COMPARATIVE ECONOMIC ANALYSIS OF THE BORDER REGIONS IN AUSTRALIA – EVIDENCE OF GOVERNMENT POLICY EFFECTS?

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ABTRACT: This study follows from a previous paper that identified an area of potential research into regional economic performance and the effects of government policy in regional Australia. A number of State border regions are identified as useful for analysing the consequences of policy because they are homogenous economic identities but subject to different State government policy environments. Analysis of Australian Bureau of Statistics census data for the past 25 years reveals that economic performance in these regions has varied in a significant way and a timeframe for government policy effects can thus be established. This provides further prospects for regional research.

1. INTRODUCTION

This study follows from a previous paper published in this journal which identified an area of potential research into regional economic performance in Australia. The basic notion was, given Australia at the sub-national (and sub-state) level is constituted by a large number of non-metropolitan regions, that comparative analysis of ongoing economic performance might provide clues as to the success or otherwise of regional economic policy.

In particular, a number of regions were identified as being potentially very useful for analysing the consequences of policy, because, despite their definition as different regions, they should indeed be homogenous economic identities. These are the *border regions*; regions which straddle State border and which, despite intrinsic similarities, have been subject to different State government policy environments since Australia's federation.

The objective of this paper is to progress this research. The first issue raised is to determine whether or not these border regions can be legitimately defined as split regional identities. When this is ascertained, the second issue becomes the collection and analysis of data that reflects the economic progress of these regions. The third issue is to determine whether the economic progress of these regions has varied in a significant way because of differing government policies. The conclusion would then be to note the particular regions where substantive variation is apparent because they then become the subject of further (intensive) case study research into the identification of policies and their effects.

2. ARE THE BORDER REGIONS SPLIT IDENTITIES?

The regions under consideration are those that straddle the Queensland/New South Wales (NSW), NSW/Victoria, and South Australia/Victoria borders. As Howard (2001) noted, these regions are separated by State's borders which were

applied arbitrarily in the nineteenth century by British Acts of Parliament, so arbitrarily indeed that often the borders are straight lines of meridian that take no account of regional geographic variation. On that basis, the only thing that differentiates one region from another is the border itself; the land resource in terms of its natural characteristics (fertility, climate, geology) is essentially the same.

Homogenous as a word means being "composed of similar parts" or "of a uniform nature" (see for example, Collins Dictionary of the English Language), and homogeneity is one method of defining regions (Richardson, 1979). So in this geographic context, the border regions are potentially split identities. Richardson noted however that regional homogeneity contemplates dimensions other than the geographic, suggesting also economic, social and political characteristics.

The geographic dimension remains an important one though, because it is almost inevitably the starting point for the path of economic and social development (Ullman, 1964). This is particularly so in the Australian scene because of the dominant role that primary industries have played in economic development. In other words, the geographic setting has significant implications for the industrial characteristics of regional Australia, and if the border regions are homogeneous across the borders, then one might expect to see similar industrial characteristics.

Referring to the economic realm, Maxwell and Hite (1991) constructed a typology of regional industry classifications for regional Australia based on earlier work by Carter. The data that these researchers used for classification was from the ABS population census. Effectively, the typology identifies the dominant or core industries that formed the basis to the economy of each region in Australia, so for example, a region may be classified as agricultural or manufacturing. The industry types were generic rather than specific but nonetheless useful in generating a broad classification of regional industry types. According to this typology, the border regions and their dominant industries were defined as in Table 1.

The table identifies the relevant border regions and matches single or multiple regions with their border counterpart. It is useful to note that the match is geographically precise in the sense that regions not only share borders, but their extension along the borders are almost exactly the same.[1] Three different border groupings are identified, namely:

- Queensland – NSW border regions,
- The NSW – Victoria border regions (which run up the Murray, then to the south-eastern eastern corner) and
- Victoria – South Australia border regions (which include the Murray-Mallee regions in the north and the "Green Triangle" in the south.).

Given the industry classifications applied by Maxwell and Hite (1991) to these regions, Table 1 does suggest regional homogeneity across the borders.

[1] For example, Darling Downs and Northern (NSW) start and finish at the same points along the Queensland - NSW border.

Table 1. Maxwell and Hite's (1991) Regional Industry Classifications.

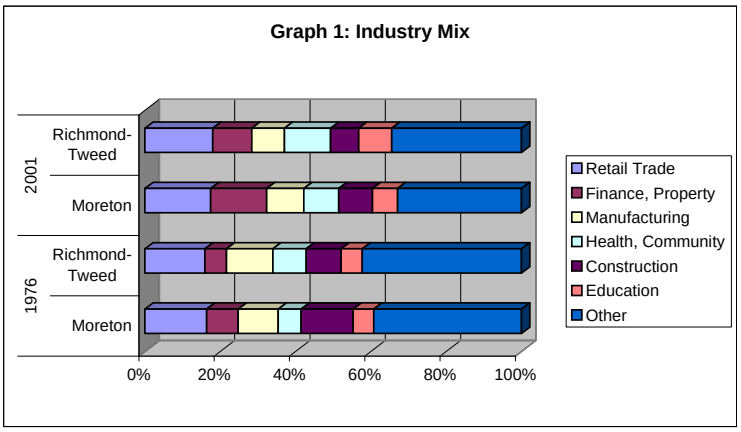
Queensland - NSW Border Regions			
	Queensland	**NSW**	
Moreton	Warm coastal climate	Agricultural/warm coastal climate	Richmond-Tweed
Darling Downs	Agricultural	Agricultural	Northern
South West	Agricultural	Agricultural	North Western
Victoria – NSW Border Regions			
	Victoria	**NSW**	
Murray River Border Regions			
Mallee, Loddon-Campaspe, Goulburn and Ovens-Murray	Agricultural/Manufacturing	Agricultural/Manufacturing	Murray
The Eastern Corner of Victoria - NSW			
East Gippsland	Agricultural	Other	South Eastern
Victoria – South Australia Border Regions			
	Victoria	**South Australia**	
The Green Triangle			
Wimmera	Agricultural		
Western District*	Agricultural	Agricultural	South East
The Murray Mallee Corner of New South Wales, South Australia and Victoria			
	Victoria	**South Australia**	
Mallee	Agricultural	Manufacturing	Murray Lands

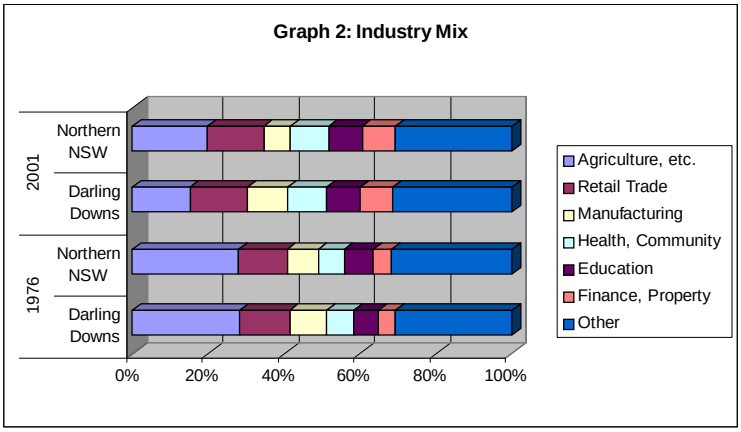
*Previously part of South-Western Statistical Division (SD), which was classified as agricultural/urban resource development. The *new* Western SD is then classified as agricultural.

A more detailed analysis based on percentage composition of employment by industry was also conducted for 1976 and 2001 to see whether this homogeneity has been preserved. Summary graphs 1 to 7 of census data are presented. Each graph describes the employment share for the biggest six industries in the border regions. Usually, the "big six" account for 65% plus of employment in a region.

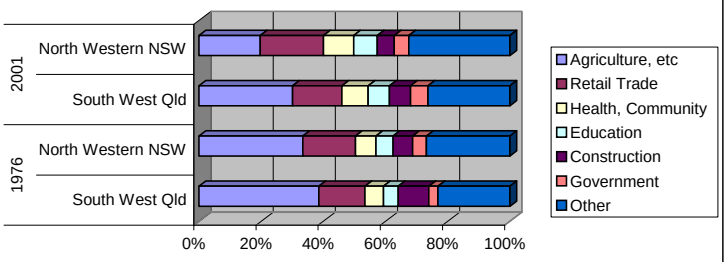
The notion of ongoing industrial homogeneity is sustained most of the time, despite the impacts that policy may have had over 25 years.

One exception may be the regional grouping around the Murray-Mallee Corner (Graph 7), where NSW meets Victoria and South Australia. It would seem that although Mallee in Victoria and Murray Lands in South Australia are relatively similar in industry mix, Murray in NSW is more comparable to the Victorian Murray regions as a whole (Graph 4).

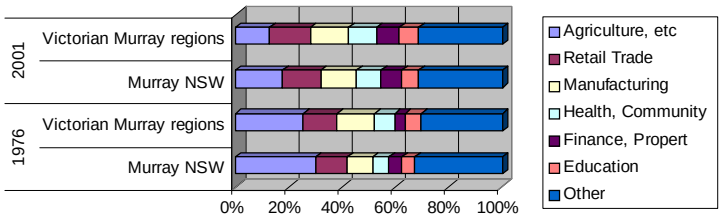




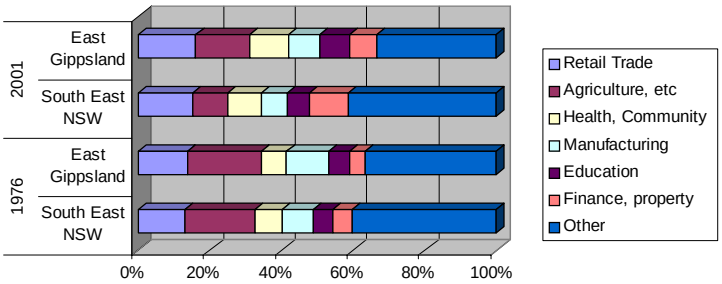
Graph 3: Industry Mix

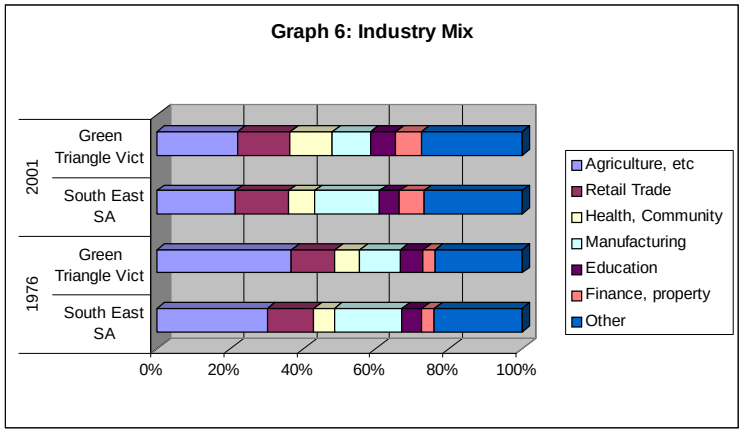


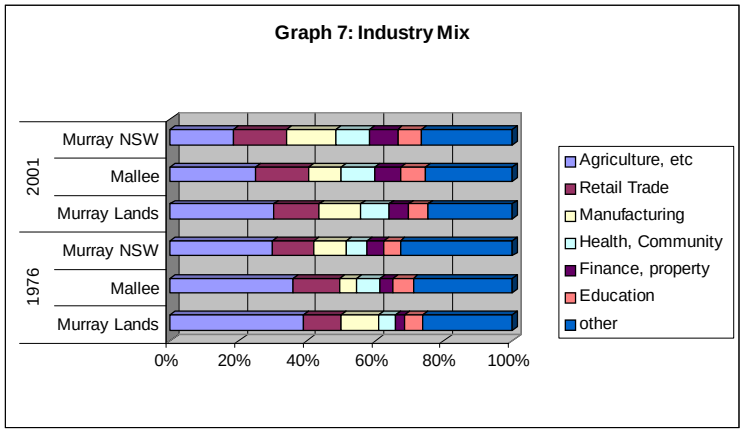
Graph 4: Industry Mix



Graph 5: Industry Mix







Source: ABS (2003) and ABS (1979).

The data employed in the graphs utilizes Australian Bureau of Statistics (ABS) census data. The ABS term for region is a *statistical division* (SD). Indeed, SDs are defined as "regions characterized by identifiable social and economic links between the inhabitants and economic units within the region, under the unifying influence of one or more major towns" (Castles, 1993). ABS recognition and aggregation of data for regions commences in 1954. Between 1971 and 1976 however, the ABS boundaries were substantially redrawn in the mainland states of Queensland, Victoria, South Australia and West Australia. In Queensland, most of the change means previously smaller regions are combined. In Victoria, the changes are extensive.

Table 2. State Distributions of Statistical Divisions.

State/Territory	Statistical Divisions 1976	Statistical Divisions 2001
New South Wales	12	12
Victoria	12	11
Queensland	11	11
South Australia	7	7
Western Australia	9	9
Tasmania	4	4
Northern Territory	1	2
Australian Capital Territory	1	1
Total	**57**	**57**

Source: ABS (2003) and ABS (1979).

This renders comparison before 1971 problematic because of the need to aggregate small area data and so is beyond the scope of this paper. It is also interesting to note that this extensive redrawing of SD boundaries corresponds with the first real national program of regional development policies at the Commonwealth level, namely the Whitlam Government's "National Program for Urban and Regional Development (Department of Urban and Regional Development, 1974). The Program was soon abandoned with the next federal government in 1975 but the SD boundaries employed by the ABS have remained largely intact. Indeed, the planning regions adopted nearly twenty years later by the McKinsey Report (1994) and the Task Force on Regional Development (1993), which form much of the research effort underpinning the second major thrust of a national regional development policy, namely the Keating Government's Working Nation Program, employ basically the same boundaries for the SDs that were defined in 1976. Table 2 summarises the State distribution of SDs in 1976 and 2001 (ABS, 1979, 2003).

One implication is of course that the current boundaries of SDs are relatively stable. This makes comparative analysis of economic performance since 1976 reasonable in terms of simplicity and validity. Another aspect is the limited role that national policy has played over this timeframe. The two periods of policy activism noted above were short-lived, being quickly abandoned with a change of government. It might be however, that there is renewed vigour on this policy front given the announcement in 2002 of a new "Sustainable Regions Programme" worth a not insignificant $100.5 million over 4 years (Department of Transport and Regional Services, 2003). Traditionally though, regional economic policy has remained the province of State governments.

3. MEASURING REGIONAL ECONOMIC PROGRESS

A number of economic variables suggest themselves as being useful for measuring the comparative economic performance of regions, including per capita income (PCI), labour market performance, state of the environment, quality of infrastructure (hard and soft), standards of living and quality of life.

For this analysis the focus is directed at per capita incomes and employment growth.

The definition of PCI is well known and in the regional context is quite simply total regional incomes as reported in the census divided by the regional population. Employment growth is the change in the number of people reporting themselves as employed, part or full time, between one census period and the next. The variables are of course useful variables to measure, and for a variety of reasons. Firstly, these variables are recognised as important indicators of the quality of life (Streeton, 1994). Income indicates the capacity to access goods and services, while employment growth indicates economic opportunity. If regional industry is doing well, for example, then the expectation would be that employment and income growth in the region would be relatively strong. Second, the theme of this paper is the consequences of different policy environments. In that context, both these variables are appropriate given that they are frequently the target of government policy at both the macro and microeconomic levels.

These are also useful variables to study because data has been collected at census and regional levels for many years, permitting useful time series analysis. Indeed, labour force status and income variables have been included in ABS censuses since 1911 (Castles, 1992).

Employment growth and per capita income are also likely to be related. Employment growth should create new incomes (by reducing unemployment) in a positive correlation. The strength of the correlation will however depend on a variety of factors, including which industries jobs are being created in, the skill levels of jobs, as well as whether the jobs are full or part time.

4. CONSIDERING THE PERFORMANCE OF THE SUB-STATE BORDER REGIONS IN AUSTRALIA

In considering the performance of the State border regions on these variables, a simple model is used. The basic premise to the model is that economic outcomes are the result of a combination of both market forces and government policy (or private versus public sector forces). The market forces are also expected to come from two spheres, the macro and the micro; quite literally, the effects of the State's overall economic performance and the forces within the region's industry mix. The notion of regional homogeneity across State borders also suggests that relatively similar economic outcomes should be generated by market forces because of that homogeneity. So, if the measures of economic performance differ substantially from one side of the border to the other, then the State border must be making a difference. And as the State border's major function is to differentiate one jurisdiction and set of State government policies from the other, a difference in economic performance is attributable to the effects of policy.

Market forces may of course be slightly different from one side of a State border to the other. One might expect, for example, that a State's overall macroeconomic performance will influence its regions. In such a case, where one border region under-performs its neighbour, it may be that the State's economy

is dragging the region down. It is possible to isolate such effects via shift share analysis (Bishop and Simpson, 1972), which essentially measures the major components that contribute to a change in an economic variable. In this context, the components of change in PCI are taken as constituted by both Statewide and regional components, where the regional component is the residual after removing the State growth rate.

With employment growth, the analysis of the components can become more precise. There are firstly, the statewide effects that draw the regional economy along, and then there are industry mix effects that will change the region's relative performance vis-à-vis the State. For example, if a region is in a State with a high employment growth rate, the expectation would be that the region would be similarly advantaged. Again, if a region has a high proportion of fast-growing industries, then its employment growth rates will contribute to superior performance. So when these major components are removed the regional residual measures the change in employment growth that is not explained by market forces in terms of industry mix or the State growth rate. Given that homogeneity prevails across the State borders, then the residuals should be approximately equal. If not, then the effects of policy are implicated.

The discussion therefore proceeds with analysis and comparison of the differences in the residual values for PCI and employment growth between the border regions as they are grouped in Table 1 above. The method of calculating the regional residuals is based on Dinc's (2002) approach.[2] The residuals are taken as percentages of the end of period values to facilitate comparative analysis (for example, because of different population sizes). A significant difference implicates government policy. The data analysed is ABS census data and covers the five census periods from 1976 to 2001. This makes it possible to determine when policy differences had an impact.

4.1 The Queensland – NSW Border Regions

Tables 3 and 4 contain the data for residual employment growth and PCI growth for the Queensland – NSW border regions. Residual employment growth is defined as the percentage of employment at the end of the period after

[2] Simplified, Dinc's (2002, p8) equation for calculating the residual is:
Residual = $V_r (g_r - g_s)$,where V_r is the value for the regional variable at the beginning of the period, g_r is the rate of growth in the region in the variable and g_s the rate of growth in the State.

removing State growth rates and industry mix effects. Residual PCI is a similar concept - the percentage of end of period PCI after removing the State growth rate.

Table 3. Residual PCI as a Percentage of End of Period PCI: Queensland – NSW Regions

Region	1976-81	1981-86	1986-91	1991-96	1996-01
Richmond-Tweed	0%	-1%	-1%	-2%	-4%
Moreton	3%	-1%	3%	-3%	1%
Northern NSW	0%	-6%	1%	-3%	-1%
Darling Downs	3%	-3%	-1%	0%	3%
North Western NSW	4%	-8%	-1%	1%	-1%
South West Qld	9%	0%	0%	-2%	10%

Table 4. Residual Employment Growth as a Percentage of Total Unemployment at the End of the Period: Queensland – NSW Regions.

Region	1976-81	1981-86	1986-91	1991-96	1996-01
Richmond-Tweed	15%	1%	13%	7%	7%
Moreton	28%	8%	6%	8%	7%
Northern NSW	-1%	-4%	-1%	-7%	-4%
Darling Downs	-5%	0%	-7%	-5%	0%
North Western NSW	3%	-3%	1%	-1%	-1%
South West Qld	-11%	3%	-8%	-14%	0%

The tables show a pattern. Performance is mixed through 1976 to 1981. The Queensland regions are stronger on PCI, yet the NSW regions are stronger on employment growth except in Richmond-Tweed. But in the 1981-86 period there is a considerable change; the Queensland regions dominate on all fronts. Then in 1986-91, the pattern changes again and the NSW regions generally exceed the performance of their border counterparts on employment growth. In 1991-96, the regions on either side of the border come together, before the Queensland regions once again outperform their NSW counterparts in 1996-2001, and on nearly all measures.

The implications are that regional policy impacts on either side of the Queensland-NSW vary substantially from one time period to the next, potentially reflecting changing policy priorities of different government administrations.

4.2 The NSW – Victoria Border Regions

The NSW – Victoria border runs along the Murray until it reaches the East Gippsland Corner. In terms of land mass, the single SD of Murray on the NSW side is roughly equivalent to the four Victorian regions of Mallee, Loddon-Campaspe, Goulburn and Ovens-Murray. While the natural geography on either

Table 5. Residual PCI as a Percentage of End of Period PCI: NSW – Victoria Regions.

Region	1976-81	1981-86	1986-91	1991-96	1996-01
South Eastern NSW	-3%	5%	1%	-2%	-2%
East Gippsland	15%	-10%	-2%	-7%	-3%
Murray, NSW	8%	-8%	-4%	2%	-1%
Victorian Murray Regions	8%	-6%	1%	0%	7%

Table 6. Residual Employment Growth as a Percentage of Total Unemployment at the End of the Period: NSW – Victoria Regions.

Region	1976-81	1981-86	1986-91	1991-96	1996-01
South Eastern NSW	0%	10%	7%	-2%	-1%
East Gippsland	3%	1%	17%	-4%	-5%
Murray, NSW	4%	2%	-3%	-2%	-3%
Victorian Murray Regions	5%	3%	6%	1%	0%

side of the border is homogenous, it is clear from observation that development has taken very different paths from east to west. [3]

In the west, agricultural development in the Mallee has been promoted by the Victorian (and South Australia in Murray Lands) government since the establishment of irrigation colonies as early as 1887 (Warhurst, 1995; Johnson, 1999). A hundred plus years later and the effects are obvious. The towns and cities on the Victorian side of the border are far bigger and the landscape far more intensively worked than the towns and farms on the NSW side, a pattern which almost reverses the further east up the Murray one ventures, until at Albury-Wodonga, the NSW partner city's population is nearly 50% bigger than its counterpart (ABS, 1998). It follows that the classification of Murray as a single SD is challengeable.

In that context, comparisons of PCI and employment growth data are potentially flawed. Nonetheless, the relevant data sets are contained in Tables 5 and 6. In the east however, a comparison between East Gippsland and South East NSW seems more useful.

To summarise the tables, the Victorian regions are stronger in 1976-81, but

[3] The author conducted an extensive fieldtrip in 2002 taking in the Murray River borders regions as well as the Green Triangle regions along the South Australia border regions.

then in 1981-86 there is a swing in favour of the NSW region in the east. Then this reverses in 1986-1991 with big advantages in employment growth on the Victorian side of the border. Indeed, but for the difference in PCI between South East NSW and East Gippsland, the Victorian regions are clearly doing much better than NSW during this period. This superior performance for Victorian regions also remains largely in place right through to 2001 in the west, while the opposite is the case in the east.

4.3 The South Australia - Victoria Border Regions.

In the north, three regions constitute the Murray-Mallee corner, Mallee in Victoria, Murray Lands in South Australia and the western part of Murray in NSW, but although the landscape may have been similar in historical times, 100+ years of agricultural development has left very different landscapes with much more intensive agriculture in Victoria and South Australia compared to NSW. Furthermore, in terms of secondary/tertiary sector development, the contrasts are similarly substantial. The NSW region, for example, is largely omitted from the joint industry/tourism marketing and promotion initiatives that characterize the Mallee region around Mildura in Victoria and Murray Lands around Renmark in South Australia. Indeed, these joint activities that feature in the regions along the South Australia-Victorian borders suggest not only homogeneity, but a harmony in policy as well. Given the apparent differences between Murray in NSW (including its extension up the Murray) and the other border regions in the Murray-Mallee corner, it is excluded from the analysis.

Turning south, three regions share the border between South Australia and Victoria, South East SA on the South Australian side and South Western and the Wimmera in Victoria. Strictly speaking, the Wimmera[4] is not part of the Green Triangle, a joint tourism/industry promotion between South Western and South East SA, but there are spin-offs because of its location.

Tables 7 and 8 contain the data for the Mallee and Green Triangle border regions

Table 7. Regional PCI Residuals as a Percentage of End of Period PCI: South Australia – Victoria Regions.

Region	1976-81	1981-86	1986-91	1991-96	1996-01
South East SA	12%	-8%	-2%	5%	0%
Green Triangle Victoria	13%	-5%	-2%	2%	5%
Murray Lands	6%	-10%	-4%	7%	1%
Mallee	8%	-12%	-3%	4%	0%

[4] Part of the Golden Triangle.

Table 8. Residual Employment Growth as a Percentage of Total Unemployment at the End of the Period: South Australia – Victoria Regions

Region	1976-81	1981-86	1986-91	1991-96	1996-01
South East SA	6%	-3%	2%	4%	-1%
Green Triangle Victoria	1%	-2%	-3%	-2%	-5%
Murray Lands	4%	-3%	6%	4%	-2%
Mallee	3%	-4%	12%	-1%	0%

The tables show a pattern where these border regions track each other quite closely in terms of PCI from 1976 to 1991, and then in the 1991-96 period, the regions in South Australia perform more strongly than on the Victorian side of the border. Into 2001, regional PCIs come together in the north; while in the Green Triangle, the Victorian regions outperform South Australia.

Regarding employment growth, the South Australian regions usually outperform the Victorian regions in the south, but it is a mixed bag in the north. There is not much to separate Murray Lands from Mallee between 1976 and 1986, but by 1991, Mallee is well ahead. Then in 1991-96, Murray Lands holds the advantage. Indeed, there is a pattern whereby the South Australia regions are clearly dominant in the 1991-96 period, whereas the picture is mixed into 2001.

Overall, it is possible to identify where regional advantages shift from one side of the border to the other. The standout period is however, the 1991-1996 period when the South Australian regions clearly outperform their Victorian counterparts.

5. CONCLUSION

The research conducted was designed to see whether the effects of government policy could be identified by an analysis of economic data from a number of State border regions. These regions straddle State borders, and but for that border, would be regarded as homogenous.

“Components of change” analysis was used to analyse two variables, PCI and employment growth. The method produces a residual value in the variable after removing effects attributable to statewide and industry mix effects. Given that the border regions are relatively homogenous, the residual values on either side of the border should be the same. If they are not, the State borders must be making a difference, and the implication is for effects of policy.

Often, the analysis produced mixed results, with significant differences from one side of the border to the other, and across time. There were also standout periods, when regions on one side of the border clearly and consistently outperform the other.

For example, regarding the Queensland-NSW border regions, in the periods 1981-86 and 1996-01 the Queensland regions dominate, although the NSW side does better in employment growth in the interim. When it comes to the

Victorian-NSW border, again the results are mixed but there is a standout period when the Victorian regions dominate through 1986-91. There is also a consistency in that the Victorian Murray regions always perform better than Murray in NSW (although the issue as to whether Murray should constitute a single SD was raised above). Regarding the South Australia-Victoria border, the generally mixed pattern is disturbed by the 1991-96 period, when the South Australian regions dominate.

The dominance of one side of the border over the other during these standout periods also suggests broad ranging effects of policy favouring one set of regions over the other. Indeed, it may also be useful to note that these periods correspond with particular government administrations, the implication being that the effects of broad government policy dispositions are detectable in the economic data.

For example, the relatively strong performance in the Queensland regions in 1981-1986 corresponds with the Bjelke-Peterson National Party government administration, which at the time was at its peak. With its strong rural/regional development credentials, it stood in contrast to the then Wran Labor government in NSW. The reversal of fortunes in the Queensland regions through 1986-91 may well reflect the change to a Labor government (Goss) in Queensland in 1989 and a return to conservative/rural Liberal-National Party political administration with the Greiner government in NSW in 1988. At about the same time as the Carr (Labor) government is installed in NSW in 1995 with its strong political base in the Hunter, Sydney and Illawarra, Queensland returns a conservative rural government in 1996 (Farnsworth, 2003).

Referring to the Victorian regions and their NSW counterparts, it is the Cain Labor government in power in Victoria, albeit late in its lifecycle. During the period when South Australia clearly outperforms Victoria, both States have recently seen a change (1992-93) from Labor to conservative governments – the Kennett Liberal/National Party Government in Victoria and the Brown Liberal Party Government in South Australia (Farnsworth, 2003). On the evidence, the regional development credentials of the later seem superior.

In conclusion, the analysis has proven successful in identifying particular periods when performance across State borders has varied despite similar industrial characteristics and regional policy has been implicated. As well, potential links can be drawn to the policy disposition of different government administrations. There remains the task of a more intensive analysis of policy details during the standout periods to establish the veracity of these links.

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