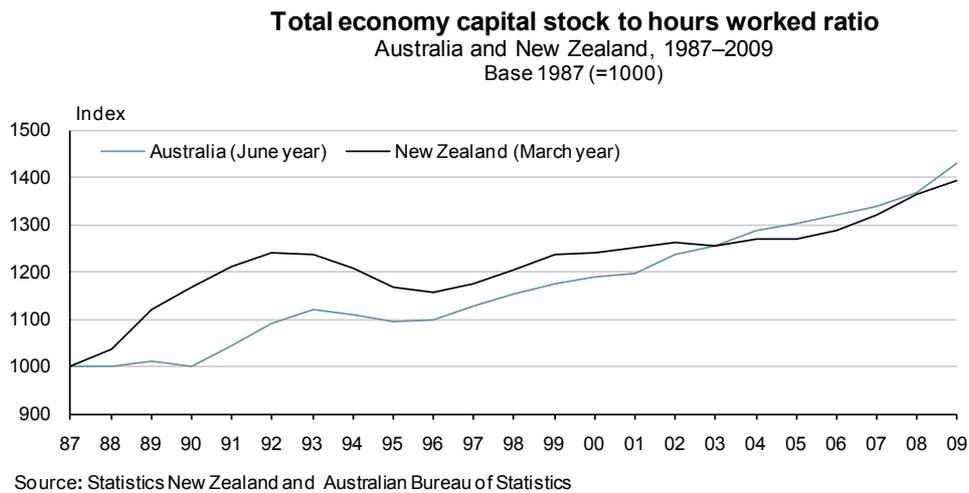
The capital to labour ratio is simply a measure of the capital input index divided by the labour input index. Growth in the ratio indicates that an economy has undergone capital deepening, that is, the intensity of capital input relative to labour input has risen. A decline in the ratio is termed capital shallowing. Both Statistics NZ and the ABS publish the capital to labour ratio for the measured sector. The labour input data used are identical to those published in figure 16.

Across the total economy, the capital to labour ratio measure is not currently available in either country. In its place, a proxy measure has been used – the ratio of capital stock to hours worked. The capital stock data used in this ratio, unlike the capital input index, is not a true measure of capital services. To obtain a measure of capital services, assets used in the production process must be assigned a weight based on the cost of using that asset. A lack of data precludes the calculation of asset-specific user costs, so a simplified approach was taken. In New Zealand's case, published constant price **productive** capital stock data have been used, while in Australia, published **net** capital stock are used.

The labour input data used in this total economy measure are identical to those underlying figure 15, that is, total hours worked from the labour force surveys.

Figure 24 shows the capital stock to hours worked ratio for the total economy.

Figure 24



Growth in the capital stock to hours worked ratio has been similar in New Zealand and Australia across the entire 1987 to 2009 period. Both countries have become significantly more capital intensive over this time. However, they have taken different growth paths over this 22-year period, with New Zealand becoming more capital intensive in the late 1980s, due to a significant amount of labour shedding. From 1987 to 1992, New Zealand's capital stock to hours worked ratio increased by an average of 4.4 percent per year, with Australia's significantly lower than that at 1.8 percent. Australia has caught up since 1992, growing annually at 1.6 percent, whereas New Zealand's growth rate has slowed to just 0.7 percent annually since 1992. Over the entire 1987 to 2009 period, Australia and New Zealand grew at 1.6 percent and 1.5 percent per year, respectively.

Table 4

Capital to labour ratio average annual growth rates

1987 to 2009

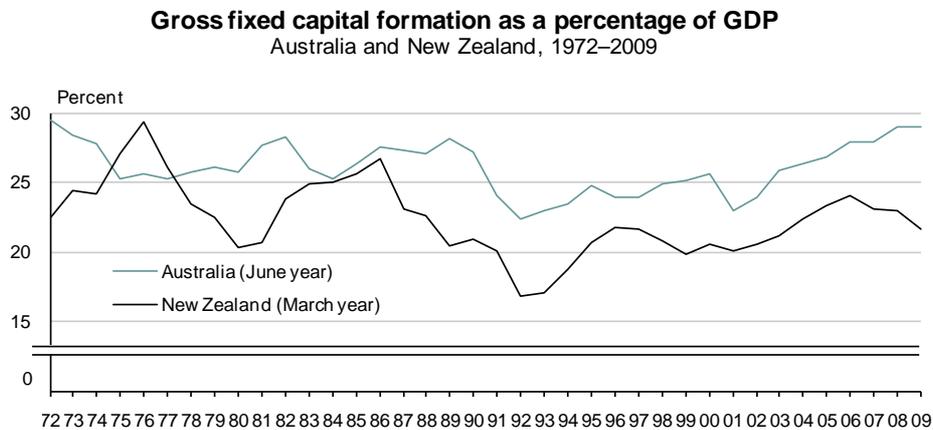
	Total economy		Measured sector	
	Australia	New Zealand	Australia	New Zealand
Capital stock / capital input	3.4	2.7	3.9	2.8
Hours worked / labour input	1.8	1.1	1.1	0.1
Capital to labour ratio	1.6	1.5	2.7	2.7

Table 4 shows that, for the whole economy, New Zealand and Australia experienced a similar degree of capital deepening. However, this was achieved differently in Australia than in New Zealand. In Australia, growth rates for both capital stock and hours worked were significantly higher than in New Zealand. Within the measured sector, capital to labour ratio growth has been identical in both countries from 1987. There is an even larger disparity between the input growth rates of Australia and New Zealand across the measured sector. As commented previously, New Zealand's labour input growth has been very weak, mainly due to labour shedding in the early years of the series.

Gross fixed capital formation as a proportion of GDP

Gross fixed capital formation (GFCF) as a proportion of GDP is a useful indicator of the level of capital intensity in an economy or industry.

Figure 25



Source: Statistics New Zealand and Australian Bureau of Statistics

Capital investment has generally been higher in Australia. New Zealand invested heavily in the manufacturing and energy sector in the 1970s and the 'Think Big' projects in the 1980s. Throughout the 1990s and up to 2006, the two series tracked each other quite closely, although Australia's capital investment was always higher over this time, as a percentage of GDP. Since 2006, the series have diverged considerably. During the past three years, Australia's current price GFCF has increased by 30 percent, while New Zealand's increased by only 4 percent. In fact, in 2009, GFCF declined by 4 percent in New Zealand as recession kicked in.

Appendix 1 Productivity research papers and statistics

Davis, G, & Ewing, R (2005). *Why has Australia done better than New Zealand? Good luck or good management?* Wellington: New Zealand Treasury.

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New Zealand Treasury (2008). *New Zealand's productivity performance.* Wellington: New Zealand Treasury. www.treasury.govt.nz/publications/research-policy/tprp/08-02.

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OECD (2010). *OECD Factbook 2010: economic, environmental and social statistics.* Paris: OECD. www.oecd.org/site/0,3407,en_21571361_34374092_1_1_1_1_1,00.html.

Statistics NZ (2007). *Extracting growth cycles from productivity indexes.* Wellington: Statistics NZ. www.stats.govt.nz/methods_and_services/information-releases/productivity-statistics.aspx.

Statistics NZ (2009). *Industry productivity statistics 1978–2008.* Wellington: Statistics NZ. www.stats.govt.nz/browse_for_stats/economic_indicators/productivity/industry-level-productivity-1978-2008.aspx.

Statistics NZ (2009). *Productivity statistics: sources and methods.* Wellington: Statistics NZ. www.stats.govt.nz/methods_and_services/information-releases/productivity-statistics.aspx.

Appendix 2 Tables

Tables prepared for the 2025 Taskforce, August 2010

Appendix tables

- 1 Index of real gross domestic product
- 2 Index of real gross domestic product per capita
- 3 Gross domestic product
- 4 Gross domestic product per capita
- 5 Gross national income per capita
- 6 Household consumption expenditure per capita
- 7 Purchasing power parities
- 8 Estimated resident population
- 9 Labour force summary statistics
- 10 Net migration rate