

**“No country for old men”: a note on  
the trans-Tasman income divide**

**Andrew Coleman and Hugh McDonald**

**Motu Working Paper 10-08  
Motu Economic and Public Policy Research**

**August 2010**

## **Author contact details**

Andrew Coleman  
Motu Economic and Public Policy Research  
Andrew.coleman@motu.org.nz

Hugh McDonald  
Motu Economic and Public Policy Research  
hugh.mcdonald@motu.org.nz

## **Acknowledgements**

The authors would like to thank The Treasury for financial support while writing this paper, and seminar participants at The Ministry of Women's Affairs. We would like to thank Sylvia Dixon, Dean Hyslop, and Dave Maré for providing us with some of the data.

## **Motu Economic and Public Policy Research**

PO Box 24390

Wellington

New Zealand

Email            info@motu.org.nz

Telephone      +64 4 9394250

Website        www.motu.org.nz

© 2010 Motu Economic and Public Policy Research Trust and the authors. Short extracts, not exceeding two paragraphs, may be quoted provided clear attribution is given. Motu Working Papers are research materials circulated by their authors for purposes of information and discussion. They have not necessarily undergone formal peer review or editorial treatment. ISSN 1176-2667 (Print), ISSN 1177-9047 (Online).

## **Abstract**

Although much work has been done analysing the possible causes of the New Zealand-Australian income gap, to date there has been little analysis of the extent to which this gap differs by gender and age. Using New Zealand and Australian employment and census data we examine these differences and find that (1) over the last 25 years the incomes of New Zealand women have declined less rapidly than those of New Zealand men, relative to Australian incomes; (2) this poor relative performance of New Zealand males was felt most by those in middle age; and (3) the stronger relative income growth of New Zealand females appears to be largely driven by increased public sector wage growth, and as such, its long term sustainability is questionable.

## **JEL codes**

J31, O57, F22

## **Keywords**

New Zealand , Australia, Wage differences, employment, gender, cohort analysis

## **Summary Haiku**

*Divided by the Tasman*

*Kiwis drop behind*

*But Bruce does worse than Sheila.*

# 1. Productivity Gaps and male-female wage differentials

An enduring policy issue concerns the gap between New Zealand and Australian incomes<sup>1</sup>. While there is no single best way of measuring the gap, most comparisons suggest that (1) New Zealand incomes were 15 - 18 percent lower than Australian incomes in 1981; (2) New Zealand incomes were 23 - 31 percent lower than Australian incomes in 2009; and (3) between 1981 and 2009 the gap between the two countries widened by approximately 8 - 11 percent of Australian incomes<sup>2</sup>. Although much of the relative deterioration occurred in the 1980s, the data indicate New Zealand incomes increased more slowly than Australian incomes between 1989 and 2009.

Even though much work has been done analysing the likely cause of this gap, so far there has been little analysis of the extent to which this gap differs by age and gender. In part, this lack of analysis reflects a dearth of disaggregated income data. The most obvious sources, tax data, are not generally available for analysis, and census income data, are subject to reporting and recording error. Nonetheless, analysis of industry wage levels suggests that male and female income patterns have evolved differently in Australia and New Zealand since 1989. Consequently, it is possible that a detailed analysis of these patterns may shed some light into the growing income gap between the two countries.

Table 1 shows average weekly wages in Australia and New Zealand in local current dollar terms in 1989 and 2009. The data are average weekly ordinary time wages (excluding overtime) for full time workers, all industries combined, from the quarterly surveys of employers in each country. The data show that nominal ordinary time wages for Australian male and female full time workers increased by almost the same fraction between 1989 and 2009, by 139 percent. In New Zealand, nominal ordinary time wages increased significantly less, 90 percent for men and 102 percent for women. Since consumer prices increased in Australia by only nine percent more than in New Zealand over this period, these data indicate a significant deterioration of New

---

<sup>1</sup> In recent years, papers analysing productivity and income trends in Australia and New Zealand include Parham and Roberts (2004), Davis and Ewing (2005), Margaritis et al (2005), NZIER (2006), and Le (2008). In 2009 the New Zealand Government funded a body called the 2025 Taskforce to investigate relative income trends in the two countries. Their first report was produced in November 2009 (2025 Taskforce, 2009.)

<sup>2</sup> A convenient measure is real GDP per capita, using year 2000 OECD based purchasing power parities. By this measure, in 1981 NZ incomes were 15% lower than Australian incomes, and in 2008 New Zealand incomes were 23% lower than Australian incomes. Note that this means Australian incomes were 18% and 30% higher than New Zealand incomes respectively. See 2025 Taskforce (2009) for further information.

Zealand real wages relative to Australian real wages for both males and females<sup>3</sup>. However, they also indicate that New Zealand men fell behind Australian men more rapidly than New Zealand women fell behind Australian women<sup>4</sup>.

Figure 1 shows the ratio of New Zealand and Australian ordinary time wages for full time workers, for both males and females<sup>5</sup> (The New Zealand wages are converted into Australian terms by multiplying by each year's purchasing power parity factor). With the exception of an increase in women's wages in New Zealand's relative to those in Australia since 2005, the data indicates that wages for New Zealand workers deteriorated with respect to Australian wages over most of the period. The figures also show that New Zealand women have earned less relative to Australian women than New Zealand men earned relative to Australian men over almost the whole period. However, this difference between New Zealand and Australian women's wages has steadily narrowed over time, and by 2008 New Zealand women were earning at a level just under 80 percent of Australian wages.

Figure 1 shows the trends in the ordinary time wages of full time employees. Trends in incomes reflect changes in the hours worked by average employees as well. The quarterly survey of employers in each country also records average wages of all workers, not just full time workers, thus allowing an analysis of how incomes have changed over time in each country, adjusting for hours worked. Because longer hours are worked in New Zealand than Australia, the income gap between Australia and New Zealand is not as large as the wage gap (see figure 2.) The relative deterioration in incomes and wages is similar, except that the incomes of New Zealand women declined less quickly than wages because of a relative increase in hours worked. As shown in figure 2, by this measure New Zealand women have been in a better position than New Zealand men relative to their Australian counterparts since 2002.

---

<sup>3</sup>Cross-country comparisons are bedeviled by the need to convert incomes in one country into incomes in another, and to adjust for the effects of inflation. Nonetheless, the post-1989 comparison between Australia and New Zealand is somewhat easier than most because the exchange rate has been reasonably stable, and the inflation rates in each country have been similar. While the consumer price index increased by 9 percent more in Australia than in New Zealand over the 20 year period, OECD estimates of purchasing power parity rates only increased by five percent more in Australia than New Zealand. As a convenient rule of thumb, one New Zealand dollar purchased approximately the same as \$0.91 Australian dollars throughout the period, varying from \$0.89 in 1989 to \$0.94 in 2008).

<sup>4</sup> The wage growth differential for men and women is greater than the figures in Table 1 if total weekly wages for full time workers are used instead of ordinary time wages. The respective figures are: Australian male wages increased by 132%; New Zealand male wages increased by 81%; Australian female wages increased by 136%; New Zealand female wages increased by 93%. Thus weekly total (full time) wages for New Zealand men fell further behind Australian wages than weekly ordinary time wages, because overtime increased by less.

<sup>5</sup> The trends for full time total wages (including overtime) are similar, except the relative position moved slightly in favour of women in 2008.

A different perspective on the same data is to look at the trends in male/female wage ratios in each country. The ratio of ordinary time wages for full-time employees for the period 1989 -2009 are shown in Figure 3<sup>6</sup>. The figure indicates that the 6 percent increase in wages New Zealand women experienced relative to New Zealand men after 2000 was not experienced in Australia, enabling the female/male ratio to increase to the Australian level. Again, this implies the income gap between Australia and New Zealand has widened more for men than for women.

This paper provides two different perspectives as to why the female and male wage gap between Australia and New Zealand has developed differently in the last three decades. In section 2, sector-specific wages are examined to ascertain if wage trends in the sectors that men and women are primarily employed have been different in New Zealand and Australia. It is shown that two sectors that employ a lot more women than men – health and education – had the highest wage growth in New Zealand relative to Australia, and that this accounts for most of the differential since 2002. In section 3, census data are used to examine income growth through time for different age and gender groups in both countries. There it is shown that middle-aged men have experienced lower income growth relative to Australia than any other demographic group. This seems to be because they responded to the economic restructuring that occurred in both countries in the 1980s and 1990s worse than any other group. While it is not known why mid-life New Zealand men had worse relative outcomes than other groups, there is some evidence that younger men and women did not fall behind Australians as fast as this group.

## 2. Wage growth by sector

Australia-New Zealand wage differentials can be decomposed into parts that represent the extent that wages in the same sectors in each country are different, and the extent that people in each country work in sectors that pay different amounts. The decomposition is most easily done if geometric averages are calculated. Let  $W_{it}^N$  and  $W_{it}^A$  be the logarithm of wages in sector  $i$  at time  $t$  in each country, and  $\pi_{it}^N$  and  $\pi_{it}^A$  be the fraction of the workforces working in each sector. The logarithm of the geometric mean wage in New Zealand is:

$$W_t^N = \sum_i \pi_{it}^N W_{it}^N \quad (1)$$

and the New Zealand -Australia wage differential (in percent) is

---

<sup>6</sup> Figures 1 and 2 do not include the data for 2009 as a PPP adjustment factor is not yet available for that year.

$$\begin{aligned}
W_t^N - W_t^A &= \sum_i \pi_{it}^N W_{it}^N - \pi_{it}^A W_{it}^A \\
&= \sum_i \pi_{it}^N (W_{it}^N - W_{it}^A) + (\pi_{it}^N - \pi_{it}^A) W_{it}^A
\end{aligned} \tag{2}$$

Differencing this expression through time,

$$\begin{aligned}
\Delta(W_{t+1}^N - W_{t+1}^A) &= \sum_i \pi_{it+1}^N (W_{it+1}^N - W_{it+1}^A) + (\pi_{it+1}^N - \pi_{it+1}^A) W_{it+1}^A - \sum_i \pi_{it}^N (W_{it}^N - W_{it}^A) - (\pi_{it}^N - \pi_{it}^A) W_{it}^A \\
&\cong \sum_i \Delta \pi_{it+1}^N (W_{it}^N - W_{it}^A) + \sum_i \pi_{it}^N \Delta (W_{it+1}^N - W_{it+1}^A) \\
&\quad + \sum_i \Delta (\pi_{it+1}^N - \pi_{it+1}^A) W_{it}^A + \sum_i (\pi_{it}^N - \pi_{it}^A) \Delta W_{it+1}^A
\end{aligned}$$

Table 2 shows this breakdown for Australian and New Zealand wage differentials, 1994-2002 and 2002-2009. The sector-specific wage data are the December quarter ordinary time full time equivalent wages from the quarterly employment surveys in each country. The sector weightings from Australia are based on the Australian Labour Market Statistics<sup>7</sup>. The sector weightings for New Zealand are based on the Quarterly Employment Survey<sup>8</sup>. The table shows that the average wage difference for both males and females is dominated by the differences in wages within each sector, rather than by the sectoral composition of the workforce. For instance, in 2009 only 0.6 percentage points of the 24 percentage point nominal wage difference for female workers occurred because New Zealand women worked in different sectors than Australian women; the rest occurred because New Zealand women working in the same sectors as their Australian counterparts earned lower wages. A similar result holds for men, although there is a more pronounced tendency for New Zealand men to be working in relatively low paid sectors compared to Australian men<sup>9</sup>.

The table also indicates that the increases in the wage differentials for both males and females were dominated by changes in wage rates in the same sectors in the two countries, rather than by differences in the rates at which people switched from one sector to another. For example, 16 percentage points of the 18 percentage point increase in the male wage gap between

<sup>7</sup> Australian Labour Market Statistics 6105.0. The data are from tables 3 and 4: Employed persons by sex, full-time/part-time and industry ANZSIC 1993/2006. Employment was calculated as full-time employees plus half of part-time employees. The categories are slightly different than those used in New Zealand, and were re-aggregated to be consistent with New Zealand data.

<sup>8</sup> New Zealand Quarterly Employment Survey: Full-Time Equivalent Employees by Industry (ANZSIC06) and Sex (December quarter).

<sup>9</sup> Newell (2009) used the same data to examine employment patterns by sector in Australia and New Zealand, with similar results. He did not examine wage patterns, however.

1994 and 2009 were caused by smaller increases in New Zealand wages than Australian wages within the same sectors.

Since most of the increase in the wage gap can be attributed to changes in wages within sectors, it is of interest to analyse the extent to which sector-specific wages in the two countries changed through time. Tables 3a (males) and 3b (females) show ordinary-time full time wage patterns by sector. The tables show (a) average weekly wages in Australia and New Zealand in 2009; (b) each sector's gender-specific average wage premium in Australia (the sector wage divided by the average wage in Australia); (c) real wage growth by sector in New Zealand compared to real wage growth in Australia over three different periods: 1994-2009, 1994-2002, 2002-2009; and (d) the fraction of male or female workers in each sector in New Zealand in 2009. The sectors are listed in order of New Zealand's sector-specific real wage growth differential with Australia between 1994 and 2009, with the worst performing sectors listed at the top of the table.

The data can be interpreted in several ways. First, they can be used to show the distribution of relative real wage growth between Australia and New Zealand. The cumulative distributions for men and women for the 1994-2002 period are shown in figure 4a (using 1994 sectoral employment patterns as weights), while the distributions for 2002- 2009 are shown in figure 4b (using 2002 employment patterns as weights). Each graph shows the fraction of men and women who worked in sectors where average real wage growth in New Zealand exceeded average wage growth in Australia by a certain amount.

Figures 4a and 4b are strikingly different. Figure 4a shows that the cumulative distribution functions for New Zealand men and women were rather similar between 1994 and 2002, with New Zealand men doing only slightly worse than women with respect to their Australian counterparts. The data show that half of New Zealand women worked in sectors where real wage increases were at least 3 percent lower than in Australia, and half of New Zealand men worked in sectors where real wages increases lagged those in Australia by at least 5 percent. In total, only 20 percent of men and women worked in sectors where real wage increases were higher than in Australia. For male workers these sectors were construction, education, health, and electricity, while for female workers these sectors were construction, education, wholesale trade, and forestry and mining.

Table 4b shows the same figures for 2002-2009. The figure shows that New Zealand women experienced much higher wage growth than New Zealand men, and in fact had similar wage growth to Australian women. The median New Zealand woman worked in a sector where



real wage growth was at least as high in New Zealand as in Australia; in contrast, 50 percent of men worked in sectors where average real wage growth was 5 percent less than in Australia, and only 14 percent of men worked in sectors where real wage growth was higher in New Zealand than Australia. These differences are the reason why male wages have declined much faster than female wages with respect to Australia in the last decade.

The data in table 3b shows that there were four main sectors in which New Zealand women experienced higher real wage increases than Australian women: education and training (14 percent of the female workforce); health care and social assistance (18.5 percent of the female workforce); the professional, scientific, technical and administrative sector (13 percent of the female workforce) and arts and recreation (5 percent of the female workforce.) In both health and education, New Zealand women experienced real wage increases 10 percent higher than Australian women, meaning that these two sectors accounted for all of the overall increase in wages between New Zealand and Australia over the period. Indeed, the healthcare and education sectors were the only two sectors where women had higher real wages increase in New Zealand than Australia over the whole period, 1994 – 2009.

The healthcare and education sectors in New Zealand are overwhelmingly female – only 9 percent of men work in these sectors, compared to 32 percent of women. Moreover, men typically work in different parts of these sectors, and did not get such high wage increases as women over the period. Consequently, one of the main reasons that women’s wages in New Zealand increased with respect to men’s wages after 1994 is the relatively large increase in wages in these two sectors, particularly for female workers. Without these increases, women’s wages in New Zealand would not have increased so rapidly compared to men’s wages in New Zealand, and would not have increased relative to women’s wages in Australia.

Wages changes in the health and education sectors are primarily determined by and paid by the Government. Since they are largely funded out of general taxation, it is not sustainable for wage increases in these sectors to exceed wage increases in the rest of the economy in the long run<sup>10</sup>. For this reason it may be premature to conclude that the decline in New Zealand women’s wages relative to Australian women’s wages has stopped, and even reversed. Rather, the small rise in women’s wages in New Zealand relative to those in Australia that occurred between 2002

---

<sup>10</sup> Note, however, that since education and good health raise incomes, it is possible that raising incomes of workers in the health and education sectors could leader to improvements in health and education outcomes for people using these services, raising incomes elsewhere in the economy. In these circumstances wage rises in these sectors could be sustainable in the long run.

and 2009 may merely prove to be temporary upward blip caused by a Government inspired realignment of wages in the health and education sectors<sup>11</sup>.

### **3. Age and cohort analysis of census data.**

Australian and New Zealand census data can be used to trace out income paths of different aged groups of men and women in both countries. Each country has censuses every five years: income data are available in New Zealand from 1966 onwards, but only from 1976 in Australia, and even then the 1976 data are not considered completely reliable. The data can be used to calculate moments such as the mean or median of the income distribution for each age-gender group. These moments can then be used (i) to trace the path of wages through time for a particular age-gender group (such as 45-49 year old males) and (ii) to trace the lifecycle earning through time of a particular cohort (such as males born from 1951-1955)<sup>12</sup>.

There are some potential difficulties with these data. First, the estimates of mean and median income are affected by the census reporting process, which details the number of people in various income bands. The real size of the income bands varies from census to census, and on some occasions - particularly 1991 in New Zealand – the upper band is very low, lowering the estimated mean income. Secondly, average income depends not only earnings but participation rates, and it can be difficult to make inferences about the growth rates of average earnings from information about average incomes. To some extent this problem can be countered by calculating income moments including or excluding those reporting zero income; nonetheless, even then the data reflect changes in hours worked and unemployment spells as well as full time earnings. It is noteworthy that real income patterns reported in the New Zealand census appear quite volatile.

The income data from the census can be compared with quarterly earnings data analysed in section 2. In both countries, full time earnings for males from the quarterly employment surveys are very similar to average earnings for males aged 35-39 from the census, and full time earnings for females from the quarterly employment surveys are very similar to upper quartile earnings for females aged 25-29 from the census. Women's full time wages are significantly higher than the average incomes reported in the census, however, because many women work

---

<sup>11</sup> Gibson (2009) discusses the increase in public sector wages that occurred between 2003 and 2007, and argues that it did not reflect either a change in the average characteristics of private or public sector workers, nor the different attributes of their jobs.

<sup>12</sup> This material extends earlier work by Easton (1997), who examined income trends by cohort up to 1996 using New Zealand census data, and Coleman (2006), who examined trends up to 2001. Neither compared with Australian data.

less than full time. The relationship between the two data series is closer in Australia than in New Zealand, but in both it is sufficiently strong to suggest that the census income data are not prohibitively inaccurate.

### **Results – 1981 to 2006**

The census data, deflated using the consumer price index, show that Australian mean real incomes increased by 49.4% over the period 1981-2006. Over the same period New Zealand's mean income increased by only 36.2%<sup>13</sup>. By disaggregating this general relative decrease, we can pinpoint the groups within New Zealand whose real income growth is relatively strong or weak. To achieve this we look at four different real income averages, the mean, the median, the earnings of those in the 25<sup>th</sup> percentile and the earnings of those in the 75<sup>th</sup> percentile. All averages are calculated excluding those who earn zero incomes.

Table 4 shows real 2006 income levels for different demographic groups compared to their levels in 1981. The 1981 level for each group is set to 100, so the figures can be interpreted as the percentage increase in income over the 25 year period. The first row of the table indicates that average real (CPI-deflated) incomes for New Zealand males had typically decreased by a small amount over the 25 year period, in comparison to a 15 – 40 percent increase for Australian males. The table further shows that the relative – and in many cases absolute – decline occurred at all points in the income distribution, and was greater at older ages than younger ages. Female incomes increased less rapidly in New Zealand than in Australia as well, but in both countries there was a substantial increase, in part driven by changes in participation rates. As noted in section 1, hours worked by New Zealand females appear to have increased faster than hours worked by Australian females (which appear to have fallen) helping to maintain the ratio of New Zealand/ Australia female incomes, even if wages did not keep up. The data suggest lower quartile and median wages for New Zealand women aged in their 30s and 40s kept up with those Australia, unlike the situation for New Zealand men.

Tables 5a and 5b provide additional information on the evolution of Australian and New Zealand incomes through time. There are two notable features of the data for New Zealand males. First, low income males were the hardest hit group in each country, but worse affected in New Zealand than Australia (see Figure 5). In New Zealand real incomes were 15- 20 percent lower in 2006 than they had been in 1981 for each age group. While Australian males earning at

---

<sup>13</sup> Using OECD data, the respective figures are 62% and 48% growth, or approximately 12 percent more over the 25 year period. The difference between the CPI-deflated census data and the OECD data may reflect differences in the price deflators. Note that the difference in the growth rates between the two countries is the same. Moreover, since we are primarily interested in comparing male and female growth paths, the differences in the deflators will not matter.

the 25<sup>th</sup> percentile also saw very little income growth over this time period, only the 30 year old age group saw their incomes fall, and only by 5%.

Second, the relative decline by New Zealand males is greater at older age groups. While the incomes of New Zealand 30 year old men fell behind their Australian counterparts by an average of approximately 20% over the 1981 – 2006 period, New Zealand's older males have seen far poorer income growth. The mean income for 50-year-old males in New Zealand in 2006 was nearly exactly the same in real terms as in 1981. In contrast, in Australia mean male incomes for 50 year old males had grown by over 39%. New Zealand mean 40 year old male incomes declined by 4% in real terms over this 25 year period while Australia's grew by 31%. These results hold for the median and quartile measures as well, indicating significant income deterioration for middle aged New Zealand males relative to their Australian counterparts.

The contrast between New Zealand males and females is quite marked. While mean real income growth of New Zealand women over the period was on average 15% lower than that of Australian women, New Zealand women's incomes increased by approximately 40 percent. 30-year-old and 40-year-old women earning at the bottom of the income scale (as represented by the lower quartile income level) increased their incomes at a similar rate to Australian women, in part because of changes in hours worked. The gap in upper quartile incomes, which most closely reflect full time female wages, continued to widen, albeit at smaller rates than for men. The growth rates of median female wages are shown in Figure 6.

### **Cohort Analysis**

The census data can also be used to trace the lifetime income paths of cohorts born in different years. Since censuses are conducted in five yearly intervals, and most record income levels for people in a five year age interval, the lifecycle earnings of a cohort can be traced through successive censuses. If there is economic growth through time, each later born cohort should earn more at any particular age than an earlier born cohort. A graph tracing lifecycle income of successive cohorts should show a sequence of steadily rising lifecycle curves.

Figure 7 traces out median Australian male incomes by cohort. The figure shows that at most ages later born cohorts earned more than earlier born cohorts. This can be clearly seen by looking at the data points for the different cohorts at age forty – those born in 1966 earn more in real terms at age forty than those born in 1961, who earn more than those born in 1956, who earn more than those born in 1936. There are a couple of exceptions to the rule that successive generations earned higher incomes at the same age, however. First, median incomes at age 20 have not been increasing through time, probably due to rising school leaving ages and increasing

tertiary enrolment rates. Secondly, the cohort born in 1961 – 1965 earned marginally less at ages 20 – 39 than those born five years earlier, while the cohort born 1966-1970 earned significantly less at ages 20 – 34 than those born five or 10 years earlier. This in part reflects the structuring of the Australian economy during the 1980s and the early 1990s. By 2001 the natural order of growth had been restored for all cohorts, with each cohort earning more than their older peers at the same age.

The median New Zealand male income cohort graph is quite different (see Figure 8). The different earnings for successive cohorts at age 25 dramatically illustrate the poor performance of the New Zealand economy for males since 1981. The highest real incomes at age 25 were earned by those born in 1956, followed by those born in 1961; those born in 1966-1976 fared appreciably worse. In general, those born between 1956 and 1970 did not earn more than their older peers when they were in their prime working ages; in fact, they often earned less, partly because wages for most age groups reached a peak in 1981 that was not attained again until 2006. It should be noted that there are tentative signs that incomes for the youngest male cohorts are on a rising path, however. Similarly to young Australian males, young New Zealand males are earning more than their elder peers at any age, even if they still have an income gap with their Australian counterparts.

The female cohort graphs tell quite different stories to the male ones. In general, for both Australia and New Zealand, successive cohorts have higher median incomes at ages above 30. The increase is most noticeable for New Zealand women, perhaps because the number of hours worked increased faster in New Zealand than Australia.

It is possible that different education experiences explain the different income growth patterns in Australia and New Zealand. However, aggregate level data does not provide good evidence that this is the case. Table 6 reports the fraction of different age-gender groups with upper high school and tertiary education qualifications in New Zealand and Australia, using data compiled by the OECD (OECD 2009). It shows completion rates by age are very similar in the two countries: Australia currently has slightly higher numbers completing high school, and slightly lower numbers completing tertiary qualifications, but overall the differences are small. While much higher numbers of young people have qualifications than older people, the changes through time in each country are similar. It therefore seems unlikely that aggregate changes in education qualifications explains the different income patterns in the two countries.

#### **4. Conclusion**

This note has examined the development of male and female incomes in Australian and New Zealand over the last 25 years. It demonstrates that New Zealand female incomes declined

less rapidly with respect to Australian incomes than New Zealand males incomes, and that by 2008 New Zealand women were slightly better off relative to their Australian counterparts than New Zealand men. The improvement for New Zealand women represents a rise in the ratio of female to male incomes that occurred in New Zealand but not Australia after 2000, in large part due to an increase in incomes in the health and education sectors. Nonetheless, both male and female incomes have deteriorated in New Zealand with respect to Australian incomes since 1989.

The data suggest that the deterioration of New Zealand women's incomes with respect to Australian women's incomes stopped and even reversed after 2002. It is unclear whether the downward trend has permanently ceased, as it was largely due to higher average wage increases in the health and education sectors, which are unlikely to continue unless wages in other sectors also increase. There is little evidence that the trans-Tasman wage gap for New Zealand men has stopped widening, although younger cohorts are falling behind their Australian counterparts at a slower rate than older cohorts.

The evidence suggests that the deterioration of New Zealand incomes has been most marked for middle-aged New Zealand males. While both Australian and New Zealand males suffered falling or static incomes during the reform period of the 1980s and 1990s, incomes for Australian males but not New Zealand males recovered. Australian men born in 1956 and 1961 earned more than Australian men born in 1936 when they were in the prime working ages, 35 – 45. New Zealand men born in these years did not. There are signs that incomes for these male cohorts are finally rising again in New Zealand. Nonetheless, part of the widening gap in the average wages earned by New Zealanders and Australians is the result of the differing experiences of middle-aged men in these two countries after 1980.

## References

- 2025 Taskforce (2009) *Answering the \$64000 question: Closing the income gap with Australia by 2025. The first report of the 2025 Taskforce, November 2009.* (Wellington: New Zealand Government)
- Australian Bureau of Statistics (1976 – 2006) *Australian Census 1976- 2006* (Canberra: Australian Bureau of Statistics)
- Australian Bureau of Statistics (1981 – 2009) *Average Weekly Earnings, States and Australia: Catalogue No 6302.0* (Canberra: Australian Bureau of Statistics, various dates)
- Coleman, A.M.G. (2006) “Income and Saving in New Zealand: an age cohort analysis,” paper prepared for the Reserve Bank of New Zealand conference “Housing, savings, and the household balance sheet,” November 14 2006.
- Davis, Graeme and Robert Ewing (2005) “*Why has Australia done better than New Zealand? Good luck or good management?*” Australian Treasury Working Paper 2005-01
- Easton, Brian (1997) *In Stormy Seas: The Post-War New Zealand Economy* (Dunedin: University of Otago Press)
- Gibson, John (2009) “The rising public sector pay premium in the New Zealand labour market.” *New Zealand Economic Papers* 43(3) 255-261.
- Le, Trinh (2008) “When will New Zealand catch up with Australia?” NZIER Working Paper 2008/03.
- Margaritis, Dimitri, Frank Scrimgeour, Michale Cameron, and John Tressler (2005) Productivity and Economic Growth in Australia, New Zealand, and Ireland. *Agenda* 12 (4) 291-308.
- Newell, James (2009) “A comparison of New Zealand and Australian labour markets: current similarities and long term trends.” MERA working paper 2009/02
- NZIER (2006) “The New Zealand-Australian income differential” NZIER Working Paper 2006/05
- OECD (2009). *Education at a Glance 2009 – OECD Indicators*. France: OECD Publishers. Available at <http://www.oecd.org/edu/eag2009> (Accessed 30/8/2010)
- Statistics New Zealand (1981 – 2009) *Quarterly Employment Survey 1981 – 2009* (Wellington: Statistics New Zealand,)
- Statistics New Zealand (1966 – 2006) *New Zealand Census of Population and Dwellings. 1966 - 2006* (Wellington: Statistics New Zealand)
- Statistics New Zealand (1997) *1996 Census of Population and Dwellings: National Summary* (Wellington Statistics New Zealand October 1997)

**Table 1 – Average ordinary time wages, full time workers, 1989 – 2009**

	Male			Female		
	Australia	NZ	NZ/AU	Australia	NZ	NZ/AU
1989	\$A534	\$NZ529	99.0%	\$A443	\$NZ412	93.0%
2009	\$A1279	\$NZ1006	78.7%	\$A1061	\$NZ832	78.4%
<i>increase</i>	139%	90%	-20.4%	139%	102%	-14.6%

**Table 2: Decomposition of the nominal Australia – New Zealand wage differential**

	Males				Females		
	1994	2002	2009		1994	2002	2009
Wage differential (levels)							
$\sum_i \pi_{it}^N (W_{it}^N - W_{it}^A)$	-6.0%	-16.7%	-23.9%		-16.3%	-25.5%	-23.2%
$\sum_i (\pi_{it}^N - \pi_{it}^A) W_{it}^A$	-2.2%	-2.0%	-3.0%		0.7%	0.4%	-0.6%
$W_t^N - W_t^A$	-8.2%	-18.7%	-26.9%		-15.6%	-25.0%	-23.8%
Wage differential growth rate							
	1994-2002	2002-2009	1994-2009		1994-2002	2002-2009	1994-2009
$\sum_i \Delta \pi_{it+1}^N (W_{it}^N - W_{it}^A)$	-0.9%	0.1%	-0.8%		-0.7%	-0.5%	-1.2%
$\sum_i \pi_{it}^N \Delta (W_{it+1}^N - W_{it+1}^A)$	-9.8%	-7.0%	-16.7%		-8.2%	2.0%	-6.3%
$\sum_i \Delta (\pi_{it+1}^N - \pi_{it+1}^A) W_{it}^A$	0.2%	-0.2%	0.0%		0.0%	-0.6%	-0.5%
$\sum_i (\pi_{it}^N - \pi_{it}^A) \Delta W_{it+1}^A$	0.3%	-1.0%	-0.7%		-0.2%	-0.2%	-0.4%
$\Delta (W_{t+1}^N - W_{t+1}^A)$	-10.1%	-8.2%	-18.3%		-9.1%	0.7%	-8.4%



**Table 3a Male wages in Australia and New Zealand by sector**

Sectors ordered by New Zealand relative wage growth, 1994-2009.

Sector	NZ weekly wages	Aust weekly wages	Aust Wage %	Growth 1994-2009	Growth 1994-2002	Growth 2002-2009	% NZ male jobs
Information Media Telecommunications	1,370	1,562	19%	-20.9%	-14.8%	-7.3%	2.2%
Rental, Hiring and Real Estate	1,116	1,433	9%	-18.6%	-13.6%	-5.7%	1.2%
Arts, Recreation and Other Services	839	1,174	-10%	-18.3%	-12.7%	-6.4%	5.3%
Professional, Admin, Technical, Science	1,204	1,613	23%	-15.1%	-9.1%	-6.6%	12.5%
Wholesale Trade	1,092	1,248	-5%	-13.7%	-5.1%	-9.1%	8.0%
Construction	894	1,269	-3%	-13.7%	1.7%	-15.2%	11.8%
Public Admin and Safety	1,211	1,342	2%	-12.5%	-8.6%	-4.3%	6.3%
Retail Trade	673	990	-25%	-10.7%	0.7%	-11.4%	8.5%
Manufacturing	930	1,168	-11%	-8.6%	-3.0%	-5.8%	19.5%
Accommodation and Food Services	622	954	-27%	-7.5%	-5.4%	-2.1%	4.6%
Health Care and Social Assistance	1,347	1,489	14%	-7.5%	2.1%	-9.4%	3.7%
Forestry and Mining	1,123	2,000	53%	-6.6%	-2.0%	-4.6%	1.4%
Financial and Insurance Services	1,787	1,642	25%	-1.6%	-9.0%	8.1%	2.4%
Electricity, Gas, Water and Waste	1,246	1,376	5%	-1.2%	3.1%	-4.1%	0.9%
Transport, Postal and Warehousing	998	1,123	-14%	3.6%	-8.2%	12.9%	6.3%
Education and Training	1,235	1,366	4%	7.9%	6.6%	1.2%	5.4%
All sectors combined	1,024	1,311		-10.7%	-4.4%	-6.7%	

Column 1: New Zealand ordinary time wages, weekly, \$NZ, 2009

Column 2: Australian ordinary time wages, weekly, \$AU, 2009

Column 3: Australian sectoral wage premium compared to Australian average wages

Column 4: difference between real wage growth in New Zealand and Australia, 1994 – 2009.

Real wage growth is nominal wage growth deflated by the change in the consumer price index.

Column 5: difference between real wage growth in New Zealand and Australia, 1994 - 2002

Column 6: difference between real wage growth in New Zealand and Australia, 2002- 2009

Column 7: fraction of New Zealand male workers in sector in 2009.

**Table 3b Female wages in Australia and New Zealand by sector**

Sectors ordered by New Zealand relative wage growth, 1994-2009.

Sector	NZ weekly wages	Aust weekly wages	Aust Wage %	Growth 1994-2009	Growth 1994-2002	Growth 2002-2009	% NZ female jobs
Information Media Telecommunications	998	1291	19%	-22.3%	-19.6%	-3.3%	2.2%
Construction	710	1011	-7%	-13.7%	5.0%	-17.8%	1.4%
Rental, Hiring and Real Estate Services	821	990	-8%	-7.1%	-5.2%	-2.0%	1.7%
Financial and Insurance Services	1039	1175	9%	-6.5%	-4.3%	-2.3%	4.1%
Electricity, Gas, Water and Waste	1044	1194	10%	-6.0%	-8.4%	2.6%	0.4%
Retail Trade	586	844	-22%	-5.5%	-5.9%	0.4%	11.9%
Transport, Postal and Warehousing	812	1063	-2%	-5.0%	-15.0%	11.7%	2.8%
Public Admin and Safety	1035	1228	14%	-4.8%	-2.3%	-2.5%	6.4%
Accommodation and Food Services	549	822	-24%	-4.4%	-3.2%	-1.2%	7.1%
Arts, Recreation and Other Services	652	963	-11%	-2.6%	-13.8%	13.0%	5.2%
Wholesale Trade	853	968	-10%	-1.4%	9.8%	-10.2%	4.3%
Professional, Admin, Technical, Science	914	1187	10%	-1.3%	-4.3%	3.1%	13.2%
Manufacturing	740	961	-11%	-1.0%	-0.6%	-0.4%	6.9%
Forestry and Mining	981	1564	45%	-0.4%	23.6%	-19.5%	0.1%
Health Care and Social Assistance	918	1051	-3%	7.0%	-2.6%	9.8%	18.5%
Education and Training	1079	1232	14%	18.7%	7.4%	10.5%	13.8%
All sectors combined	846	1081		-1.0%	-3.4%	2.5%	

Column 1: New Zealand ordinary time wages, weekly, \$NZ, 2009

Column 2: Australian ordinary time wages, weekly, \$AU, 2009

Column 3: Australian sectoral wage premium compared to Australian average wages

Column 4: difference between real wage growth in New Zealand and Australia, 1994 - 2009

Column 5: difference between real wage growth in New Zealand and Australia, 1994 - 2002

Column 6: difference between real wage growth in New Zealand and Australia, 2002 - 2009

Column 7: fraction of New Zealand female workers in sector in 2009.

**Table 4. Level of 2006 real incomes indexed with a base year of 1981=100.**

	<b>Males</b>					
	<b>New Zealand</b>			<b>Australia</b>		
<b>Age</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>30</b>	<b>40</b>	<b>50</b>
Mean	92	96	100	115	131	139
Median	91	96	98	109	126	134
25 <sup>th</sup> Percentile	82	84	82	95	106	108
75 <sup>th</sup> Percentile	102	106	111	121	138	148
	<b>2. Females</b>					
<b>Age</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>30</b>	<b>40</b>	<b>50</b>
Mean	141	131	148	166	149	169
Median	169	135	154	172	135	174
25 <sup>th</sup> Percentile	240	162	224	240	137	172
75 <sup>th</sup> Percentile	137	128	140	152	145	162

**Note,** all averages are calculated excluding those earning zero incomes.

**Table 5(a): Male real income levels indexed with base 1981=100**

<b>Males</b>								
<b>Mean</b>	<b>New Zealand</b>	<b>1981</b>	<b>1986</b>	<b>1991</b>	<b>1996</b>	<b>2001</b>	<b>2006</b>	
	Age 30	100	96	76	82	87	92	
	40	100	96	78	89	95	96	
	50	100	95	76	91	98	100	
	<b>Australia</b>							
	Age 30	100	99		95	108	115	
	40	100	105		108	120	131	
	50	100	101		117	129	139	
	<b>Median</b>	<b>New Zealand</b>	<b>1981</b>	<b>1986</b>	<b>1991</b>	<b>1996</b>	<b>2001</b>	<b>2006</b>
		Age 30	100	89	79	81	83	91
40		100	94	85	87	86	96	
50		100	91	81	87	87	98	
<b>Australia</b>								
Age 30		100	98		92	103	109	
40		100	103		104	116	126	
50		100	99		110	124	134	
<b>25<sup>th</sup> Percentile</b>		<b>New Zealand</b>	<b>1981</b>	<b>1986</b>	<b>1991</b>	<b>1996</b>	<b>2001</b>	<b>2006</b>
		Age 30	100	83	66	67	69	82
	40	100	88	73	73	71	84	
	50	100	85	67	70	69	82	
	<b>Australia</b>							
	Age 30	100	95		80	90	95	
	40	100	98		89	97	106	
	50	100	92		90	102	108	
	<b>75<sup>th</sup> Percentile</b>	<b>New Zealand</b>	<b>1981</b>	<b>1986</b>	<b>1991</b>	<b>1996</b>	<b>2001</b>	<b>2006</b>
		Age 30	100	90	86	88	89	102
40		100	93	92	93	92	106	
50		100	92	88	97	96	111	
<b>Australia</b>								
Age 30		100	101		98	113	121	
40		100	107		112	131	138	
50		100	102		122	143	148	

**Note,** all averages are calculated excluding those earning zero income

Table 5(b): Female real income levels indexed with base 1981=100

Females							
Mean	New Zealand	1981	1986	1991	1996	2001	2006
	Age 30	100	112	100	116	136	141
	40	100	117	103	115	128	131
	50	100	123	103	119	139	148
	Australia						
	Age 30	100	108		137	177	166
	40	100	105		127	158	149
	50	100	104		141	184	169
	Median	New Zealand	1981	1986	1991	1996	2001
Age 30		100	93	103	114	140	169
40		100	96	102	110	120	135
50		100	97	98	115	134	154
Australia							
Age 30		100	111		136	163	172
40		100	104		114	130	135
50		100	105		139	165	174
25 <sup>th</sup> Percentile		New Zealand	1981	1986	1991	1996	2001
	Age 30	100	77	129	161	197	240
	40	100	105	123	132	144	162
	50	100	143	143	157	185	224
	Australia						
	Age 30	100	121		179	227	240
	40	100	101		114	134	137
	50	100	104		129	156	172
	75 <sup>th</sup> Percentile	New Zealand	1981	1986	1991	1996	2001
Age 30		100	86	96	108	124	137
40		100	92	102	107	118	128
50		100	93	100	110	126	140
Australia							
Age 30		100	106		120	142	152
40		100	105		119	135	145
50		100	102		128	150	162

Note, all averages are calculated excluding those earning zero incomes.

Table 6 Education attainment by age in Australia and New Zealand, percentages, 2007

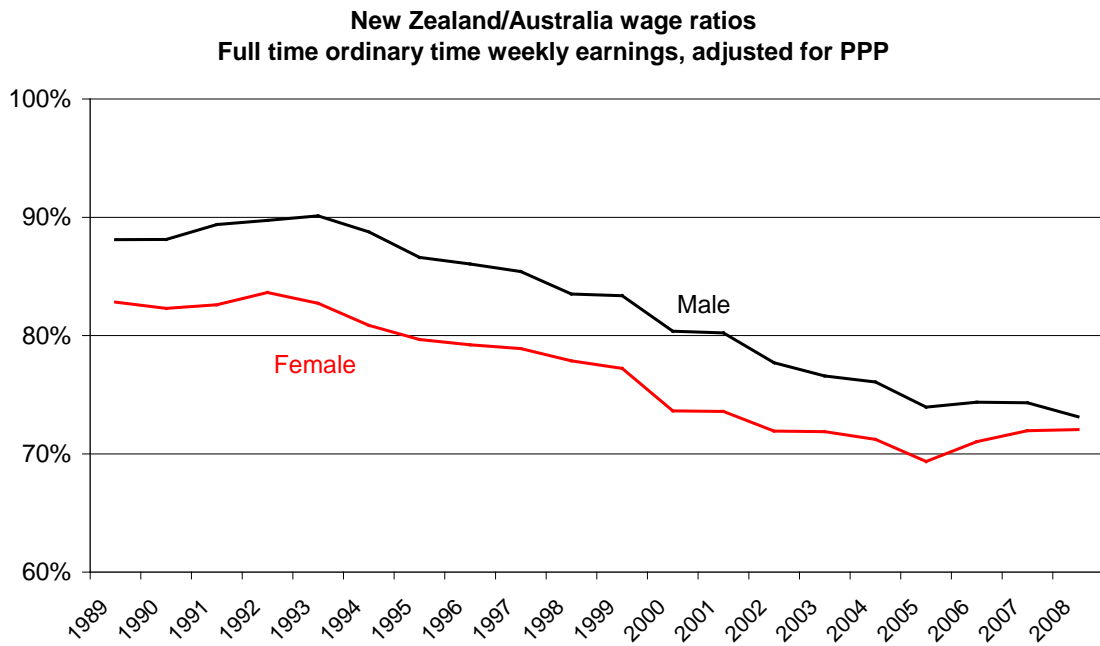
	Male			
	UpperHigh School		Tertiary degree	
	New Zealand	Australia	New Zealand	Australia

25-34	78	80		29	27
35-44	75	73		26	23
45-54	72	71		23	23
55-64	66	64		21	19

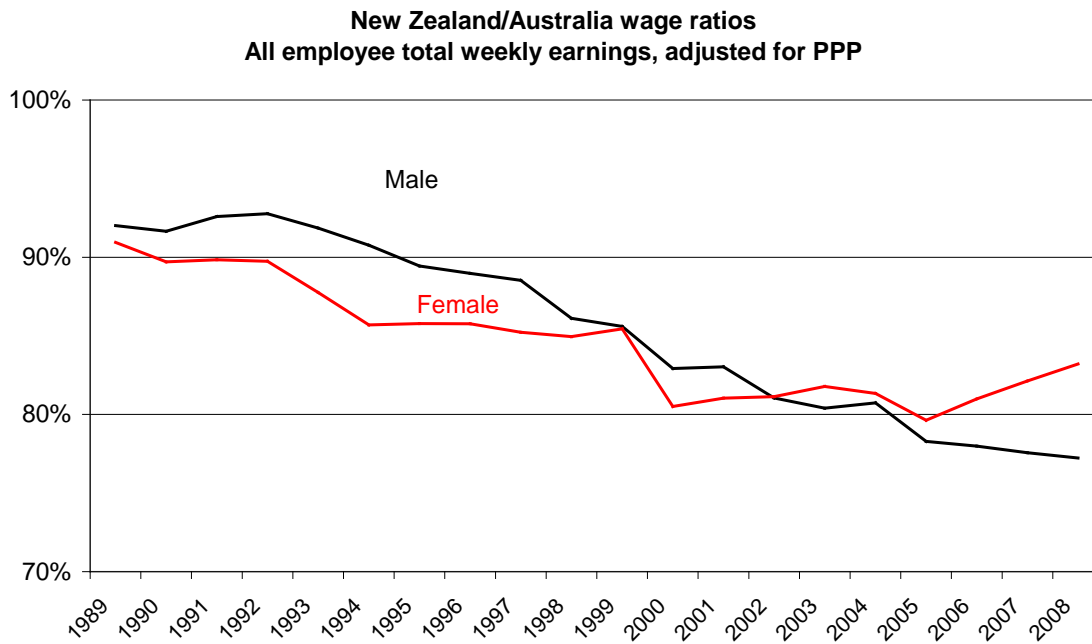
	Female				
	UpperHigh School			Tertiary degree	
	New Zealand	Australia		New Zealand	Australia
25-34	82	83		37	34
35-44	72	67		27	26
45-54	68	58		22	22
55-64	54	45		15	16

Source: OECD (2009) Tables 2, 3.

Figure 1



**Figure 2**



**Figure 3**



Figure 4a

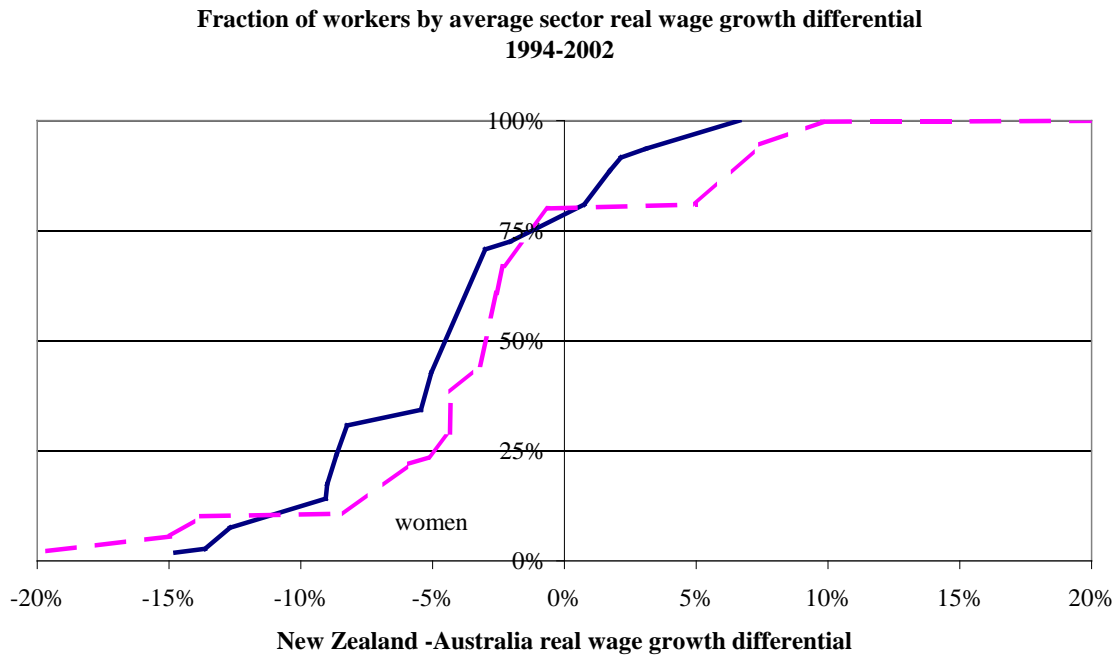


Figure 4b

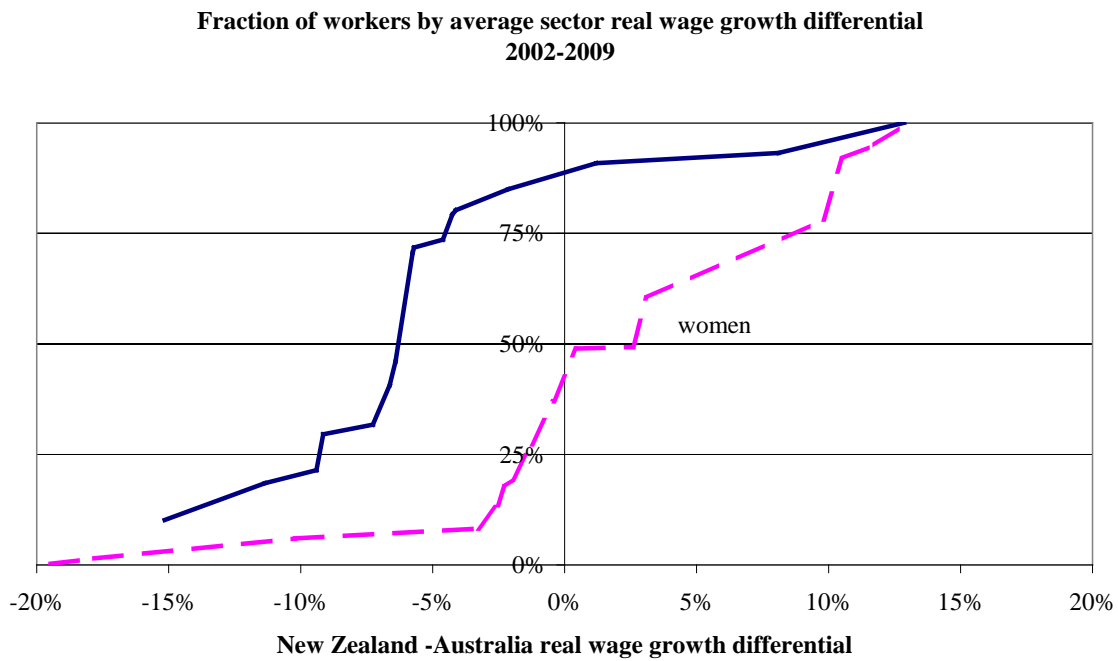




Figure 5

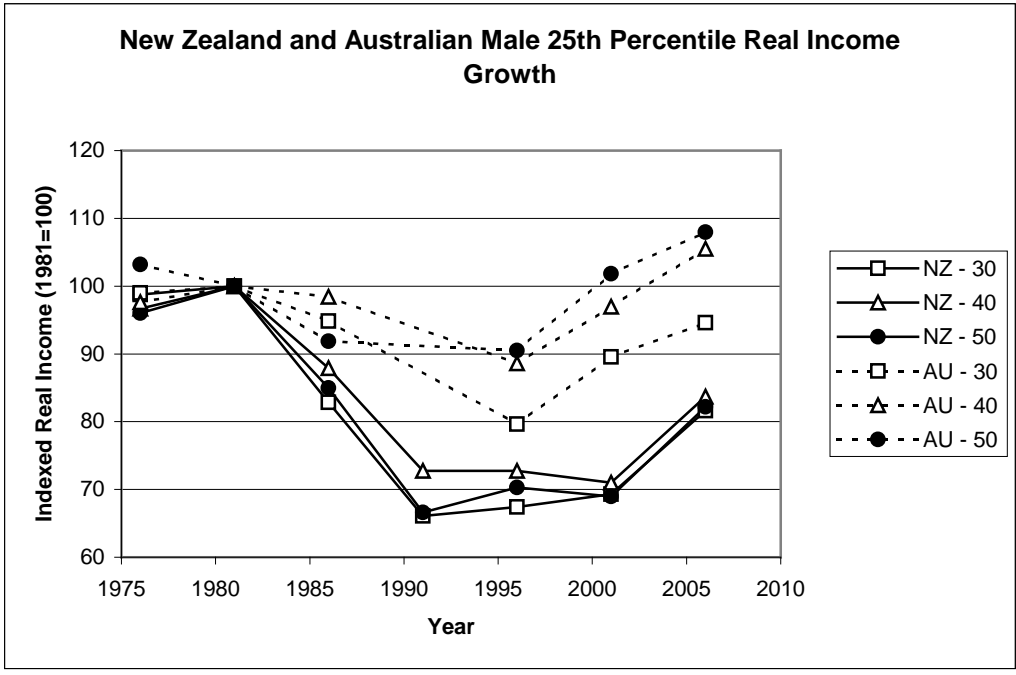


Figure 6

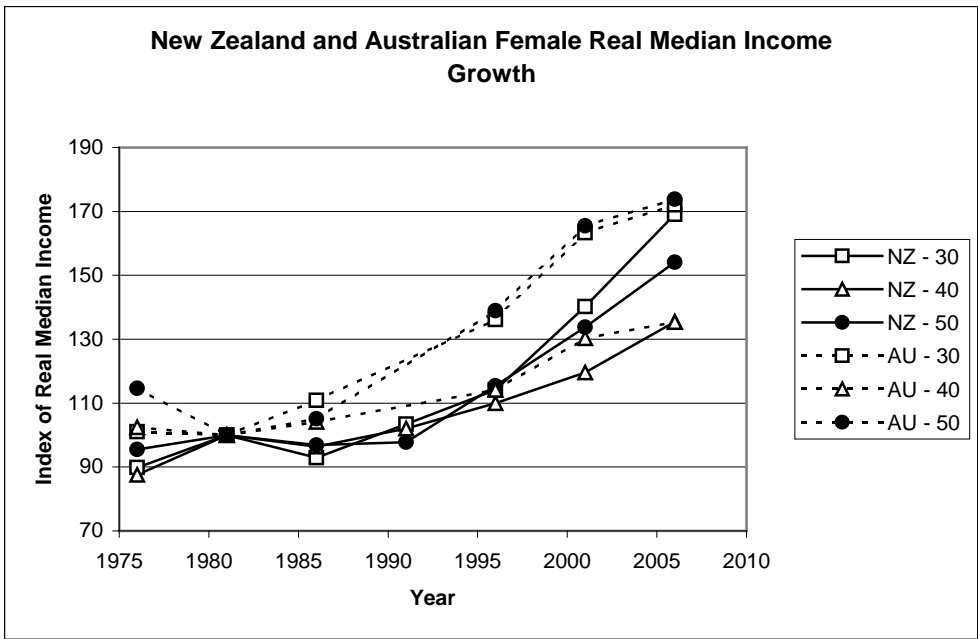


Figure 7: Australian male median income (excluding zeroes) cohort chart



Figure 8: New Zealand male median income (excluding zeroes) cohort chart

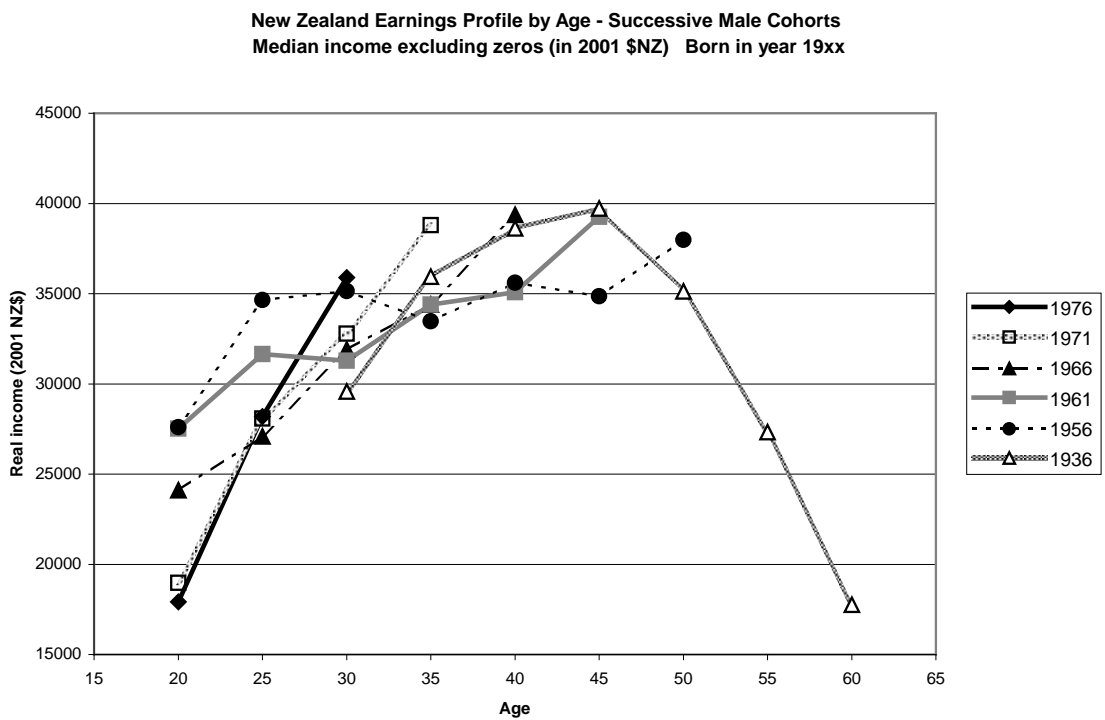


Figure 9: Australian female income paths by cohort.

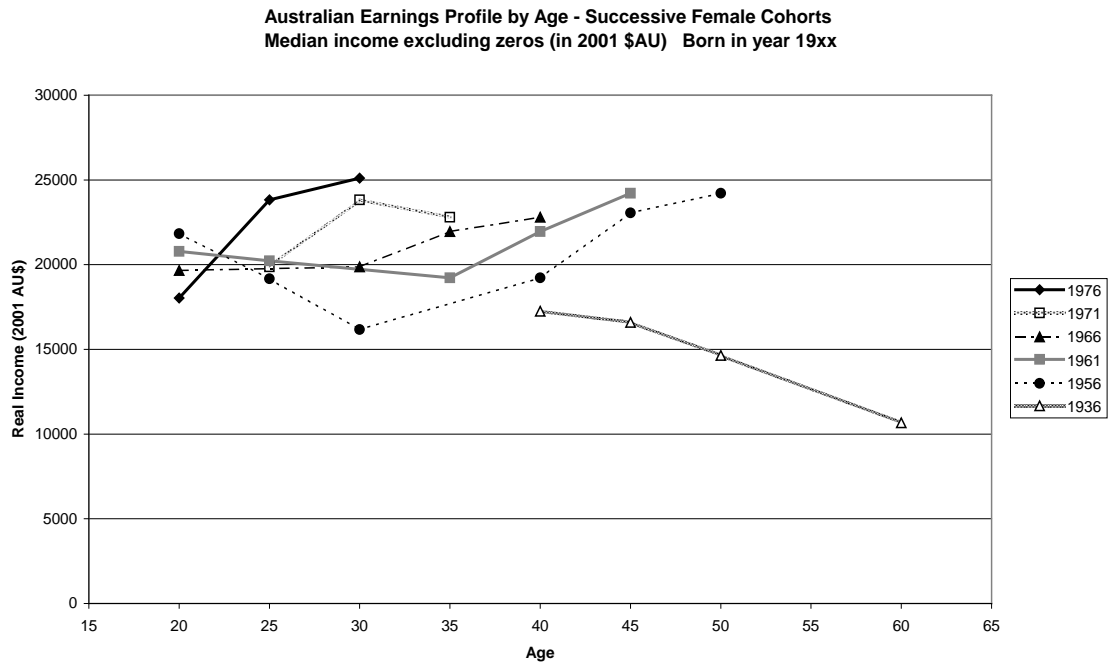


Figure 10: New Zealand female income paths by cohort.



## Recent Motu Working Papers

All papers in the Motu Working Paper Series are available on our website [www.motu.org.nz](http://www.motu.org.nz), or by contacting us on [info@motu.org.nz](mailto:info@motu.org.nz) or +64 4 939 4250.

- 10-07 Grimes, Arthur; Mark Holmes and Nicholas Tarrant. 2010. "New Zealand Housing Markets: Just a Bit-Player in the A-League?"
- 10-06 Le, Trinh; John Gibson and Steven Stillman. 2010. "Household Wealth and Saving in New Zealand: Evidence from the Longitudinal Survey of Family, Income and Employment".
- 10-05 Grimes, Arthur. 2010. "The Economics of Infrastructure Investment: Beyond Simple Cost Benefit Analysis".
- 10-04 van Benthem, Arthur and Suzi Kerr. 2010. "Optimizing Voluntary Deforestation Policy in the Face of Adverse Selection and Costly Transfers".
- 10-03 Roskrige, Matthew; Arthur Grimes; Philip McCann and Jacques Poot. 2010. "Social Capital and Regional Social Infrastructure Investment: Evidence from New Zealand".
- 10-02 Coleman, Andrew. 2010. "Uncovering uncovered interest parity during the classical gold standard era, 1888-1905".
- 10-01 Coleman, Andrew. 2010. "Squeezed in and squeezed out: the effects of population ageing on the demand for housing".
- 09-17 Todd, Maribeth and Suzi Kerr. 2009. "How Does Changing Land Cover and Land Use in New Zealand relate to Land Use Capability and Slope?"
- 09-16 Kerr, Suzi and Wei Zhang. 2009. "Allocation of New Zealand Units within Agriculture in the New Zealand Emissions Trading System".
- 09-15 Grimes, Arthur; Cleo Ren and Philip Stevens. 2009. "The Need for Speed: Impacts of Internet Connectivity on Firm Productivity".
- 09-14 Coleman, Andrew and Arthur Grimes. 2009. "Fiscal, Distributional and Efficiency Impacts of Land and Property Taxes".
- 09-13 Coleman, Andrew. 2009. "The Long Term Effects of Capital Gains Taxes in New Zealand".
- 09-12 Grimes, Arthur and Chris Young. 2009. "Spatial Effects of 'Mill' Closure: Does Distance Matter?"
- 09-11 Maré, David C and Steven Stillman. 2009. "The Impact of Immigration on the Labour Market Outcomes of New Zealanders".
- 09-10 Stillman, Steven and David C Maré. 2009. "The Labour Market Adjustment of Immigrants in New Zealand".
- 09-09 Kerr, Suzi and Kelly Lock. 2009. "Nutrient Trading in Lake Rotorua: Cost Sharing and Allowance Allocation".
- 09-08 Coleman, Andrew and Grant M Scobie. 2009. "A Simple Model of Housing Rental and Ownership with Policy Simulations".
- 09-07 Crawford, Ron. 2009. "Variations in Earnings Growth: Evidence from Earnings Transitions in the NZ Linked Income Survey".
- 09-06 Maré, David C. 2009. "Agglomeration Elasticities in New Zealand".