The gender transition in tertiary education in New Zealand and Australia

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Abstract

Degree and higher level educational attainment trends for New Zealand and Australia by age are compared and cohort intercensal educational transitions estimated. The 1981 to 2006 period saw a rapid shift from a male to female led pattern of growth in tertiary educational attainment with by the end of the 1990's female youth cohorts increasingly outperform males. Degree or higher completions by females aged 20 to 24 years exceeded those of males by 56% over the 2001 to 2006 period in New Zealand and in Australia by 53% over the same period.

In New Zealand, this gender educational transition occurred earlier for Maori residents than for those of European ethnicity. The most recent New Zealand data shows both a levelling off in 20 years of high growth in degree level educational attainment rates as well as a levelling off of further gender divergence in degree level qualifications (although some continued divergence in doctorate level attainment rates).

This move towards greater emphasis on professional qualifications by women is likely to be associated with changing patterns of labour market participation and reproduction strategies by age. It raises the questions, why are young males not emulating the gains made in female educational capital accumulation, what will be the likely long term consequences and should we be concerned? The lower relative levels of tertiary qualification attainment by men and the possible levelling off of a long term trend of increasing tertiary attainment levels have implications for future skilled labour supply and the achievement of the goal of a high income, high employment future for the two countries.

The gender transition in tertiary education in New Zealand and Australia

Historical and international context

As in all industrialised countries, in New Zealand and Australia there has been a dramatic increase in tertiary education enrolments post World War II (Buchmann and DiPrete 2006, Dobson 1996, Callister and Newell 2008, OECD 2007). However, the rise has been particularly strong since the 1980s. For New Zealand, when considered relative to overall population growth in New Zealand, data indicate that under 10 per 1,000 of the working age population from 1900s to 1960s were involved in tertiary education but this had reached around 90 per 1,000 at the turn of the century (Ussher 2007). While much of the recent growth has been in non-degree qualifications, the number of people gaining degree or higher qualifications has also risen.

The overall growth in educational participation and attainment reflects increased demand for specialised skills to support rapid technological change, associated with extensive growth in demand for skilled professionals in service industries. Increased human capital has also been explicitly seen as a way of combating unemployment and fostered as a pre-requisite for economic growth (Skilling 2007). High growth in demand for skilled labour has seen labour supply deficits in a wide range of skilled occupational groups in many OECD countries, in spite of the rapid increase in graduates from tertiary education.

In a New Zealand context, Newell and Perry (2006) showed that rates of female attainment of degree level tertiary education steadily increased relative to males over the 20 years 1981 to 2001 leading to what we term the 'gender education transition'. An update of the New Zealand trend in percent of the population aged 20 to 24 years with a degree illustrates the timing and scale of the changes in attainment of degree qualifications relative to men (Figure 1). OECD (2003) statistics on educational attainment levels of males and females aged 25 to 34 over the period 1991 to 2001 reveal a compelling and consistent picture of faster increase in female than male tertiary educational attainment levels (Table 1). These results are expressed as the differences between male and female tertiary attainment levels and the differential gain for 1991 to 2001 in Table 2. Those results show that even for those four countries where the gendered educational attainment transition has not taken place, the underlying pattern of faster female than male increases in tertiary educational attainment levels is observed.

Figure 1 : % of NZ residents aged 20 to 24 years by sex with a degree 1981 to 2006

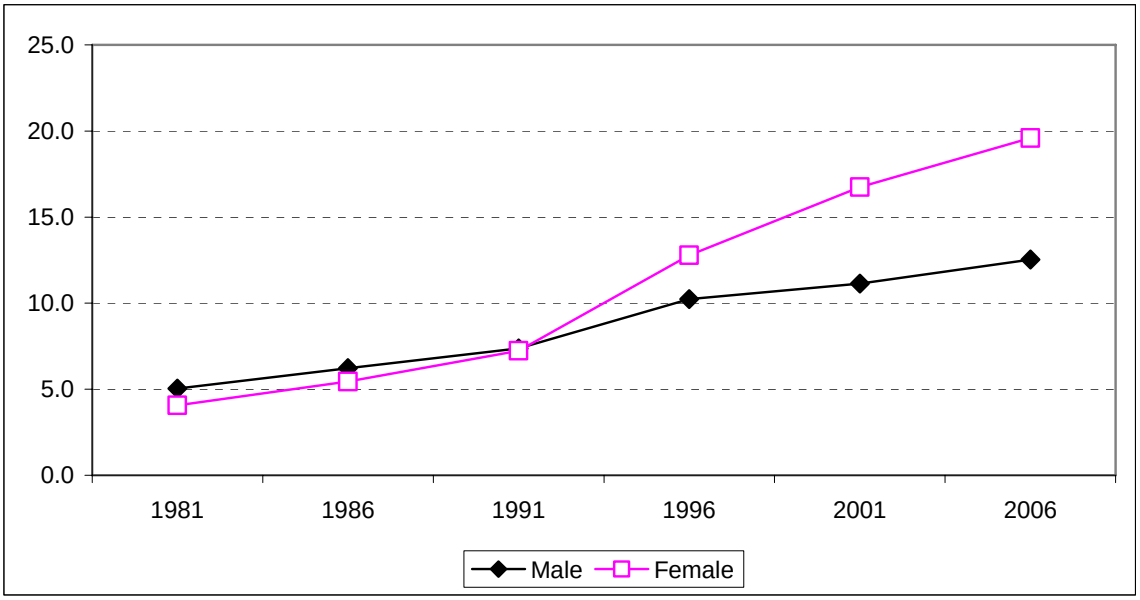


Table 1: Male and female tertiary type A or B[2] attainment level amongst 25 to 34 year olds by country, 1991, 1996 and 2001, % with tertiary qualification

	1991		1996		2001	
Country	Male	Female	Male	Female	Male	Female
Finland	27.6	39.2	29.3	41.3	30.4	46.4
Norway	26.1	28.2	26.7	33.5	32.5	43.5
Canada	30.0	33.0	38.0	46.0	45.2	56.0
Australia	22.1	23.6	24.8	25.9	29.1	37.8
Portugal	6.8	10.2	11.4	17.2	10.0	17.4
Belgium	25.1	28.6	28.6	35.8	34.0	41.1
Spain	14.9	17.8	26.3	31.0	32.1	39.0
United States	29.3	31.0	33.6	36.7	36.2	41.8
Sweden	25.9	28.3	27.6	29.3	34.4	39.5
Ireland	20.0	19.3	30.7	31.8	45.4	50.4
France	18.9	21.3	23.7	28.2	31.8	36.6
New Zealand	-	-	23.0	26.5	26.0	30.8
Italy	6.7	6.4	8.0	8.7	10.3	13.3
Netherlands	22.5	21.8	26.0	24.2	25.7	27.4
Austria	7.7	8.0	9.0	9.3	14.8	13.7
United Kingdom	19.4	17.6	25.4	23.1	30.1	28.8
Germany	22.8	19.5	22.4	18.1	23.3	20.2
Switzerland	28.7	13.5	31.1	13.7	34.8	17.1
Country Mean	**20.9**	**21.8**	**24.8**	**26.7**	**29.2**	**33.4**

[2] Tertiary Type A refers to any form of degree whereas Tertiary Type B includes vocational courses that involve two years full time study.

Table 2: % point differences between female and male tertiary type A or B attainment level of 25 to 34 year olds by country and differential female gain, 1991, 1996 and 2001

Country	1991	1996	2001	Differential female gain 1991 - 2006
Finland	-11.5	-12.0	-16.0	4.5
Norway	-2.2	-6.8	-11.0	8.8
Canada	-3.0	-8.0	-10.8	7.8
Australia	-1.5	-1.0	-8.7	7.2
Portugal	-3.5	-5.8	-7.4	3.9
Belgium	-3.6	-7.2	-7.1	3.5
Spain	-2.9	-4.7	-6.9	4.0
United States	-1.8	-3.0	-5.6	3.8
Sweden	-2.4	-1.8	-5.1	2.7
Ireland	0.6	-1.2	-5.0	5.6
France	-2.4	-4.6	-4.8	2.0
New Zealand	-	-3.5	-4.8	-
Italy	0.3	-0.7	-3.0	3.3
Netherlands	0.7	1.8	-1.7	2.4
Austria	-0.3	-0.3	1.1	1.4
United Kingdom	1.9	2.3	1.3	0.6
Germany	3.3	4.2	3.1	0.2
Switzerland	15.3	17.4	17.7	2.4
Country Mean	**-1.0**	**-1.9**	**-4.2**	**3.2**

This paper compares the recent trends in tertiary educational attainment in Australia and New Zealand. It considers whether recent 2006 census and other data suggest that higher growth in women's versus men's tertiary educational attainment level is being sustained in both countries and what cross-country differences are seen in the details of their gender transitions? While women's participation and completions rates are higher than men's in most levels of tertiary education, our primary focus for this paper is degrees or higher qualifications.

We start the discussion with an outline of changes in levels of qualifications of men and women in New Zealand and Australia using census data for 1996 to 2006. We then review the latest New Zealand educational administrative data from 1994 to 2006 to see what it indicates has been occurring over the last few years relative to the longer term trend – is this gender differentiated growth in tertiary attainment level being sustained? Finally, we briefly explore some possible social implications of the change.

Recent evidence from the Australia and New Zealand census

Overall trends in post-school educational attainment

The release of Australia and New Zealand 2006 census statistics provides an opportunity to assess whether this consistent long-term (20 years plus) trend of more rapid growth in female than male tertiary educational attainment levels is being sustained. It also offers more in depth statistics to better characterise the nature of this gendered transition than is possible using the aggregate tertiary educational attainment statistics collated by the OECD.

Trends in educational attainment levels in Australia and New Zealand reveal that the rate of increase in educational attainment overall in the population actually accelerated between 1996 to 2001 and the 2001 to 2006 inter-censal periods in both countries (Tables 3 and 4). Reflecting the growth in attainments, the strongest shift was a decline in the proportion of the population with no post school qualifications. The increase in education attainment was seen at all levels of an aggregated post-school educational attainment hierarchy with the exception of 'advanced diploma and diploma' in New Zealand. The two countries achieved similar levels of educational attainment in the population 15 years or over by 2006, but with slightly higher levels in Australia manifested at 'bachelor degree' and 'advanced diploma / diploma' levels. The level of increase in the two countries over 1996 to 2006 was of the same order.

Table 3: % of the population in New Zealand and Australia in each level of formal education (residents aged 15 years or over), 1996-2006

Post School Educational Attainment Level	1996		2001		2006	
	Australia	NZ	Australia	NZ	Australia	NZ
No Post School Qualifications	65.2	69.5	60.0	67.8	53.7	60.1
Certificate I to IV	15.7	10.9	18.2	9.8	19.6	14.7
Advanced Diploma and Diploma	7.0	10.1	6.9	10.6	8.3	9.5
Bachelor Degree	9.0	6.4	11.2	8.1	13.6	11.2
Higher Degree	3.1	3.2	3.7	3.7	4.7	4.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 4: Change increment in % at formal qualifications levels for each inter-censal period in New Zealand and Australia (residents aged 15 years or over)

Post School Educational Attainment Level	1996-2001		2001-2006		1996-2006	
	Australia	NZ	Australia	NZ	Australia	NZ
No Post School Qualifications	-5.2	-1.7	-6.3	-7.8	-11.5	-8.5
Certificate I to IV	4.8	1.1	1.6	4.9	6.4	6.0
Advanced Diploma and Diploma	-0.1	0.5	1.4	-1.1	1.3	-0.6
Bachelor Degree	2.2	1.7	2.4	3.1	4.6	4.8
Higher Degree	0.6	0.5	1.0	1.0	1.6	1.5

Gender differences in post-school educational attainment for the prime working age population

The census data show that Australian working age population women (aged 15 to 64 years) had higher rates of post-school educational attainment relative to men in 1996 than their New Zealand counterparts (Tables 5 and 6). By 2006, the New Zealand and Australian gender patterns had substantially converged but Australia had a much larger proportion of men with "certificate I to IV" levels of attainment than New Zealand.

The New Zealand data show that the 'gender transition' for degree level attainment by New Zealanders of 'Maori' and 'Pasifika' ethnicity preceded that for those of 'NZ European ethnicity only' (Table 7). It would be of interest to know whether this was also the case in the Australian Aboriginal population as compared with other Australians.

Table 5: % of males and female in the working age population of New Zealand and Australia in each level of formal qualifications (residents aged 15 years to 64 years)

	Country	1996		2001		2006	
		Male	Female	Male	Female	Male	Female
No Post School Qualifications	Australia	57.0	69.5	52.5	63.0	47.8	54.5
	New Zealand	64.8	70.1	65.1	67.0	57.3	59.5
Certificate I to IV	Australia	24.0	8.3	26.2	11.3	26.7	13.9
	New Zealand	14.6	8.8	12.8	8.2	18.6	11.6
Advanced Diploma / Diploma	Australia	6.1	8.8	6.2	8.3	7.3	10.0
	New Zealand	9.1	11.9	9.3	12.5	8.1	10.7
Bachelor Degree	Australia	9.4	10.1	11.1	13.4	13.2	16.3
	New Zealand	7.6	6.4	8.6	8.8	11.0	13.2
Higher Degree	Australia	3.5	3.3	4.0	4.0	5.0	5.2
	New Zealand	4.0	2.8	4.3	3.6	5.1	5.0

Table 6: Gender differences in post-school educational attainment rates in the working age population of New Zealand and Australia 1996 to 2006 (residents aged 15 years to 64 years)

	Country	1996	2001	2006
No Post School Quals	Australia	12.5	10.5	6.7
	New Zealand	5.3	1.9	2.2
Certificate I to IV	Australia	-15.7	-14.9	-12.8
	New Zealand	-5.8	-4.6	-7.0
Advanced Diploma and Diploma	Australia	2.7	2.1	2.7
	New Zealand	2.8	3.2	2.6
Bachelor Degree	Australia	0.7	2.3	3.1
	New Zealand	-1.2	0.2	2.2
Higher Degree	Australia	-0.2	0.0	0.2
	New Zealand	-1.2	-0.7	-0.1

Table 7: Percent of the usually resident New Zealand population with a degree qualification by prioritised ethnicity and sex: 1981 - 2001

	Sex	1981	1986	1991	1996	2001
NZ European Only	Male	5.5	7.5	8.4	11.6	13.0
	Female	2.7	4.3	5.6	8.4	11.6
NZ Maori	Male	0.9	1.5	2.0	3.2	4.3
	Female	0.4	0.9	1.4	2.8	5.2
Pasifika People	Male	0.8	1.6	1.9	2.9	3.7
	Female	0.4	1.0	1.5	2.4	4.0
Asian	Male	16.8	20.6	21.5	28.2	25.3
	Female	8.8	12.8	15.8	21.5	22.1
Total Population	Male	5.1	6.9	7.8	11.0	12.4
	Female	2.5	4.0	5.2	8.1	11.2

To understand better this history of rising educational attainment levels and gender convergence / divergence in achievement it is useful to examine trends in educational attainment levels by age group and the trends in net intercensal gain or loss in educational attainment of different age bands. This is achieved using a virtual cohort intercensal transitions analysis method, comparing the beginning and end of census period educational attainment profile of each age group to estimate net gains of losses expressed as a percent of the end of period age group size (such results are shown in Tables 10, 11 and 12). Some of these effects will be due to net gains from migrant exchange, but estimation of those effects is beyond the scope of this paper. In this analysis we focus on degree and higher qualifications. [3]

A larger percentage of working age residents of Australia had a degree by age and gender and this difference was sustained throughout the 1996 to 2006 period (Table 8). The margin between degree level attainment by Australian compared with New Zealand men widened slightly from 1.3% in 1996 to 1.9% in 2006 whereas the margin between women narrowed from 4.4% in 1996 to 3.3% in 2006. In 1996 2.4% more New Zealand men than women aged 15 to 64 years had a degree compared with 0.5% less amongst Australian men (Table 9). By 2006, both countries recorded a higher proportion of women than men aged 15 to 64 years with a degree and the margins for the two countries were almost identical. The proportion of residents aged 25 to 34 years with a degree increased sharply between 2001 and 2006, the outcome of rapid growth in completions over the previous decade.

While the proportion of male or female New Zealand residents aged 20 to 24 years with a degree in 2006 was higher than Australian residents, Australia led New Zealand in the percent of those aged 25 to 34 years with a degree in 2006. The reason for this difference may be important. Two different possible explanations for this are that New Zealand

[3] In addition, unfortunately, the statistics available to the researchers aggregate a number of categories below advanced diploma / diploma. All those whose highest level of post-school educational attainment is at Certificates I to IV level are grouped into one category. This makes it difficult to interpret the meaning of trends below degree level. It means that attainment at the level of short community education and foundation courses is not able to be distinguished from longer-term trade and technical skills.

tertiary education sector may have been more successful in increased tertiary education enrolments and completions than Australia in the last few years and/or that the effect of New Zealand international migration flows of educated residents is, in net, reducing the degree attainment rates of New Zealand residents aged 25 to 34 years compared with Australia. Statistics on comparative New Zealand and Australian intercensal net gains in numbers with a degree by age and sex in Table 10 and gender differences in Table 11 would suggest that the effect is due to recent increase in participation / completions in New Zealand. Note however that some of those completing qualifications in New Zealand are recent migrants. There have been large absolute gains by both men and women, but the relative gains are much larger for women. Degree level or higher gains by Australian women aged 20-24 years in 2006 were 53% higher than men over the 2001 to 2006 period and amongst New Zealand women 56% than men.

Table 8: % of women and men in each age group in Australia and New Zealand with a degree or higher qualification, 1996, 2001 and 2006

Age Group	Country	1996		2001		2006	
		Male	Female	Male	Female	Male	Female
20-24 yrs	Australia	9.0	14.7	10.2	16.6	12.3	18.8
	New Zealand	10.2	12.7	11.2	16.7	12.6	19.6
25-34 yrs	Australia	16.0	18.9	19.6	25.5	25.5	33.7
	New Zealand	14.7	13.1	16.7	18.6	23.1	29.9
35-44 yrs	Australia	17.9	17.5	18.8	20.8	21.9	25.1
	New Zealand	14.9	11.2	15.7	14.2	19.5	21.2
45-54 yrs	Australia	15.0	12.5	18.2	18.1	20.8	22.1
	New Zealand	13.3	7.8	15.0	11.5	17.7	17.6
55-64 yrs	Australia	9.5	6.7	12.6	11.5	16.6	15.5
	New Zealand	8.7	4.3	11.0	6.5	14.5	10.8
15-64 yrs	Australia	12.9	13.4	15.1	17.4	18.2	21.5
	New Zealand	11.6	9.2	12.9	12.4	16.1	18.2

Table 9: % point difference between females and males with a degree or higher degree or higher qualification in New Zealand and Australia in 1996, 2001 and 2006

Age Group	Country	1996	2001	2006
20-24 yrs	Australia	-5.7	-6.4	-6.5
	New Zealand	-2.5	-5.5	-7.0
25-34 yrs	Australia	-2.9	-5.9	-8.2
	New Zealand	1.6	-1.9	-6.8
35-44 yrs	Australia	0.4	-2.0	-3.2
	New Zealand	3.7	1.5	-1.7
45-54 yrs	Australia	2.5	0.1	-1.3
	New Zealand	5.5	3.5	0.1
55-64 yrs	Australia	2.8	1.1	1.1
	New Zealand	4.4	4.5	3.7
15-64 yrs	Australia	-0.5	-2.3	-3.3
	New Zealand	2.4	0.5	-2.1

Table 10: Intercensal net gain in number of residents with a degree or higher degree by age cohort and gender for New Zealand and Australia in 1996 to 2001 and 2001 to 2006

Age Group	Country	1996-2001		2001-2006	
		Male	Female	Male	Female
15-19 yrs	Australia	0.1	0.1	0.1	0.1
	New Zealand	0.1	0.1	0.2	0.2
20-24 yrs	Australia	10.2	16.5	12.2	18.7
	New Zealand	11.1	16.6	12.4	19.4
25-34 yrs	Australia	7.3	8.6	10.9	13.0
	New Zealand	3.4	5.2	9.6	12.6
35-44 yrs	Australia	2.4	3.5	3.3	3.3
	New Zealand	0.9	2.4	4.6	6.5
45-54 yrs	Australia	0.6	2.6	1.9	1.9
	New Zealand	0.0	1.5	2.4	4.5
55-64 yrs	Australia	0.3	1.7	0.7	0.9
	New Zealand	-0.2	0.5	0.8	1.7
15-64 yrs	Australia	3.4	5.1	4.7	5.8
	New Zealand	2.0	3.8	4.8	7.2

Table 11: Differences between Intercensal net gain by men and women in number of residents of with a degree or higher degree by age cohort for New Zealand and Australia in 1996 to 2001 and 2001 to 2006

Age Group	Country	1996-2001	2001-2006
15-19 yrs	Australia	0.0	0.0
	New Zealand	0.0	0.0
20-24 yrs	Australia	6.3	6.5
	New Zealand	5.5	7.0
25-34 yrs	Australia	1.3	2.1
	New Zealand	1.8	3.0
35-44 yrs	Australia	1.1	0.0
	New Zealand	1.5	1.9
45-54 yrs	Australia	2.0	0.0
	New Zealand	1.5	2.1
55-64 yrs	Australia	1.4	0.2
	New Zealand	0.7	0.9
15-64 yrs	Australia	1.7	1.1
	New Zealand	1.8	2.4

Census statistics on the proportional gains in those with a higher degree by age and sex would suggest that while New Zealand and Australian men and women are both almost equally likely to have progressed to a higher degree (Table 12), other analysis we have done suggests that this is more likely to be below doctorate level in New Zealand than in Australia

Table 12: Intercensal net gain in number of residents of with a higher degree by age cohort and gender for New Zealand and Australia in 1996 to 2001 and 2001 to 2006

Age Group	Country	1996-2001		2001-2006	
		Male	Female	Male	Female
20-24 yrs	Australia	0.5	0.8	0.8	1.1
	New Zealand	2.0	2.4	1.5	2.2
25-34 yrs	Australia	2.3	2.5	3.9	4.4
	New Zealand	1.7	2.0	3.0	4.0
35-44 yrs	Australia	1.5	1.0	2.0	1.7
	New Zealand	0.6	0.7	1.8	2.0
45-54 yrs	Australia	-0.1	0.6	0.9	0.6
	New Zealand	-0.1	0.6	0.7	1.3
55-64 yrs	Australia	0.0	-0.1	0.4	0.6
	New Zealand	-0.4	0.0	0.1	0.2
15-64 yrs	Australia	0.9	1.0	1.6	1.6
	New Zealand	0.6	1.0	1.3	1.8

Recent evidence from the New Zealand administrative data on tertiary education completions

Given that the census is only carried out every five years, census based statistics make it difficult to see the timing of shifts in this long-term trend of diverging tertiary educational completions. Annualised educational administrative statistics provide scope for identifying critical turning points and cycles in this history. A time series analysis of New Zealand educational administrative statistics for domestic students is possible for the period from 1994.[4] That series would indicate that the transition from majority male to majority female degree or higher completions occurred in the early 1990's before statistics of this form were collected. Since that time the four years from 1997 through to 2000 saw the most rapid divergence between the rates of degree or higher female and male completions (Figure 2). Notably however, there has been negligible further divergence between the numbers of female and male completions since that time up until 2006. This means that the increasing divergence between male and female degree completions has (at least for the moment) stopped. Note that the differences between the tertiary educational completions history of younger and older male and female cohorts will mean that there will be continuing increase in the overall rates of tertiary degree attainment in the population as a whole.

New Zealand administrative data, as shown in Figure 3, also show that female higher degree completions surpassed males in 1997. Female higher degree completions have increased at a higher rate than males throughout the 1994 to 2006 period with no sign of slowing down as yet.

The situation for doctorate level completions is similar but slightly different as shown in Figure 4. The number of females completing doctorates did not exceed males until 1999.

[4] While we focus on domestic students foreign students can become New Zealand residents.

While the number of female doctorate completions has generally continued to increase slowly on average since that time (notable exception being the 1999 to 2001 period), the number of male doctorate completions was about the same in 2006 as in 1999.

Figure 2 : NZ Degree (bachelors or higher) completions by domestic men and women engaged in tertiary education 1994 to 2006

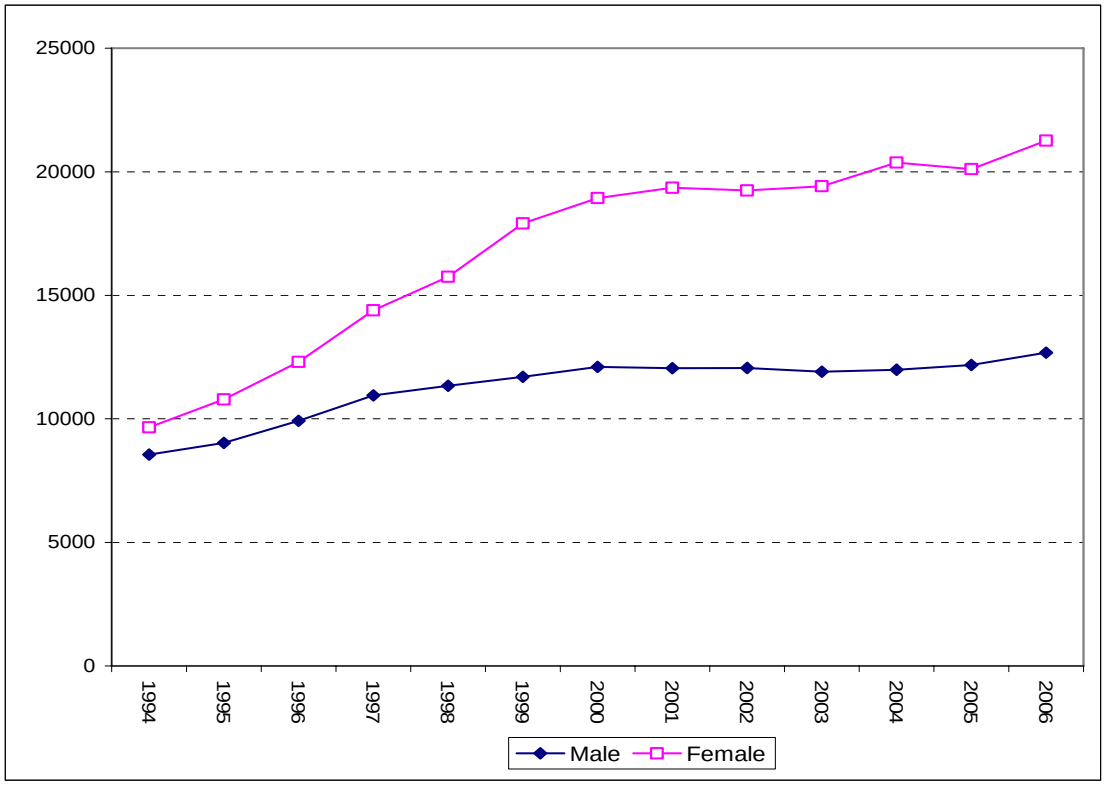


Figure 3: NZ Higher Degree completions by domestic men and women engaged in tertiary education 1994 to 2006

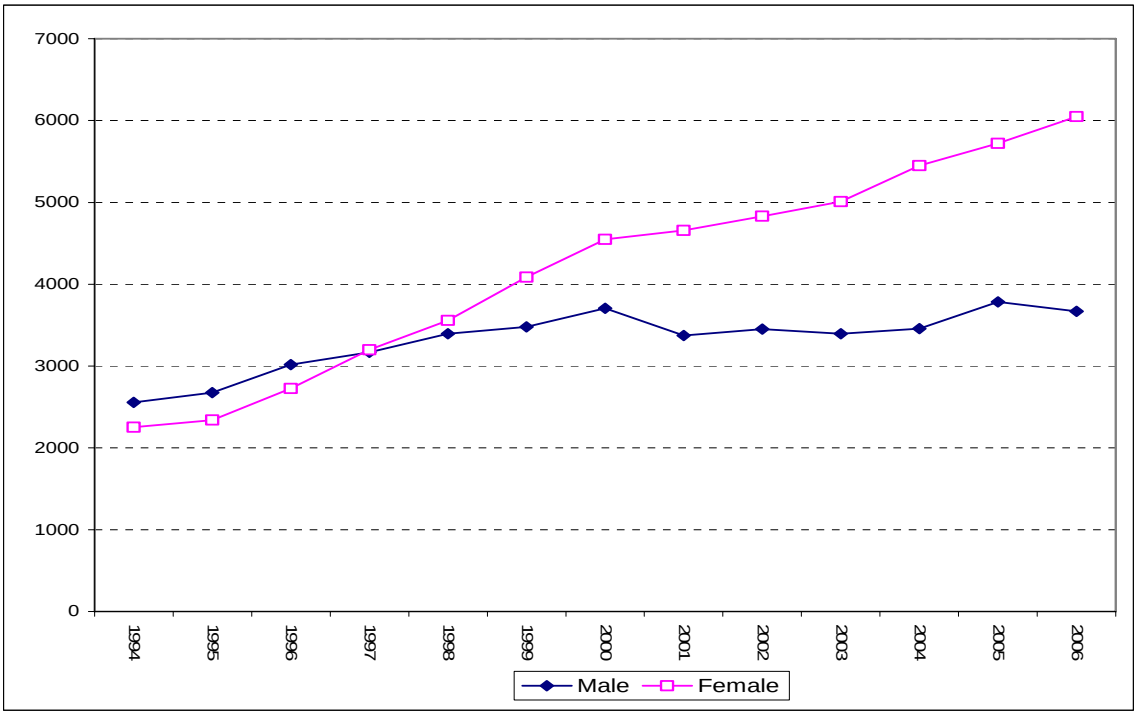
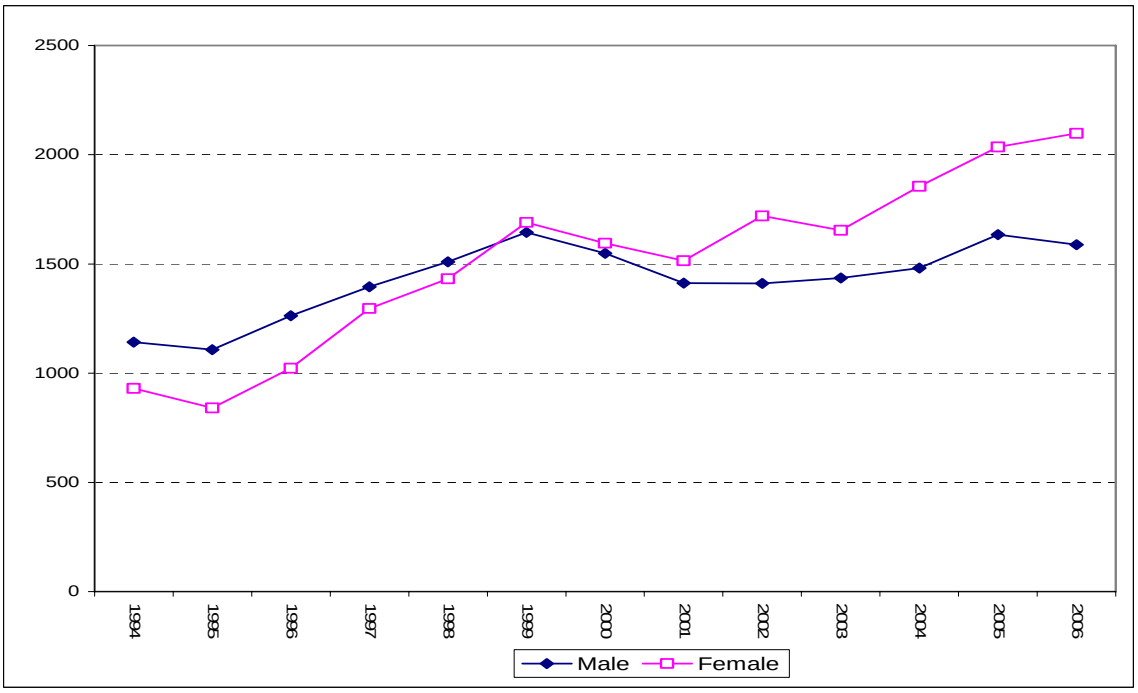


Figure 4: NZ Doctorate completions by domestic men and women engaged in tertiary education 1994 to 2006



Gender divergence and convergence in educational attainment and some implications of these trends

Against a backdrop of overall strong improvements in educational participation and achievement, there is evidence that a gendered 'education transition' has taken place in New Zealand and Australia. Clearly the overall lift in education levels is a good outcome and hopefully underpins the shift to a high income, high employment society in both Australian and New Zealand. But does the gender transition matter? Certainly in the past higher participation and achievement by men prompted much concern about the need for women to improve their relative outcomes. Is there an emerging problem the other way around?

The data suggests that after at least 25 years of much more rapid growth in tertiary educational attainment rates by women than men there appears to be a slowing down in both in the overall rate of increase in tertiary educational attainment and slow down in the margins developing between women and men's levels of post-school educational attainment rates. The overall slow down has implications for the ability of both societies to sustain the increase in skilled labour supply associated with increased demand for skilled labour in the future. Much of this increased skilled labour demand has been met through increased rates of attainment, but this can not be assumed to be sustained and the reasons for the slow down in increased post-school educational attainment rates need to be better understood. Is this a temporary pause, perhaps a result of decreased margins between the returns to up skilling in a tight labour market where unskilled as well as skilled labour is short, or is it the signal of a longer-term change?

If New Zealand and Australia are to remain high-income societies competing on quality and innovation rather than quantity and price it is essential that we have a high level of the population completing some form of tertiary education. This can be both early in their lives and through undertaking further training or retraining as they move through their lifecycle. It is also positive to see women moving into many of the fields of study that have traditionally been dominated by men, such as medical training (Callister, Badkar and Didham 2008). As an example, women who wish to consult with a female doctor now have more choice given the dramatic increase in the number of women who have trained as doctors. But inevitably a change of the size of the gender transition that has taken place in tertiary education in New Zealand and Australia will have other impacts on society, including the labour market.

In commenting on a similar transition that has taken place in the US, Buchmann and DiPrete (2006) set out a number of areas where the changes could have an impact. These include:

- Wage gaps, labour force participation, and other labour market outcomes, and
- Trends in educational assortative mating, which then can impact on the labour market.

Take the example of assortative mating. In the US Mare and Schwartz (2006) have argued that who marries who has implications for the formation of families, the extent of labour market and income inequality among families and individuals and intergenerational inequality. Their research shows that over the past 40 years in the US, primarily due to the increase in educational attainment of women, the similarity of husbands' and wives' educational attainments has increased markedly.

In turn, Costa and Kahn (2000) show that in the US college educated couples are increasingly located in large metropolitan areas. These areas were home to 32 percent of all college-educated couples in 1940, 39 percent in 1970, and 50 percent in 1990. They suggest a primary reason for this is the growth of dual career households and that these households face co-location problems. Giving another explanation for this shift, Pollak and Compton 2004 suggest that college educated individuals, married or married, are attracted to the amenities and high returns to education found in large cities and that, as a result, the formation of 'power couples' through marriage of educated singles is more likely to occur in larger than smaller metropolitan areas. Underlying these shifts will be the effect of the different industry and occupational mixes associated with labour demand in larger metropolitan centres, where specialised service industries with higher skill demands represent a larger share of the economy than in small and rural centres.

The stratification of high skilled labour into major centres in New Zealand and Australia is shown in Table 13. As an example, in 2006 Canberra (where 33.5% had a degree or higher) had more than three times the degree level rate of "Other Tasmania" (meaning Tasmania outside Hobart). For New Zealand, Greater Wellington had more than double the percentage of population with a degree than "other North Island". Large margins also exist when other post-school qualifications are factored into the mix.

Table 13: Percent of population aged 15 years or over with a degree or higher by Australasian locality[5] 1996 to 2006

Locality	1996	2001	2006
Canberra ACT	25.3	28.7	33.5
Sydney	16.5	20.3	25.0
Melbourne	15.3	18.8	23.2
Greater Wellington		18.5	23.0
Darwin	15.3	18.6	21.1
Hobart	13.7	16.8	20.5
Perth	13.5	16.4	20.3
Greater Auckland		14.6	19.8
Brisbane and Gold Coast	11.9	14.9	18.5
Australia	12.1	14.9	18.3
Adelaide	11.1	13.7	16.9
New Zealand		11.8	15.8
Greater Christchurch		11.9	15.6
Other North Island		7.9	10.9
Other Tasmania	6.5	8.2	10.1

Whatever the reason for concentration of human educational capital in large urban areas, the result is that smaller cities may experience reduced inflows of human capital relative to the past and thus become poorer. Most of New Zealand's cities and many of those in Australia, in a global context, are small. In addition, such trends will tend to draw people away from living in rural areas.

The theories around the geographic concentration of 'power couples' assume that there are roughly equal numbers of well-educated women and men. Yet, increasingly in the peak couple forming age groups there will be a 'man drought' for well-educated women if such women want to either marry someone with a similar level of qualifications or to 'marry up' educationally. As indicated by the ratios in this paper, in both Australia and New Zealand young well qualified women outnumber well qualified young men. The actual underlying numbers in the 25-34 age group across Australasia are of a significant magnitude (Table 14) and are likely to one day feature in a Bernard Salt 'man drought' headline (Salt 2005, 2007).[6]

[5] The localities as defined are based on aggregations of local authorities in New Zealand to greater Auckland, Wellington and Christchurch "regions" versus the balance of South and North Islands and for Australia using 2006 Local Government Areas to closest fit to urban metropolitan areas or state capitals versus the balance of each state.

[6] While New Zealand and Australia share a common labour market there remains a question as to whether we have a common 'marriage market'.

Table 14: Number of women and men aged 25-34 with a degree or higher qualification in Australia and New Zealand, 1996-2006

		1996	2001	2006
Australia	Male	217,000	263,700	337,000
	Female	261,200	351,800	457,000
	'Excess' women	44,200	88,100	120,000
New Zealand	Male	40,300	41,700	57,200
	Female	38,400	51,300	81,100
	'Excess' women	-1,900	9,600	23,900
Australasia	Male	257,300	305,400	394,200
	Female	299,600	403,100	538,100
	'Excess' women	42,300	97,700	143,900

There are many possible impacts of the change in education sex ratios including on marriage rates, ethnic intermarriage and fertility (Callister 2006). However, outcomes are somewhat speculative given that the full effects of the education transition are only now being seen the prime couple form and childrearing age groups.

Conclusion

This analysis of recent trends in educational attainment rates in the New Zealand and Australian resident population shows that :

- In both countries there has been a gender transition in tertiary education
- After a period of very strong growth, there appears to be a slowing down in both in the overall rate of increase in tertiary educational attainment; and
- a slow down in the margins developing between women and men's levels of post-school educational attainment rates; but
- with the possible exception of continuing increase in women with doctorate level qualifications compared with men;

This overall slow down in increases in tertiary attainment rates has implications for the ability of both societies to sustain the increase in skilled labour supply associated with increased demand for skilled labour in the future. The main determinants of future skilled labour supply to underpin the shift to a high income, high employment society in both Australian and New Zealand are:

- the size of future youth birth cohorts;
- the skilled labour force generated through educational completions rates of those new entrants as well as marginal increase in the skill levels of older residents;
- the net gain / loss of educational capital stocks of locally educated residents through net migration flows; and
- the gains associated with net migration gains of overseas trained new migrants.

Moreover, divergence between educational attainment rates of men and women may have some subtle but important social consequences. This is the subject of on-going research.

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