New Zealand: A Typical Australasian Economy?

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Abstract

We examine trend economic developments in New Zealand and in each of Australia's six states and two territories (i.e. nine regions) in order to inform issues regarding economic policy harmonisation across Australasia. Our focus is on trend developments in GDP, population, GDP per capita and employment (each at regional level), and in sectoral industry shares within each region. By comparing New Zealand developments with those in the eight Australian regions, we infer whether New Zealand's developments have been typical of those experienced elsewhere in Australasia. Examination of development trends also indicates the nature of the development process across Australasian regions. For instance, we examine the extent to which certain regions are experiencing growth in high-value industries (such as business and financial services), and examine the degree to which some are dependent on primary industries, including agriculture and mining. Analysis of all the data indicates that, while New Zealand has some idiosyncratic features, it is reasonable to regard it as a "typical" Australasian economy in many respects.

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1   Introduction

New South Wales, Victoria and Queensland—the eastern states of Australia—dominate that country's population and economy. In 2003 their combined population represented 77% of Australia's 19.8 million population; their combined GDP represented 78% of Australia's GDP. Over 3,200 kilometres west of the largest east coast city (Sydney) lies Perth, Western Australia's major city. The two cities are separated by a large expanse of desert; 2,200 kilometres to the east of Sydney lies Auckland, New Zealand's dominant city. These cities are separated by a large expanse of water (the Tasman Sea). Darwin (Northern Territory), Hobart (Tasmania) and, to a lesser extent, Adelaide (South Australia) are similarly distant from Sydney.

In most respects, the Australian states (and cities) have highly integrated economies and economic institutions. Despite the individual states having revenue-raising and expenditure powers, federal expenditures and revenues dominate total fiscal flows. Key economic legislation, such as labour laws, are formulated and applied at the federal level, and important social expenditures are funded federally. An externally generated inflow of wealth (for example, through a mineral boom) that impacts initially on one state of Australia can thereby be shared through federal mechanisms, as well as through private mechanisms across people in all states across the country.[1]

New Zealand's economic institutions are less integrated with those of Australia. There is virtually free trade between the two countries as a result of the Australia New Zealand Closer Economic Relations Trade Agreement (CER); migration between the two countries is open; and increasingly other regulatory areas (such as food standards) are being harmonised.[2] However, by far the majority of economically-relevant legislation and regulation is not identical on each side of the Tasman.[3] There are no fiscal transfers between the two countries

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[1] For brevity, the two territories (Australian Capital Territory, ACT, and Northern Territory) are included in the generic reference to Australian "states" in the remainder of this paper.
[2] Goddard (2002).
[3] Lloyd (2002).

in the event of different shocks impacting on each of them (other than some automatic social welfare entitlements).

Sinclair (1987) and Macintyre (2002) explore historical reasons why New Zealand stands apart from its Australasian counterparts in its political and economic institutions.[4] Notwithstanding this history, the two countries have shared substantially similar economic and political experiences over the twentieth century.[5] Since the mid-1960s (with the signing of NAFTA[6]) there has been a trend towards harmonisation of economic institutions.

Edwards and Holmes (1994) provide a useful resource for comparing the evolution of the Australian and New Zealand post-war economies. That study summarised developments across approximately 100 economic variables in each of Australia and New Zealand from 1950 to 1993. The data show some strong similarities between the two countries in many of their economic experiences over this period. Taking one example, New Zealand's imports from the UK as a share of total imports fell from 62% in 1950 to 6% in 1993; Australia's fell from 52% also to 6%. As another example, New Zealand's share of employment in the agriculture/fishing/forestry (AFF) sector fell from 19% to 11% over this period; Australia's share fell from near 15% to just under 6%.

Each of these trends indicates similarity of experience, but also some different experience. In the import case, New Zealand's share of imports from the UK fell more heavily than did Australia's; in the employment case, New Zealand's AFF share stayed considerably higher than Australia's. The experience differs more markedly with regard to the share of employment in manufacturing. Australia's employment share in the sector declined throughout the period, from 28% in 1950 to 14% in 1993. By contrast, New Zealand's manufacturing

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[4] Macintyre notes that prior to Australian federation in 1901, the Australian eastern seaboard economy was more integrated with New Zealand than with Western Australia. But the sentiments of "a nation for a continent and a continent for a nation" (Australia) and "the 1200 miles of the Tasman Sea are 1200 arguments against New Zealand joining the federal Commonwealth" (New Zealand) led to Western Australia federating and New Zealand staying apart.

[5] Catley (2001, p. 37) remarks: "The histories of Australia and New Zealand have been sufficiently parallel to create societies as similar as any two other countries in the world, but sufficiently different to ensure they have remained separate sovereign nation states for the last century."

[6] New Zealand Australia Free Trade Agreement.

employment share began the period at 21%, rose to a plateau of almost 26% through the 1970s, and then declined to 18% by 1993.

The historical descriptions in Edwards and Holmes provide pointers to the fundamentals driving post-war development trends in the two countries. An understanding of these fundamentals, and their likely future paths, is important for formulating a policy harmonisation programme. The closer are the shocks that impact on each economy, the more harmonised can be the institutions in the two countries. Putting it another way, less similarity in shocks may imply a need for different country institutions in order to handle the impact of the shocks on the local population. As one example, traditional currency union literature[7] emphasises that individual country macroeconomic adjustment can be put at risk if a currency union is formed between countries that experience heterogeneous shocks.[8]

Two questions arise in interpreting shocks across countries. First, what are the underlying trends around which the shocks impact? Second, how do we judge whether shocks are materially different across countries?

Answering the first question not only provides a baseline for calculating shocks, but can also be helpful in interpreting the economic impact of the shocks that occur. For instance, the economic impact of a shock to the copper price in a country with large copper wealth will differ from the economic impact on a country that produces little or no copper. The price shock may be of the same magnitude, but the economic impact will be very different. The baseline trends also indicate key features regarding the long-term development path of one country relative to another, for instance as to whether high-value services are taking over from other sectors as a share of the economy.

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[7] See, for example, Mundell (1961) and Grimes et al (2000).
[8] For a contrary view, see Kempf and Cooper (2004), who argue that a currency union is welfare-improving no matter what the correlation of shocks, provided individual country fiscal policy can be used for stabilisation purposes.

The second question is relevant for interpreting the effects both of shocks and of trends. Developments will never be identical in two countries: some difference in experiences must be expected. In the absence of fully-specified structural models that take into account all relevant features of each economy, it is difficult to find a metric that distinguishes whether shocks are "similar" or "different" across countries.

We tackle this issue by comparing New Zealand experiences with those in each of the Australian states. New Zealand developments are regarded as materially "different" to those in Australia if they follow a distinctly different pattern to the patterns of any of the Australian states. They are regarded as "similar" if New Zealand developments fall within the shared experience of the states. In some cases, New Zealand and one of the states may share outlying experiences, in which case this similarity can be identified, as can the idiosyncratic nature of these experiences compared with those of the remaining states. Developments in each region can be compared with developments in Australasia as a whole.[9] They can also be compared with developments in each other region to indicate regions that experience similar developments over time.

Our focus here is on trend developments in each region, rather than on shocks.[10] This focus is in keeping with that in Edwards and Holmes (1994). Rather than focusing on the entire post-war period, our focus is on developments from the mid-1980s onwards, covering New Zealand's "reform" and "post-reform" periods (Evans et al, 1996). By providing analysis of regional developments and by updating aspects of previous work, we provide new perspectives on New Zealand's development path. In particular we are able to analyse whether New Zealand has been developing along similar lines to the high-growth Australian states.

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[9] "Region" refers to New Zealand and each state. "Australasia" refers to the combined entity of Australia and New Zealand.
[10] Analysis of the patterns of shocks across these regions is the focus of subsequent research.

In Section 2 we describe data used in the study and the methodology used to determine trends. We provide a brief overview of the evolution of population, GDP, GDP per capita and employment across each region, as a precursor to examining key development trends. Section 3 examines the evolution of employment trends by industry. Section 4 relates the trend results to overall changes in living standards. It uses these relationships to discuss New Zealand's development relative to development trends elsewhere in Australasia.

2 Data and methodology

An overall measure of living standards is provided by real GDP per capita. Sources and key characteristics of these data are discussed in Section 2.1. We use employment as our indicator of trend economic developments (as in Bjorksten et al, 2004). These data, which are available on a disaggregated basis by industry, are described in Section 2.2. In that section we also discuss our methodology for calculating employment trends.

2.1 GDP per capita

Nominal GDP, real GDP and population data are available for New Zealand from Statistics New Zealand (SNZ).[11] Australian regional (and aggregate) data for each variable are available annually (June years) from the Australian Bureau of Statistics (ABS).[12] The Australian regional series begin in 1990.[13] Henceforth, all annual data refer to years ended June, to correspond with the Australian data. In the analysis that follows, "Australia" is the sum of the eight Australian states, while "Australasia" is defined as the sum of Australia plus New Zealand. Regions are denoted as follows:

ACT   Australian Capital Territory
NSW   New South Wales
NT   Northern Territory
NZ   New Zealand
QLD   Queensland

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[11] See Statistics New Zealand series DPEA.SDBC (population), S1NB15 (nominal GDP), S1RB01S (real GDP).

[12] See ABS National Accounts 522001 and 522003.

[13] For estimates of per capita GDP back to 1861 for each region (other than ACT and Northern Territory) see Cashin (1995).

SA   South Australia
TAS   Tasmania
VIC   Victoria
WA   Western Australia
ANZ   Australasia

Table 1 summarises key characteristics of the nine regions within Australasia. The levels data (for nominal GDP per capita and population size) refer to 2003; annual growth rate data refer to the full period for which all data are available, 1990–2003.[14]

Table 1: Regional characteristics*

	ACT	NSW	NT	NZ	QLD	SA	TAS	VIC	WA
2003 (June year)									
Nominal GDP (A$pc)	47738	40127	45871	29490	33782	32294	27100	39058	42269
Population (mill)	0.317	6.628	0.198	3.942	3.747	1.514	0.472	4.926	1.950
1990–2003 (growth, % p.a.)									
Real GDP	2.57	3.05	2.53	2.85	4.36	1.97	1.46	2.93	3.78
Population	0.98	1.03	1.53	1.21	2.09	0.46	0.23	0.96	1.55
Real GDP (pc)	1.57	2.00	0.98	1.62	2.23	1.50	1.23	1.95	2.20

*Data sources described in text; pc denotes per capita

Per capita nominal GDP data show considerable variation across the nine regions.[15] New Zealand's nominal GDP per capita in 2003 was A$29,490 compared with A$38,136 for Australia as a whole. While considerably below that of Australia, New Zealand's per capita GDP lies within 10% of each of Tasmania and South Australia (8.8% above TAS and 8.7% below SA). Queensland's per capita GDP is closer to that of New Zealand than it is to either New South Wales or Victoria (the two largest states).

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[14] Different cyclical starting and ending points can affect interpretation of this data. Since we do not have annual data prior to 1990 for the Australian states we cannot ascertain their cyclical properties at the start.
[15] New Zealand data is converted to Australian dollars using the average AUD/NZD exchange rate over the year to June 2003 (source: Reserve Bank of New Zealand, www.rbnz.govt.nz). Actual exchange rates are used rather than PPP data since the latter are not available across the Australian states.

New Zealand is the third largest region by population (being 5.2% larger than Queensland), and its population growth ranks it fourth over the period. Its population growth (1.2% p.a.) is notably stronger than in the two other relatively poor regions, South Australia (0.5% p.a.) and Tasmania (0.2% p.a.), where migration patterns have resulted in relatively low state population growth (Poot, 1995).

New Zealand also ranks midway in Australasia for real GDP growth and GDP per capita growth over the period. Its per capita growth rate of 1.6% p.a. places it as the median region in terms of per capita growth, although New Zealand's growth rate is 0.4% p.a. lower than that of Australia as a whole.

Figure 1: Real GDP per capita 1990=100
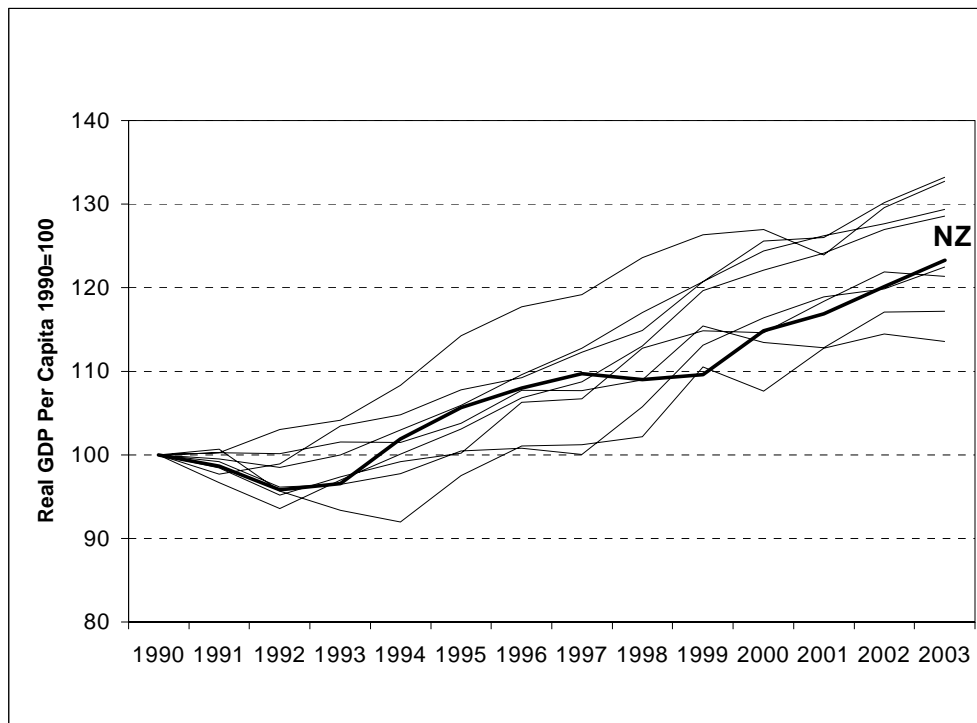
New Zealand is again the median region in terms of overall real GDP growth (and almost identical to growth in Victoria), albeit at a rate that was also 0.4% p.a. below that of Australia. This median performance can be seen in

Figure 1, which presents per capita GDP developments from 1990 with a base of 1990=100.[16]

Taking these measures together, New Zealand does not stand out as being an outlier in Australasian terms according to income, size or growth. It is the third largest state by population and fourth largest state by GDP. While being a relatively poor (but not the poorest) region, it has been growing at a rate that is similar to other regions within Australasia since 1990.

This latter feature has not always been the case. Cashin (1995) provides estimates of per capita GDP growth rates since 1861 for each region other than the two territories. Table 2 presents his post-Korean War estimates[17] for the (irregular) "decades" 1954–1961, 1961–1970, 1970–1981 and 1981–1991.[18] Also in Table 2, we extend Cashin's work to include per capita GDP growth rates (using data described above) for the twelve years 1991–2003. In each case, estimates are provided for the six "true" Australian states plus New Zealand.

Table 2: Long term real per capita GDP growth (% p.a.)*

	NSW	NZ	QLD	SA	TAS	VIC	WA	NZ average (std devs)
1954–1961	2.71	2.04	2.56	0.56	2.00	2.00	1.50	0.20
1961–1970	3.63	2.25	3.57	2.69	3.36	3.11	4.64	-1.52
1970–1981	1.75	1.07	1.92	1.42	2.83	2.21	3.38	-1.36
1981–1991	1.34	0.92	0.87	1.78	0.23	0.59	1.52	-0.23
1991–2003	2.21	1.87	2.62	1.76	1.31	2.41	2.37	-0.49

*Sources: Cashin (1995) for data to 1990/91; post-1990/91 data sources described in text. The final column gives the New Zealand figure for the "decade" less the (unweighted) average figure across all seven regions for the "decade" expressed in (unweighted) standard deviations across the seven regions for that decade.

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[16] In this and subsequent figures, NZ is highlighted and identified. The other lines refer to each of the Australian states. The tables can be used to infer the individual state performances within the graphs; individual states are not identified so as to keep the graphs simple and because our focus is on NZ's performance relative to the state experiences.

[17] The wool boom during the Korean War affected growth rates in several regions over the previous decade, making the post-Korean War period a sensible "post-war" period for cross-regional comparisons.

[18] The latter decade is derived from Cashin's estimates for 1981–1986 and 1986–1991.

The estimates show that New Zealand's growth rate has been lower than the (unweighted) average growth rate in four of the last five decades. However, in three of these decades, New Zealand's per capita growth rate was within half a standard deviation of the average. The major discrepancies in per capita growth rates occurred over 1961–1970 and 1970–1981, when New Zealand's growth rate was around one and a half standard deviations below that of the regional average.

2.2 Employment

Employment data are available quarterly for each region from 1985(4) onwards.[19] They are available on a basis that enables a similar industrial decomposition for each region. These data enable us to calculate developments in employment in each of nine industries (and in aggregate) in each region, and hence to calculate the share of employment in each industry in each region. This share measure indicates the nature of economic developments in each region, for instance whether development is primarily related to manufacturing growth or to growth in certain types of services. It does not, however, enable us to examine regional productivity developments at the industry level.

The trend analysis using employment data indicates whether regions are similar to one another in their long-run (trend) patterns of development; whether agglomeration is occurring and, if so, whether it is more prevalent for some industries than others. It also allows us to determine whether some regions are on a depopulating path as a result of losses in employment in relevant industries.

Data for total employment (Full + Part-Time) for each region by industry are available.[20] Australian employment data are sourced from the ABS;[21] NZ data are sourced from the Household Labour Force Survey of SNZ.[22] Total

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[19] Our finishing point, 2002(4), reflects the data we had available at the outset of this study.

[20] We use Full + Part-Time employment in the study in place of an arbitrary weighting of part-time relative to full-time employment since we do not have the information to determine appropriate weights. Further, our study concerns employment trends rather than shocks around the trends, and it is reasonable to expect that industry trends in full versus part-time work are similar across regions.

[21] ABS series A87218A to A87766X.

[22] SNZ series HLFQ SJB3U# where # refers to the relevant industry.

Australasian data series are computed by adding NZ data to the Australian federal data.

The industry breakdown for Australian employment data is on an ANZSIC (Australia New Zealand Standard Industry Classification) basis. The industry breakdown for New Zealand for the whole period is available on an NZSIC (New Zealand Standard Industry Classification) basis. New Zealand data are also available from 1996 on an ANZSIC basis, enabling a close matching of aggregated NZSIC groups to aggregated ANZSIC groups. For purposes of comparability, we choose nine industry groupings. Our abbreviations and brief descriptions are given below; Table 3 matches our descriptions with the NZSIC and ANZSIC descriptions.

AFF   Agriculture, Forestry, Fishing
MIN   Mining
MAN   Manufacturing
EGW   Electricity, Gas, Water
CON   Construction
WRT   Wholesale and Retail Trade[23]
TSC   Transport, Storage and Communications
BFS   Business and Financial Services
OTS   Other Services[24]
TOT   Total (sum of all industries)

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[23] Including Accommodation, Cafes, Restaurants.
[24] Also known as Community, Social and Personal Services.

Table 3: Employment data industry descriptions*

Abbreviation	Category	NZSIC	ANZSIC
AFF	Agriculture, Forestry, Fishing	Agriculture, Forestry, Fishing	Agriculture, Forestry, Fishing
MIN	Mining	Mining	Mining
MAN	Manufacturing	Manufacturing	Manufacturing
EGW	Electricity, Gas, Water	Electricity, Gas, Water	Energy
CON	Construction	Construction	Construction
WRT	Wholesale & Retail Trade (incl Accommodation/ Cafes/ Restaurants)	Wholesale & Retail Trade	Wholesale & Retail Trade + Accommodation/ Cafes/ Restaurants
TSC	Transport, Storage & Communications	Transport, Storage & Communications	Transport & Storage + Communications
BFS	Business & Financial Services	Business & Financial Services	Finance & Insurance + Property & Business Services
OTS	Community, Social & Personal Services	Community, Social & Personal Services	Govt Admin & Defence + Education + Health & Community + Cultural & Recreation + Personal & Other Services
TOT	Total	Total	Total

*For NZ, "not specified" has been distributed pro rata across each industry.

Table 4 presents the beginning of period [1985(4)] and end of period [2002(4)] employment levels for each region for each industry, as well as for Australasia as a whole and for the total of all industries. The table makes apparent the size differences across the regions. We regard "large" regions (in order of size) as NSW, VIC, NZ, QLD, WA and SA; "small" regions are TAS, ACT and NT. In terms of industry distribution, TAS has more similarities with the large regions than do either ACT or NT. Share calculations have to be interpreted with caution for these last two regions.

Table 4: Total employment (000): 1985(4) and 2002(4)*

|	ANZ	ACT	NSW	NT	NZ	QLD	SA	TAS	VIC	WA
TOT	8,451	123	2,349	68	1,569	1,091	593	181	1,829	649
	11,326	173	3,127	103	1,905	1,777	699	201	2,378	963
AFF	618	1	128	2	182	88	48	16	102	51
	537	1	100	1	171	104	43	16	67	34
BFS	868	13	286	7	124	109	57	16	190	66
	1,662	27	535	11	239	224	88	20	381	137
CON	582	12	159	8	108	87	39	12	111	47
	848	10	249	8	129	150	41	12	180	71
EGW	160	1	55	1	16	19	10	6	42	10
	82	1	28	1	9	11	6	2	16	8
MAN	1,453	6	393	4	321	138	110	26	379	77
	1,436	4	372	4	289	191	95	22	357	102
MIN	114	0	38	4	6	19	9	3	8	28
	94	0	16	3	4	22	3	2	8	35
OTS	2,105	64	551	24	391	259	150	46	456	165
	3,219	88	830	42	539	502	220	67	645	287
TSC	618	4	187	5	106	93	38	13	127	46
	683	7	209	9	115	103	40	11	144	48
WRT	1,932	22	552	15	315	281	132	41	415	159
	2,764	37	788	24	411	471	163	49	580	242

*In each cell, the top figure is total employment in 1985(4), and the bottom figure is total employment in 2002(4).

In this paper we concentrate on trend employment developments. In order to do so, we filter out short-term cyclical occurrences that have little or no bearing on longer-term developments. Each trend series is calculated using a Hodrick-Prescott filter (Hodrick and Prescott, 1997) applied to the actual series. An identical de-trending method (with lambda=1600) is used for each series, given that the frequency of the data (quarterly) is identical and the nature of the data (employment) is also identical.

We denote employment series as Ei_j, where the prefix, E, represents employment; i is the region identifier; and j indicates the industry. An employment share series is denoted with a prefix, S. For instance, STAS_AFF is Tasmania's share of trend employment engaged in agriculture. For each region, aggregate trend employment in each quarter is the sum of trend employment in the nine industries. All subsequent figures and tables refer solely to trend employment or trend employment shares.

Aggregate trend employment paths for each region are graphed in Figure 2. In each case, trend employment is indexed to 1985(4)=100.

**Figure 2: Aggregate trend employment 1985(4)=100**
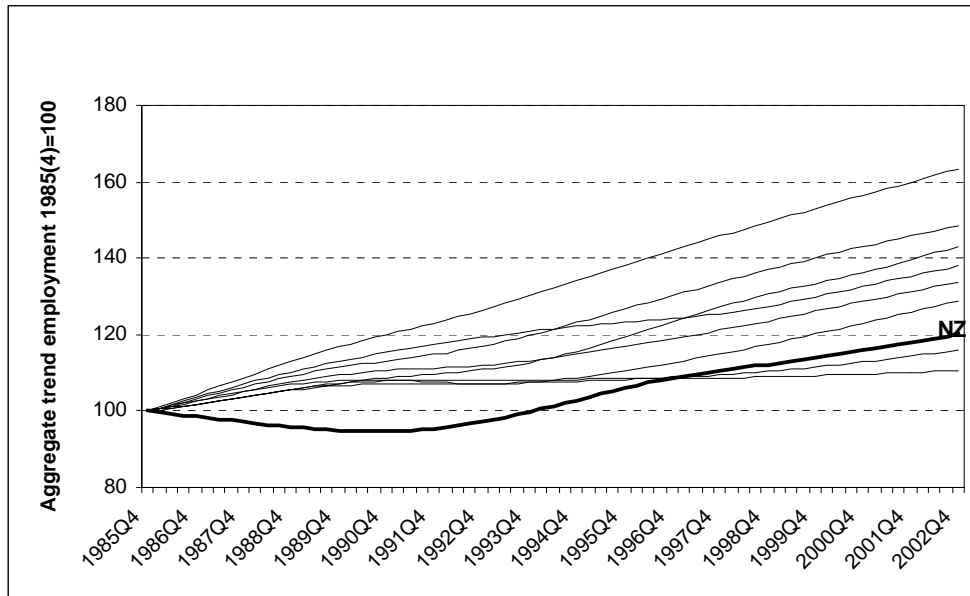
The highest performing state in terms of employment growth over 1985–2002 is QLD, with WA second. QLD trend growth is more than twice that of VIC and approximately twice that of NSW.[25] There is a close similarity in trends between Australasia as a whole (not shown) and NSW (despite NSW constituting just 28% of total Australasian employment across the sample).

NZ's trend employment path is very different over the first six years of the sample from that displayed in any other region, with a downward pattern evident. This period coincided with the major microeconomic and macroeconomic reforms undertaken within New Zealand, beginning in 1984 and culminating in the Employment Contracts Act and fiscal cuts of 1991 (Evans et al, 1996). Thereafter trend growth in NZ employment mirrors that of most other regions but without any significant closing of the gap that opened during the reform period. By the end of the sample, cumulative NZ trend employment growth was above that of TAS (the weakest performer over the whole period) and SA.

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[25] Over most of the sample, there was similar trend growth between NSW and VIC, apart from a gap that opened between 1989 and 1993 (in NSW's favour).

Taking employment growth just from 1991(4) onwards (the end of the major economic reforms in New Zealand), New Zealand emerges as a stronger than median performer. This is emphasised in Figure 3, which indexes trend employment to 1991(4)=100. Over this period there is nothing "atypical" in NZ's aggregate employment growth.

Figure 3: Aggregate trend employment 1991(4)=100
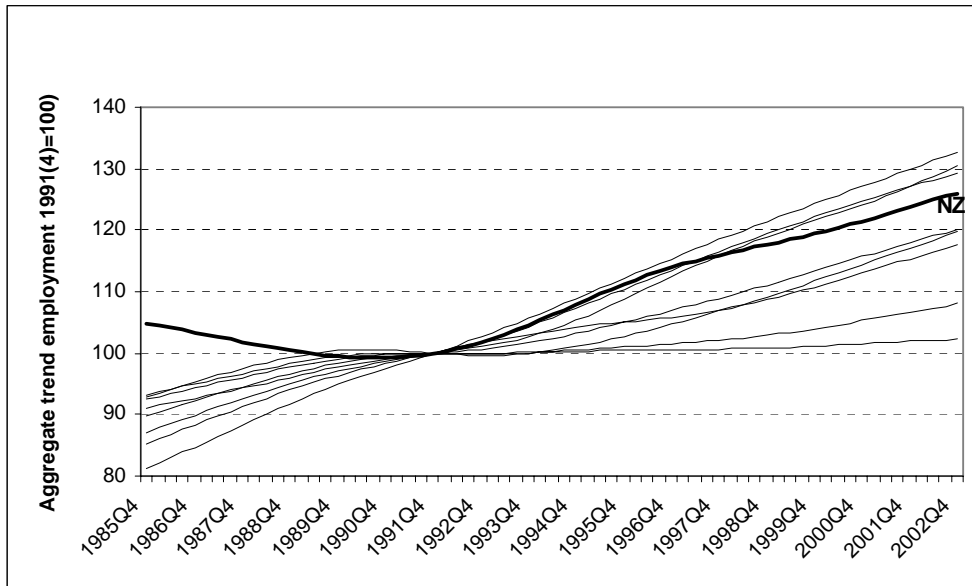
3   Industrial employment trends

Trends in regional employment shares for each of the nine industries are graphed in Figures 4–12

Figure 4: AFF trend share: NZ and Australian states

Figure 5: BFS trend share: NZ and Australian states

Figure 6: CON trend share: NZ and Australian states

Figure 7: EGW trend share: NZ and Australian states
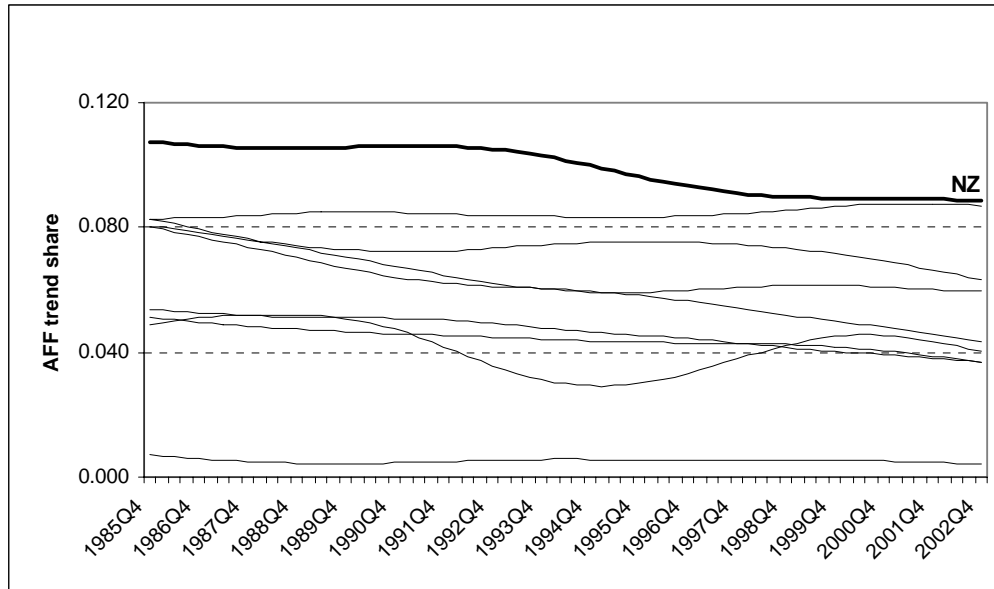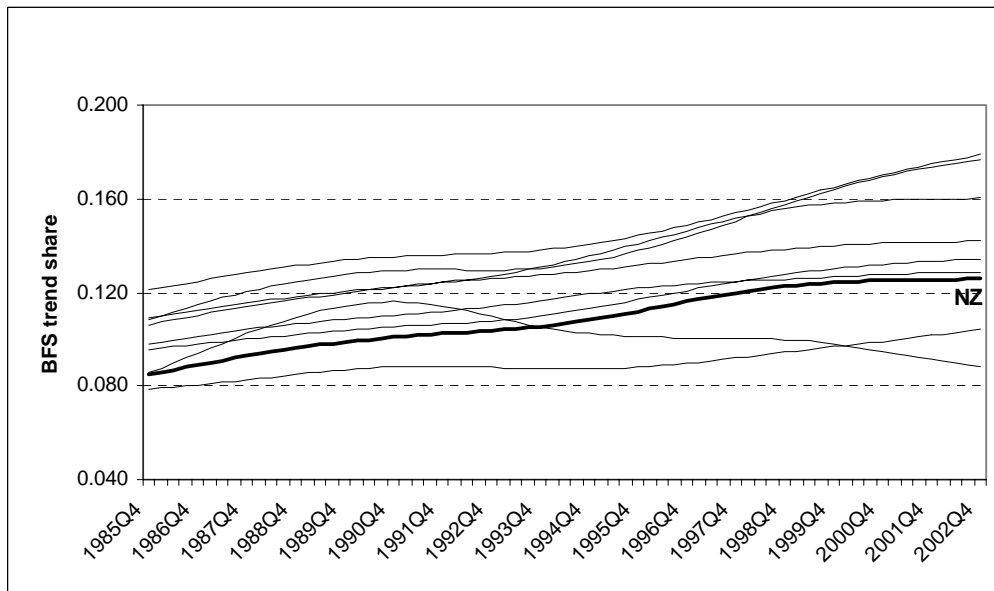

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Figure 8: MAN trend share: NZ and Australian states

Figure 9: MIN trend share: NZ and Australian states

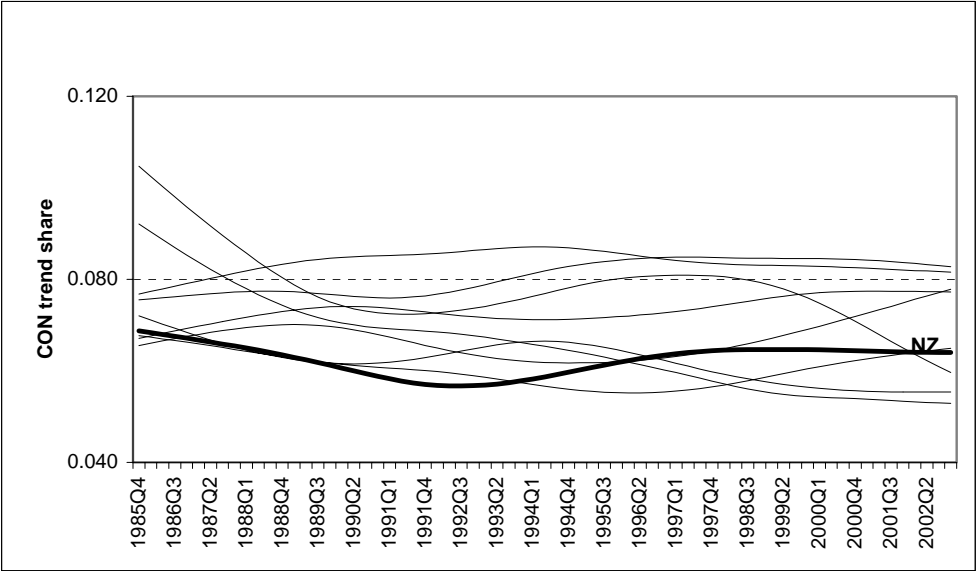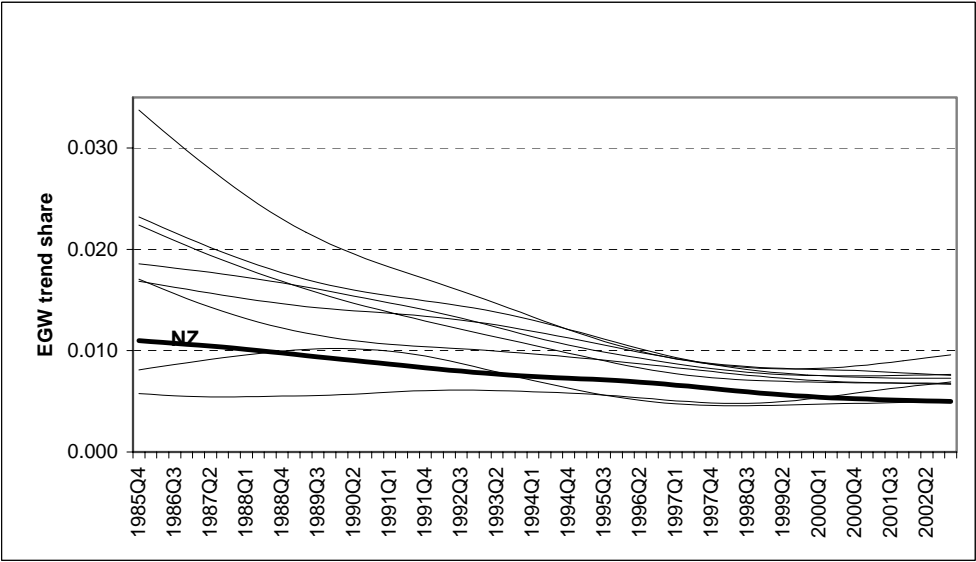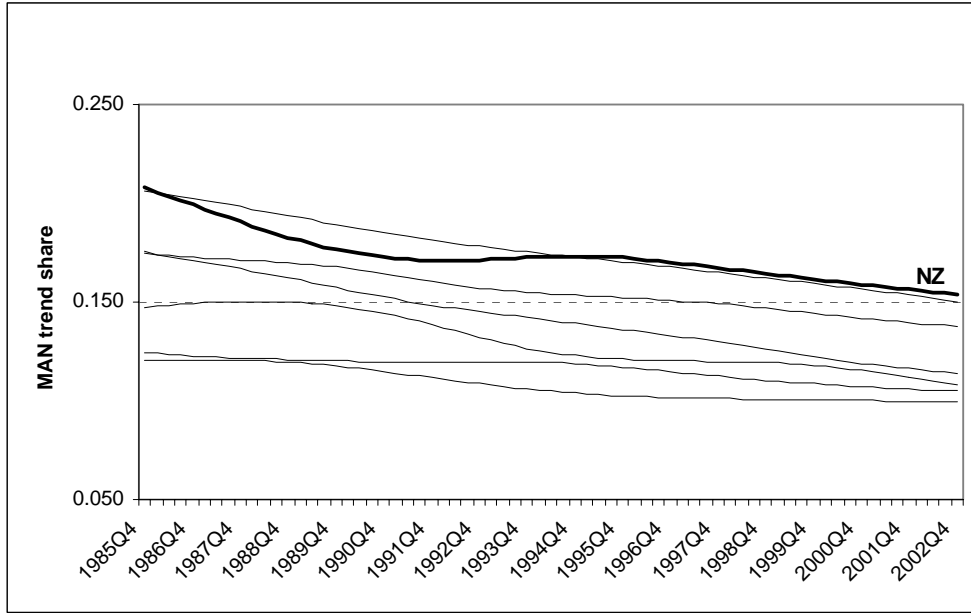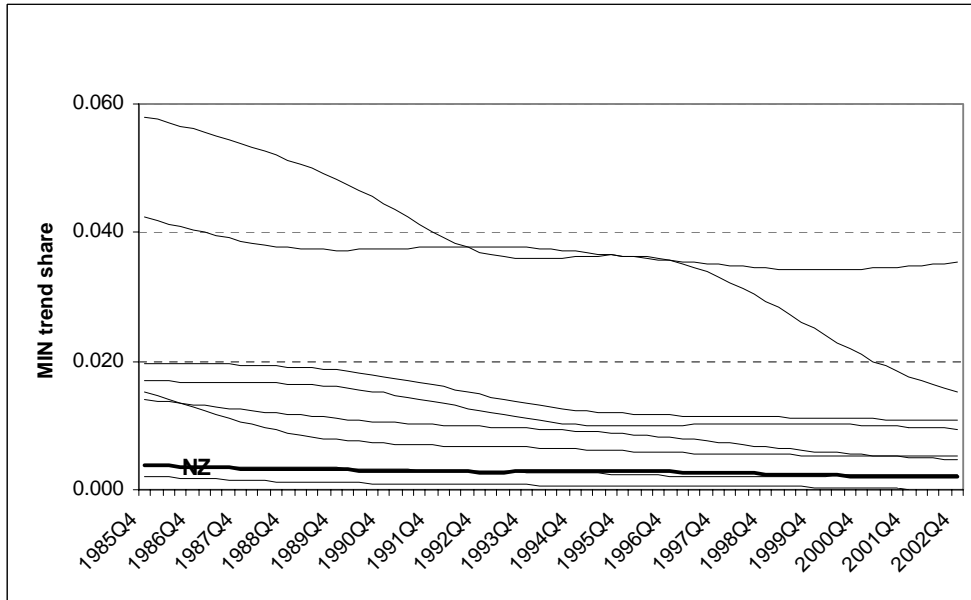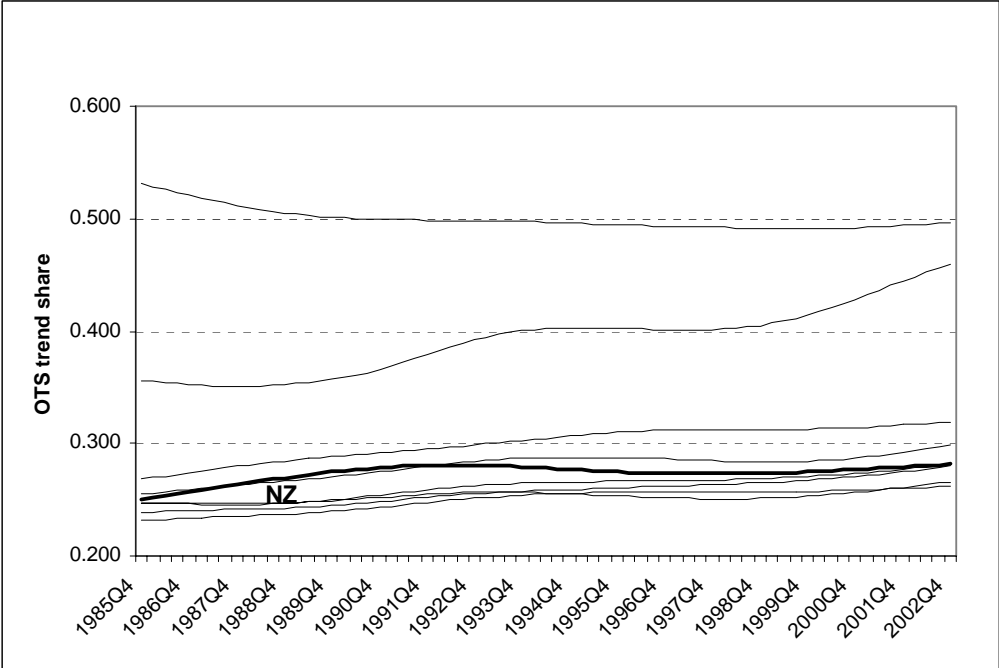**Figure 10A: OTS trend share: NZ and Australian states**

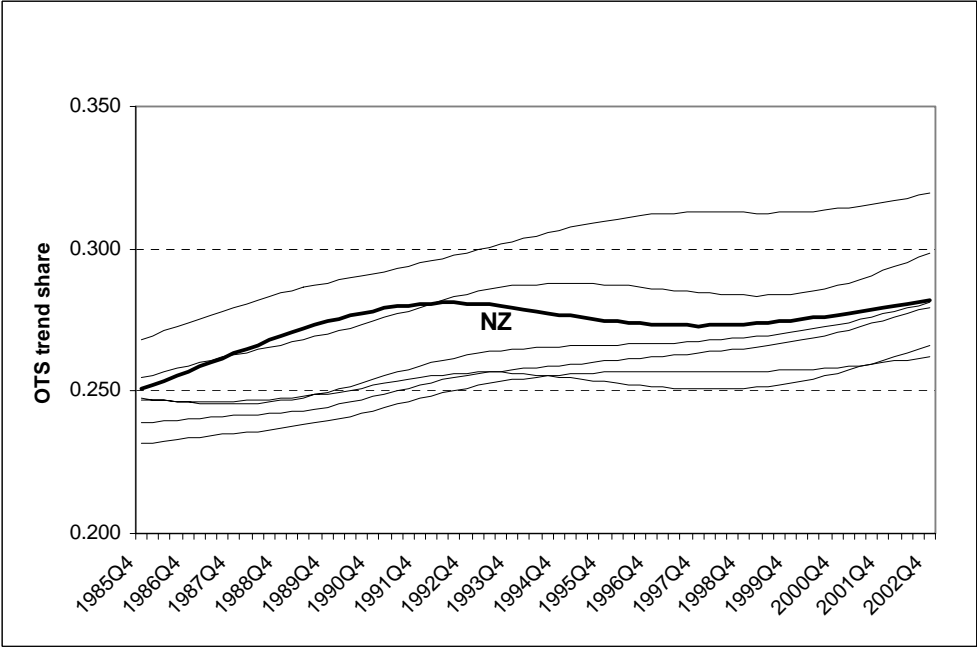**Figure 10B: OTS trend share: NZ and Australian states (excl. ACT, NT)**

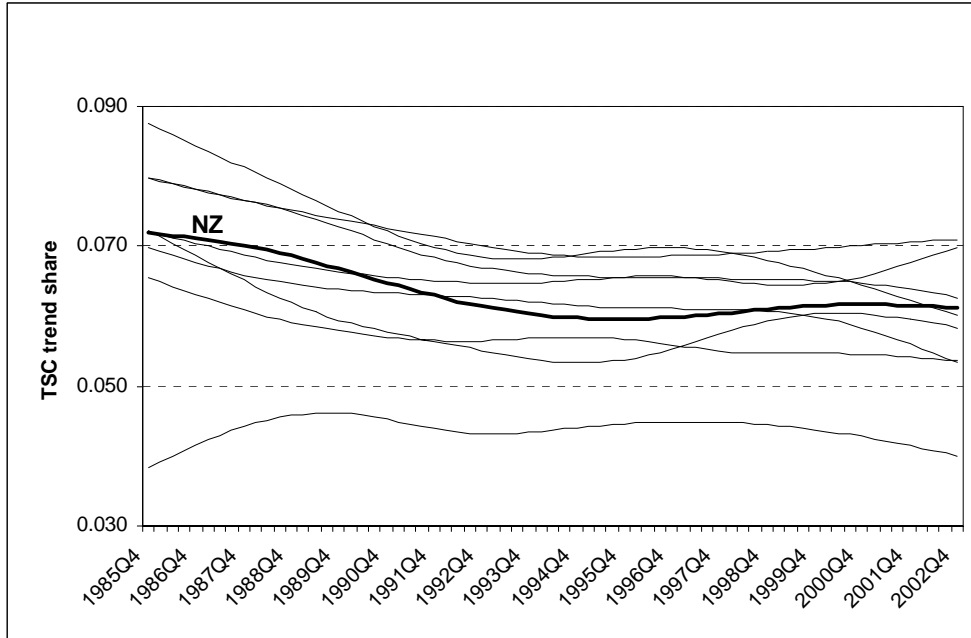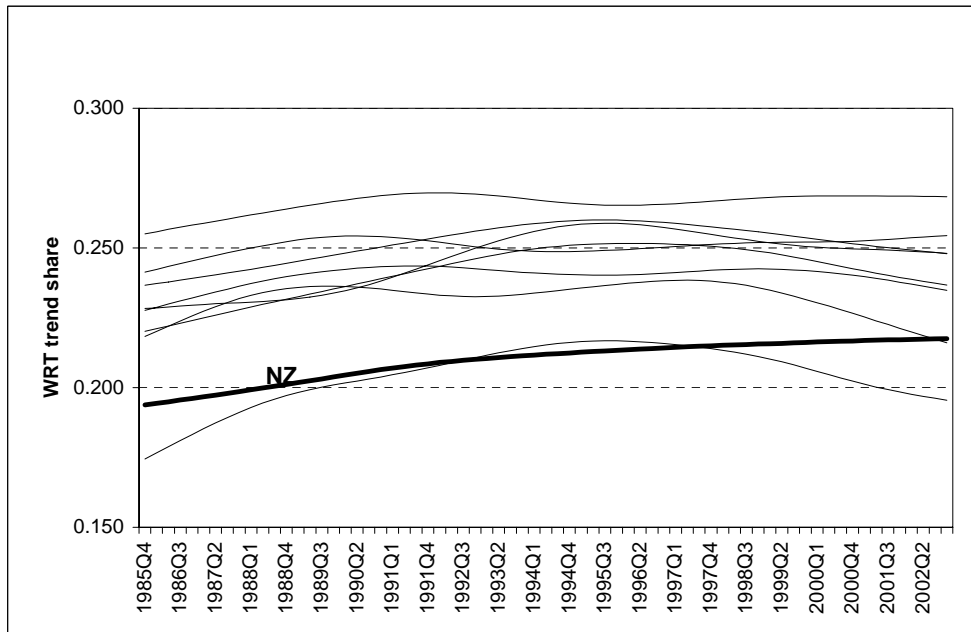**Figure 11: TSC trend share: NZ and Australian states**

Figure 12: WRT trend share: NZ and Australian states

To aid interpretation of the figures, Table 5 (p.29) presents the beginning and end of period employment shares for each industry in each region, and for Australasia as a whole. (The final two sets of rows in the table are described later in the text.)

Several features stand out. First, at the start of the sample NZ had by far the largest employment share (almost 11%) involved in agriculture, forestry and fishing (Figure 4). While this share fell through the sample, it remained high, albeit on a par with TAS at the end of the sample. These two states had employment shares in AFF of almost 9% in 2002 compared with the ANZ average of close to 5%. Overall, the share of employment involved in AFF declined by approximately 2 percentage points over the sample period.

WA stands out in terms of its employment share in mining (over 4% initially, trending down to 3.5%); only NT is higher at the start and its share declines markedly to 1.5% in 2002 (Figure 9). Of the large states, NZ and VIC stand out as having negligible mining shares. Overall, the employment share of mining trends down from a little over 1% to a little under 1% through the period.

Manufacturing (Figure 8) sees a marked downward trend in employment share across Australasia throughout the period. The share falls by around 5 percentage points to stand at 12.5% in 2002. NZ and VIC stand out as having the largest manufacturing shares, with SA the only other state higher than the Australasian average in 2002. NZ's share shows a marked swing, reflecting the effects of the economic reforms. Of the large states, the two states with the fastest overall employment growth (QLD and WA) each have a low (and declining) manufacturing share.

New Zealand's relatively high manufacturing share may surprise New Zealand observers. The decline in (seasonally adjusted) manufacturing employment numbers from 326,000 in 1986(1) to 239,000 in 1992(1) indicated a marked downturn in New Zealand manufacturing activity. Over this period, New Zealand's trend manufacturing share also fell, from 20.6% to 17.1%. Apart from a brief rise in the trend manufacturing share in the mid-1990s, NZ's manufacturing share kept falling, to reach 15.4% in 2002. But NZ's fall in the manufacturing

trend employment share over the full period (5.4 percentage points) was not unusual by Australasian standards (the ANZ manufacturing share fell by 4.9 percentage points). Economies tend to become more services oriented and less manufacturing oriented as they develop, and this trend has been observed for all Australasian regions over the sample other than NT, which had a low manufacturing share to start with.

The manufacturing data is not disaggregated throughout the period for all regions, so we cannot directly compare the nature of manufacturing across regions. It is possible that New Zealand's manufacturing comprises quite different sectors than in some Australian states, being more oriented towards agriculture commodity processing than is the case in at least some of the Australian states. To test this hypothesis indirectly, we regressed the change (Δ) in each region i's manufacturing share on its lagged agriculture share and its lagged manufacturing share, as in Equation (1).[26]

$$\Delta Si\_MAN_t = \alpha_0 + \alpha_1 Si\_AFF_{t-1} + \alpha_2 Si\_MAN_{t-1} \qquad (1)$$

A significant positive coefficient (α_1) on Si_AFF_{t-1} indicates that a variation in the agriculture employment share has a subsequent effect on the manufacturing employment share. If manufacturing employment is responsive to agriculture employment in this manner, we can interpret the result as indicating a significant agricultural commodity-processing component within manufacturing.

Table 6 (p.30) presents the estimates for α_1 from Equation (1) for each region together with its associated significance level (p-value). Five of the nine regions show no relationship between MAN employment and AFF employment at any conventional significance level (and three of these have negative coefficients for α_1). Two of the remaining four regions (VIC and TAS) have α_1 significant at the 20% level, while α_1 is significant at 6.5% for NZ and at 3.4% for WA. NZ is at the higher end of the significance levels for the relationship, although each of VIC, TAS and WA have point estimates that are higher than for NZ; SA's point estimate is almost as high. These results imply that while NZ's manufacturing

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[26] Seasonally adjusted data were used in place of trend data in estimating (1). The form of the equation is equivalent to an error correction specification with a long-run relationship between employment in MAN and AFF.

sector is reasonably commodity processing intensive, New Zealand does not stand out as the only region (even amongst the large states) where this appears to be the case.

The trend employment share involved in electricity, gas and water (Figure 7) declined markedly across Australasia and in each of the major regions in the first half of our sample. This finding is consistent with productivity improvements in this sector between 1988 and 1994 detailed by Parham (2002). Of the major regions, New Zealand has by far the lowest employment share within this industry. Transport, storage and communications (Figure 11) also had a falling employment share across most regions. Apart from ACT, which understandably is an outlier for this industry, each state had between 5% and 7% of its workforce involved.

Construction (Figure 6) has the greatest cycles within its trend measure of any of the industry shares (shorter-term cycles exist around these trend cycles). The trend cycles are related to long-term employment trends. For instance, in New Zealand, which experienced the greatest trend cycle in aggregate employment, the construction share fell from close to 7% at the start of the sample to around 5.5% in 1992 (just after the trough of the recession), rising again to 6.5% in the final five years of the sample.

This type of long-term cyclical behaviour of construction can be interpreted as an "accelerator" link to activity. Cross-sectionally, the correlation coefficient between each region's average CON share over the period and regional trend employment growth over the period is 0.93. For Australasia as a whole, the time series correlation between the rate of change of employment and the construction share over the sample period is 0.30, again consistent with an accelerator linkage. New Zealand has a low average CON share over the period (6.2%), equal to the average in TAS and just larger than that in SA (6.0%). The two fastest growing states, QLD and WA, have period average CON shares of 8.4% and 8.1% respectively. NZ's relatively low CON share relative to these two states and relative also to the two largest states, NSW (7.3%) and VIC (6.7%), is consistent with evidence that New Zealand tends to be "capital shallow" relative

to Australia (Black et al, 2003). In turn, capital shallowness is cited as a reason for New Zealand's low labour productivity levels compared with Australia.

The employment share of each of wholesale and retail trade (Figure 12), business and financial services (Figure 5), and other services (Figure 10)[27] grew in almost every region between 1985 and 2002. The rise in the share of services employment is the counterpart to the fall in the shares of primary sector and manufacturing employment. The trend rise through the period was most pronounced in business and financial services (BFS), where the aggregate employment share rose from 10.5% to 15%. Each of NSW, VIC and ACT had higher than average employment shares for BFS in 2002, while TAS, NT and NZ had considerably lower than average shares for this sector. With respect to wholesale and retail trade, NZ and NT again had low shares compared with the Australasian average, joined by ACT.

By contrast, NZ has a very similar share to the Australasian average for other services (OTS), an industry that is dominated by government-provided and/or government-funded services. Within Australia, the share diverges sharply across states, with ACT (as expected) having a very high share for this industry; TAS and SA also have high shares while NT has an extremely high share.

Overall, while some states have sectoral employment shares that differ quite substantially from the average for some sectors, the larger states tend to have industry shares that are closer to the average across the board. This is shown, for the beginning and end of the period, in Table 5. The summary statistic, Ave% |Dev|, gives the average absolute deviation (in percentage points) of each region's industry shares relative to the aggregate shares across Australasia (an average per industry deviation of one percentage point[28] would correspond to a figure of 1.00).

At the end of the period, the five large states within Australia have reasonably closely grouped (and heuristically "low") deviations from the Australasian average; on average, for each of these regions, the per industry

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[27] Figure 10A presents all regions. Figure 10B excludes two large outliers (ACT and NT) to make developments in remaining regions clearer.

deviation from the ANZ share is around one percentage point. By contrast, the per industry deviation is approximately two percentage points for TAS and over four percentage points for each of ACT and NT. New Zealand's per industry deviation is around 1½ percentage points, a little higher than for each of the five large Australian states, but lower than for the small three states. On this measure New Zealand is not quite a "core" region of Australasia, but neither is it far removed from what is typical in the core.

This summary measure (Ave% |Dev|) is useful for comparing each region to the whole of Australasia. Such a comparison would be relevant, for instance, in considering how a region might fare when policy is set according to conditions across the entirety of both countries. This would likely be the case, for example, under a currency union.

However, this summary measure is not so useful for comparing the structure of one region relative to the rest of Australasia. This is because a large region, such as NSW, comprises a sizeable proportion of the whole entity and thus in part is being compared against itself, biasing the summary measure downwards. In Table 5, the summary measure, Ave% |DevX|, compares each region's industry share with the average industry share across all other regions (i.e. comparing each region against Australasia excluding that region).

At the end of the period, each of the five large Australian states have per industry deviations relative to the rest of Australasia of between 1 and 1.5 percentage points. NZ is higher, but not unduly so (at around 1.8 percentage points); TAS follows quite closely behind NZ, while NT and ACT remain distant in terms of structural similarity.

According to both summary measures, NZ converged slightly towards the rest of Australasia in terms of industrial structure over the period under consideration. Some other regions had quite pronounced changes relative to the Australasian average industrial structure. In particular, SA and TAS both became

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[28] For instance, if the region's agriculture share were 0.042 relative to the ANZ share of 0.052, its BFS share were 0.160 instead of ANZ's share of 0.150, etc).

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markedly less like the Australasian average through the period, whereas QLD converged strongly towards it.

Another way of comparing structural developments across regions is to examine how closely the change in a region's industry shares over time mirror changes at the aggregate (Australasian) level. A region may have a consistently large mining or agricultural share, for instance, but the changes in this and other sectoral shares may nevertheless be similar to structural changes in aggregate. In such a case, development paths are similar, but the starting (and end) points are different. To examine this aspect, Table 7 (p.30) provides a summary measure of trend employment developments for each region and industry, based on Equation (2). It presents the coefficient (α_1) on the time trend term (TIME) for the full sample in the equation (for each region i and industry j):

$$\log(Si\_j_t) = \alpha_0 + \alpha_1 \text{ TIME}_t \qquad (2)$$

The estimate of α_1 in (2) is purely a summary statistic to compare trend growth rates between regions and across industries. It is not taken as a structural parameter (and hence cannot be used, for instance, in forecasting or related purposes).

VIC's trend growth in each of its industry shares is within 0.2% per quarter of the Australasian average for that industry; each of NSW, NZ and SA have one industry where the trend share change deviates by more than 0.2% (these are in the small industries of EGW and MIN). According to the Ave% |Dev| summary statistic, trend share changes in VIC are closest to those of ANZ; NSW, NZ and SA (in that order) form a second tightly bunched group, with gaps back to QLD, and then to TAS and WA. The summary statistics for TAS and WA are approximately twice that for NSW and three times that for VIC. ACT and NT are again strongly differentiated from the remaining regions in structural terms.

This measure indicates that VIC, NSW, NZ and SA can be regarded as "core regions" in terms of development trends; QLD is moderately closely related to the Australasian whole. For the three small states, both the level and trend share changes indicate that they can be regarded primarily as "peripheral" states in

structural terms. This is particularly the case for ACT and NT, with TAS being an intermediate case.

4   Discussion

The description of employment trends in Section 3 found certain sectoral developments that may be important in influencing overall growth trends. In particular, the data show that the two fastest growing regions (QLD and WA) had the largest CON shares through the period. Further, the regions with the largest BFS shares in 2002 (NSW, VIC and ACT) have considerably higher per capita incomes than two of the regions (TAS and NZ) that have low shares for this sector.[29]

These observations raise the issue of whether certain industrial structures have been associated with faster (or slower) trend growth. While a causal analysis of this issue is beyond the scope of the data used in this study, we can examine associations between GDP per capita growth, population growth, and sectoral structures over the period. We do so by calculating correlation coefficients across regions between GDP per capita growth and each of: population growth; sectoral average trend employment shares;[30] and sectoral share trend growth over the period.[31] (Since we are dealing with only nine regions, we cannot expect to find many statistically significant correlations; we relax the significance level to 20% to ensure that we capture the maximum possible information from the data.)

We find, firstly, that GDP per capita growth and population growth are positively correlated.[32] This implies that the fastest-growing regions in terms of income per head have also had relatively fast-growing populations. Second, GDP per capita growth is positively correlated with the BFS average share (at 8%

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[29] NT also had a low BFS share but has high per capita income. Its high income is possibly an aberration due to small numbers and heavy government influence, exhibited through its high share of employment in the "other services" sector.

[30] The average trend employment share for each sector in each region is calculated as the average of the 1985(4) and 2002(4) figures from Table 5.

[31] The trend growth for each sector share in each region is given by the estimate of α_1 in Table 7.

[32] Significance is at the 19% level; population is the denominator for GDP per capita, which could artificially bias the significance level upwards.

significance) and with the growth in the BFS share (at 16%). It is also correlated with the average WRT share (at 13%) and with growth in the CON share (at 4%).

The association between CON trend employment growth and GDP per capita growth is likely to reflect the capital requirements of fast-growing regions. It is conceivable that a burst of construction activity (e.g. public works) could lift GDP growth temporarily, but it is doubtful that prolonged GDP per capita growth is caused by the rising CON share. The positive correlation between the WRT share and GDP per capita growth may reflect the choices of people living in fast-growing regions to increase their purchases of retail goods (in keeping with a permanent income model of consumption).

The links between the BFS trend employment share (and its growth) and GDP per capita growth are likely to reflect bi-directional interactions. A fast-growing region may require the skills of people working in the business and financial services area. It may also be the case that growing concentration of BFS activities in larger centres (especially Sydney and Melbourne) spurs the growth of these regions. This may particularly be the case given that incomes of employees in this sector are well above average compared with those in other sectors.

If agglomeration of BFS employment is a contributor to regional per capita income growth (consistent with these associative results), there may be implications for regional development policies. In particular, if BFS agglomeration were to continue, a growing disparity of regional per capita incomes could occur. In the face of such trends, it may be advantageous for an individual region—especially one that is on the margin between being a growing or a stagnating BFS centre—to encourage greater location of BFS activities in its region ahead of other locations. A region that is facing head office "hollowing out" may therefore wish to assess the merits of a policy programme designed to reverse this trend.

Whether the longer-term development trends are causally related to per capita income levels or not is left to future investigation. The implications of the trend findings for the manner in which different shocks impact on each of the regional economies is also important. Grimes (2005), building on aggregate work

in Bjorksten et al (2004), will report analysis of the differing impact of industry-specific and other types of shocks on cycles across the nine Australasian regions.

In terms of the question posed in the title to this paper, New Zealand cannot be regarded (at least since 1991) as an atypical Australasian economy. New Zealand's trends in GDP growth, GDP per capita growth, population growth, and employment growth have each been quite typical amongst Australasian regions over this period. New Zealand's changes in industry shares through the period have also been typical of broader Australasian developments. New Zealand does, however, stand out as a moderate (but not substantial) outlier in some respects. It has a relatively high share of employment involved in each of agriculture/forestry/fishing, and in manufacturing; and relatively low employment shares in business and financial services, wholesale and retail trade, and in mining. Unfortunately for New Zealanders, it also has relatively low per capita incomes.

Table 5: Trend employment shares: 1985(4) and 2002(4)*

	ANZ	ACT	NSW	NT	NZ	QLD	SA	TAS	VIC	WA
AFF	0.070	0.007	0.051	0.049	0.107	0.083	0.080	0.083	0.054	0.080
	0.052	0.004	0.037	0.040	0.089	0.059	0.063	0.087	0.037	0.044
BFS	0.105	0.109	0.121	0.086	0.085	0.098	0.096	0.079	0.109	0.106
	0.150	0.177	0.179	0.088	0.126	0.129	0.134	0.104	0.160	0.142
CON	0.070	0.092	0.067	0.105	0.069	0.077	0.068	0.072	0.066	0.075
	0.075	0.053	0.077	0.060	0.064	0.082	0.065	0.055	0.078	0.083
EGW	0.019	0.008	0.023	0.006	0.011	0.017	0.019	0.034	0.022	0.017
	0.007	0.005	0.007	0.007	0.005	0.007	0.008	0.010	0.007	0.008
MAN	0.174	0.038	0.175	0.043	0.208	0.124	0.175	0.147	0.206	0.120
	0.125	0.029	0.114	0.044	0.154	0.105	0.138	0.108	0.150	0.100
MIN	0.013	0.002	0.014	0.058	0.004	0.020	0.015	0.017	0.004	0.042
	0.008	0.000	0.005	0.015	0.002	0.011	0.005	0.009	0.002	0.035
OTS	0.248	0.531	0.232	0.356	0.251	0.239	0.255	0.268	0.247	0.247
	0.279	0.497	0.262	0.460	0.282	0.280	0.299	0.320	0.266	0.281
TSC	0.075	0.038	0.080	0.080	0.072	0.087	0.065	0.072	0.072	0.070
	0.063	0.040	0.071	0.070	0.061	0.060	0.054	0.058	0.063	0.053
WRT	0.226	0.174	0.237	0.218	0.194	0.255	0.228	0.228	0.220	0.241
	0.242	0.196	0.248	0.216	0.218	0.268	0.235	0.248	0.237	0.254
Ave % |Dev|[+]	n/a	6.88	0.84	4.28	1.63	1.51	0.48	1.24	0.87	1.36
	n/a	5.44	1.01	4.34	1.53	0.98	1.00	1.93	0.86	1.12
Ave % |DevX|[^]	n/a	6.96	1.19	4.31	2.00	1.72	0.50	1.25	1.16	1.49
	n/a	5.51	1.41	4.39	1.83	1.17	1.05	1.95	1.09	1.24

* 1985(4) figures are shown as the top number in each cell; 2002(4) figures are shown as the bottom number in each cell.

[+] Average of the absolute deviations (in percentage points) in region industry shares relative to ANZ share.

[^] Average of the absolute deviations (in percentage points) in region industry shares relative to ANZ share excluding own region.

Table 6: Estimate of α_1 from Equation (1): 1985(4)–2002(4)

	ACT	NSW	NT	NZ	QLD	SA	TAS	VIC	WA
α_1	-0.153	-0.002	-0.012	0.128	0.039	0.121	0.195	0.229	0.165
[p]	[.574]	[.989]	[.815]	[.065]	[.538]	[.356]	[.168]	[.123]	[.034]

Table 7: Estimate of α_1 (% per qtr) from Equation (2): 1985(4)–2002(4)

	ANZ	ACT	NSW	NT	NZ	QLD	SA	TAS	VIC	WA
AFF	-0.4	-0.1	-0.4	-0.4	-0.4	-0.4	-0.2	0.1	-0.5	-0.8
BFS	0.5	0.7	0.5	-0.2	0.6	0.4	0.5	0.3	0.6	0.4
CON	0.1	-0.7	0.1	-0.4	0.0	0.0	-0.1	-0.3	0.1	0.2
EGW	-1.7	-1.4	-1.9	0.0	-1.2	-1.3	-1.6	-2.2	-1.9	-1.3
MAN	-0.5	-0.5	-0.6	0.0	-0.3	-0.2	-0.4	-0.5	-0.4	-0.4
MIN	-0.9	-3.6	-1.5	-1.7	-0.8	-1.1	-1.3	-1.0	-0.9	-0.2
OTS	0.1	-0.1	0.2	0.4	0.1	0.2	0.2	0.2	0.1	0.2
TSC	-0.2	0.0	-0.2	-0.3	-0.2	-0.4	-0.2	-0.2	-0.1	-0.3
WRT	0.1	0.1	0.1	0.0	0.2	0.0	0.0	0.2	0.1	0.0
Ave % $|$Dev$|$+	n/a	4.7	1.0	4.7	1.1	1.5	1.2	1.9	0.6	2.1

+ Average of the absolute deviations (in percentage points) in regional industry trend growth rates relative to ANZ industry trend growth rates.

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Acronyms

ABS   Australian Bureau of Statistics
ACT   Australian Capital Territory
AFF   Agriculture, Forestry, Fishing
ANZ   Australasia
ANZSIC Australia New Zealand Standard Industry Classification
BFS   Business and Financial Services
CER   Australia New Zealand Closer Economic Relations Trade Agreement
CON   Construction
EGW   Electricity, Gas, Water
NSW   New South Wales
NT   Northern Territory
NZ   New Zealand
NZSIC   New Zealand Standard Industry Classification
MIN   Mining
MAN   Manufacturing
OTS   Other Services
QLD   Queensland
SA   South Australia
SNZ   Statistics New Zealand
TAS   Tasmania
TOT   Total (sum of all industries)
TSC   Transport, Storage and Communications
VIC   Victoria
WA   Western Australia
WRT   Wholesale and Retail Trade

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