

Regional Capitals in the WA Settlement Hierarchy

Briefing Paper 3: Employment Diversity and Growth

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SCHOOL OF EARTH AND ENVIRONMENT**



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Key Findings

- (1) Western Australia's Regional Capital's play an important role in the State's overall economic structure and have economies that are distinctive within the settlement hierarchy.
- (2) Collectively, the regional capitals are the most significant concentrations of employment in non-metropolitan Western Australia
- (3) Each regional capital has a distinct 'economic niche' within the State's settlement system, and plays an important role in job creation.
- (4) Amongst the regional capitals more economically diverse localities tend to create more jobs than more specialized localities.
- (5) That highly specialized localities experience more differentiation in their ability to create jobs than less specialized localities.
- (6) In the 2006-2011 period, WARCA bucked the trend for more diverse economies creating more jobs, due in large part to the exceptional performance of the relatively specialized economies of Roebourne and Port Hedland.

Recent trends in employment dynamics and economic specialization support the notion that diverse economies tend to be more resilient. Teasing out this relationship suggests a more complex story: what a locality specializes in (i.e. its specific economic function) may be as important as how diverse that economy is, implying that policy based upon promoting diversity may need refining. Subsequent reports will explore these broader questions, focusing on the local economic competitiveness of the WARCA alliance relative to the rest of the Western Australian settlement system.

1. Overview

One of the ongoing debates in regional and local public policy is the extent to which a diverse economy contributes to growth and resilience. Conventional wisdom holds that a diverse economy is more likely to withstand downturns and upheaval, while a narrow economic base leads to vulnerability. By contrast, there is a view that more specialized economies tend to grow faster than diversified ones because they are able to capitalize on increases in productivity resulting from lower unit costs and comparative advantage. In a resource economy, such as Western Australia, the role of specialization and diversity is potentially highly significant. While local government areas (LGAs) strongly associated with the resource sector (e.g., mining) may do extraordinarily well in a resource boom, those LGAs with higher levels of industry diversification and capacity for job creation may be less subject to resource boom-bust cycles. Thus, one of the dilemmas facing policymakers is whether to pursue development strategies based on diversity and resilience, or those oriented toward specialization and comparative advantage. This brief report examines employment diversity and specialization amongst members of the WARCA, and the extent to which this relates to growth and resilience. It considers these relationships relative to Western Australia as a whole, the Perth metropolitan area, and the remainder of regional WA.

2. Employment by Industry Sector

For the census periods 2001-2011, Figure 1 provides thumbnail sketch of the evolving structure of employment across Western Australia for our aggregate regional groupings. The first observation is all regional groupings appear to have experienced job growth across all industrial sectors with the notable exception of Agriculture, Forestry, and Fishing (AGR), which has experienced a decline over all the past decade across all regions. This is consistent with the restructuring felt within agricultural industries across Australia. The second observation is the close degree of similarity between the industrial structure of Western Australia as a whole and Perth. This is hardly surprising given the dominance of Perth in terms of size of employment within the State. In broad terms, Perth has a significant number of people employed across all industry sectors. However, the industrial sectors that are consistently dominant are Accommodation & Food Services (AAF), Construction (CON), Education & Training (EAT), Health Care and Social Assistance (HAS),

Manufacturing (MAN), Public Administration & Safety (PAS), Professional, Scientific & Technical Services (PST), and Retail trade (RET). Whilst both WARCA and regional Western Australia share this economic profile, it is unsurprising that their economic employment composition also contains a significant number of workers employed in the mining sector (MIN), as well as other growth sectors, including construction (CON). In addition, their role as major service providers is evident in the presence of substantial retailing and health care and social assistance (HAS).

Figure 1a: The Distribution of Employment Across WARCA

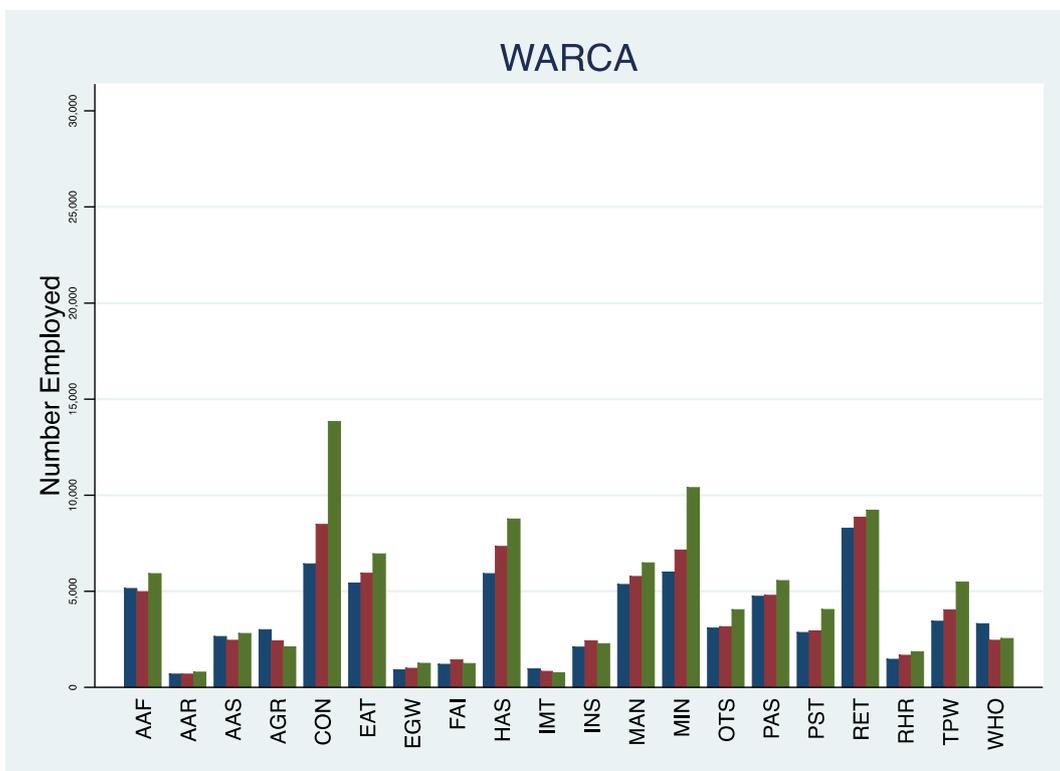


Figure 1b: The Distribution of Employment Across Regional Western Australia

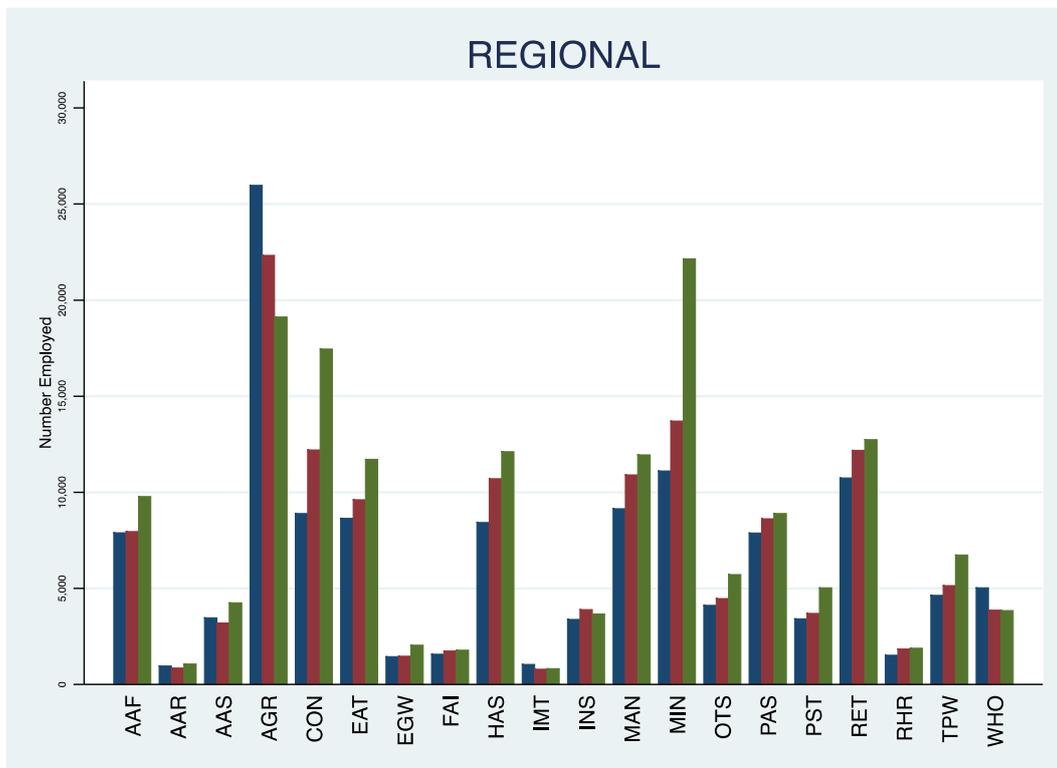


Figure 1c: The Distribution of Employment Across Perth

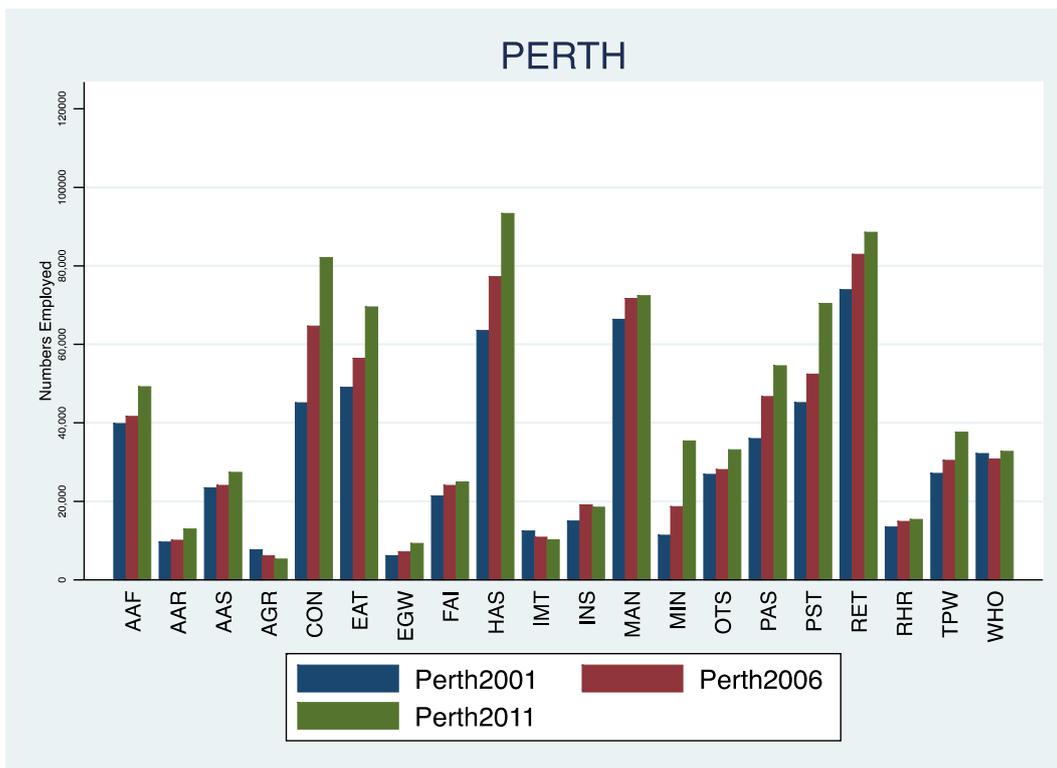
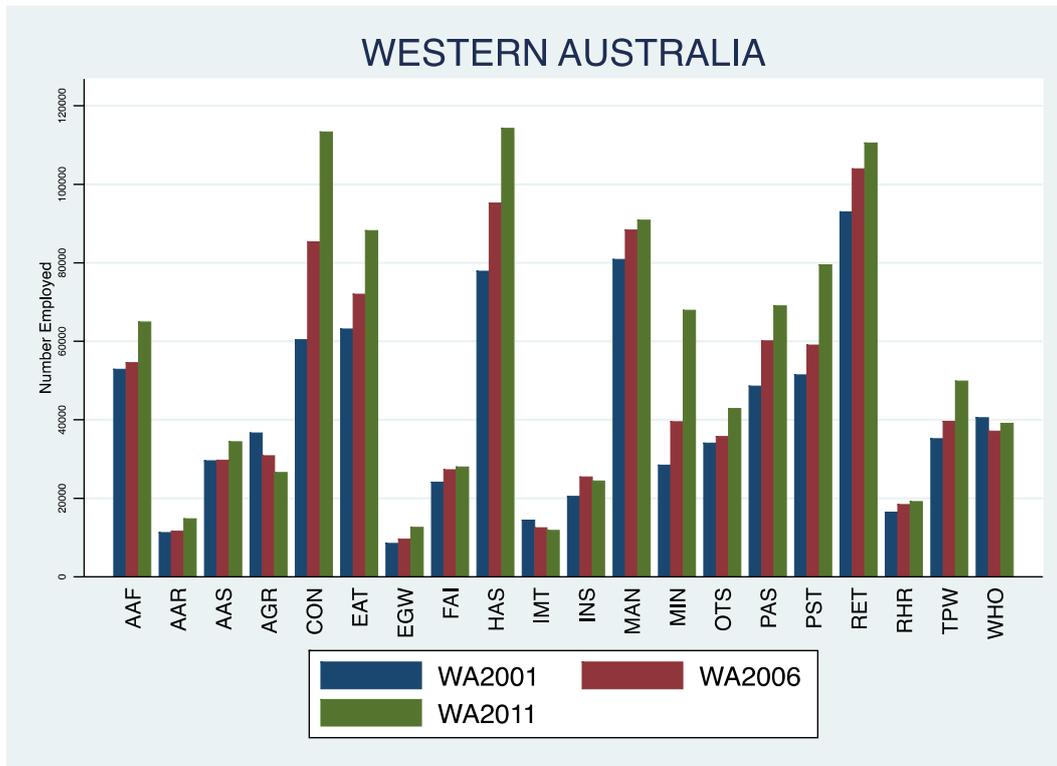


Figure 1d: The Distribution of Employment Across Western Australia



3. Regional Employment Diversity

In this section, we assess the overall level of economic diversity within the Regional Capitals through the application of the Regional Diversity Index (see Appendix 1). Table 1 shows the index scores for each Regional Capital in Western Australia for the years 2001, 2006 and 2011. During this period all of these centres experienced an increase in specialization, and a decrease in the level of diversity. Across all three census periods, Geraldton-Greenough, Albany and Bunbury had the highest regional diversity. While Bunbury’s diversity ranking amongst WACRA members fell slowly from first to third over the years, Geraldton-Greenough rose more sharply from third in 2001 to a stable first position in both 2006 and 2011. Broome (4th), Kalgoorlie-Boulder (5th), Port Hedland (6th) and Roebourne (7th) retained their respective position in all census years. The overall decrease in the level of diversification on the Regional Diversity Index over the three periods is a reflection of the growing economic specialization of the Regional Capitals, most of which played a pivotal

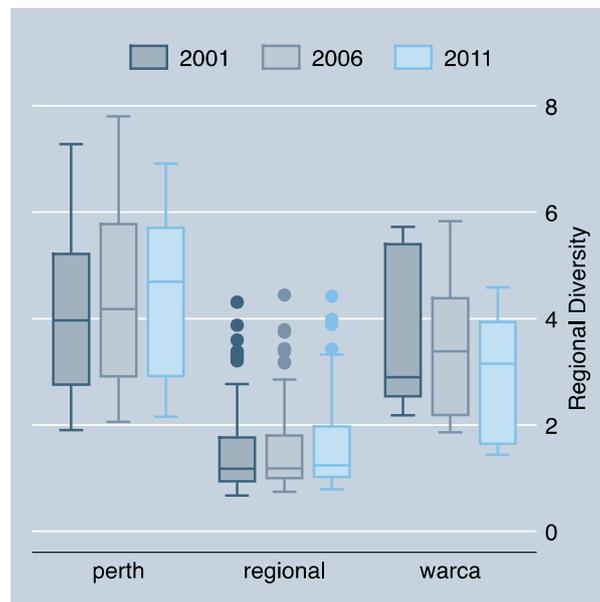
role in the resources boom. As the boom unfolded, the economies of these cities adapted to capitalize on the emerging economic opportunities and hence became increasingly specialized.

Table 1: Regional Diversity Index and Rank 2001, 2006 and 2011

	RDI 2001	RDI 2006	RDI 2011
Bunbury	5.72	4.38	3.91
Geraldton-Greenough	5.40	5.83	4.58
Albany	4.55	4.32	3.93
Broome	2.89	3.38	3.15
Kalgoorlie-Boulder	2.61	2.52	2.71
Port Hedland	2.53	2.18	1.64
Roebourne	2.18	1.85	1.43

Figure 2 shows how the State’s regional capitals changed relative to other types of settlement on the Regional Diversity Index using box plots. Box plots are a simple graphical representation of data, with the ‘box’ for each category showing where the bulk of the data points (i.e. local government areas) lie, with the ‘dots’ showing outliers. The results of Figure 2 suggest that for the Perth metropolitan area diversity increased overall between 2001 and 2011, although fell slightly between 2006 and 2011. For regional Western Australia, the overall trend is one of increasing levels of diversity across the time periods. Yet, as pointed out in Table 1, the trend in the WARCA members is one of increasing specialization rather than diversification.

Figure 2: Variations in RDI disaggregated by Regional Grouping



4. Employment Diversity and Job Creation

Figure 3 shows the relationship between job creation (employment growth) and regional diversity over the 2001-2006 and 2006-2011 periods. Across both periods, there is a positive relationship between employment growth and regional industrial diversity. The more diverse, or less specialized, an LGA the higher the expected growth rate. Put differently, on average more specialized economies tend to grow slower than less specialized economies, at least when Western Australia is considered as a whole.

Figures 4a and 4b show the position of the WARCA members within the overall relationship between job creation and economic specialization. During 2001-2006, Roebourne created more jobs than would have been expected given the diversity of its industrial base. This is due largely to the strength of the resource sector. Albany and Broome created approximately as many jobs as might be expected given their level of industrial diversity. The remaining WARCA LGAs created fewer jobs than would have been predicted given their degree of economic specialization. Over the 2006-2011 period Roebourne and Port Hedland created more jobs than expected. Broome, Kalgoorlie, and Geraldton created approximately the expected number of jobs, whilst Albany and Bunbury created fewer jobs than expected.

Figure 3a: Relationship between Job Creation and Economic Diversity,
2001-2006

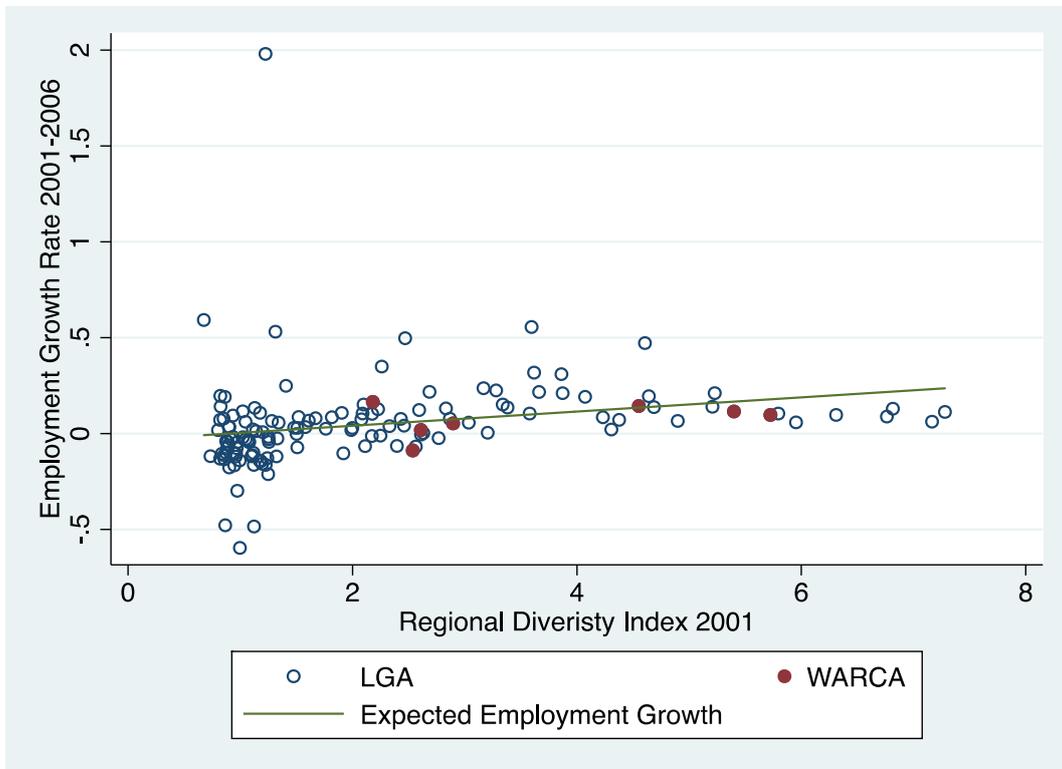


Figure 3b: Relationship between Job Creation and Economic Diversity,
2006-2011

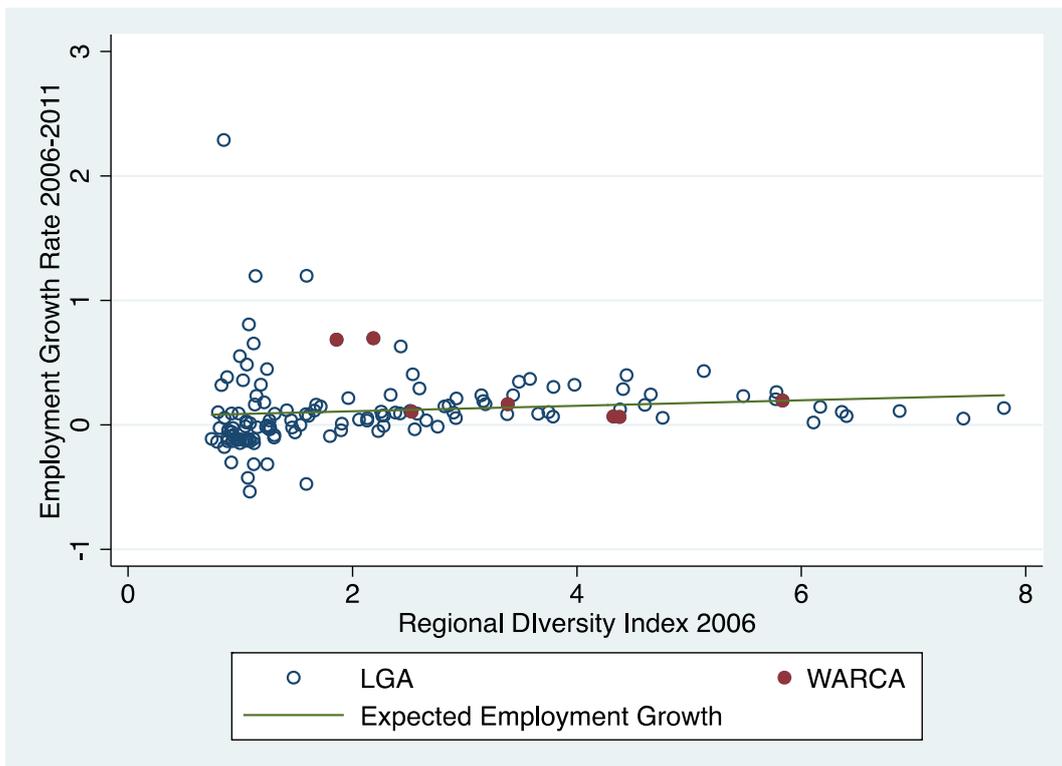


Figure 4a: Actual and Expected Relationship Between Job Creation and Economic Diversity across WARCA, 2001-2006

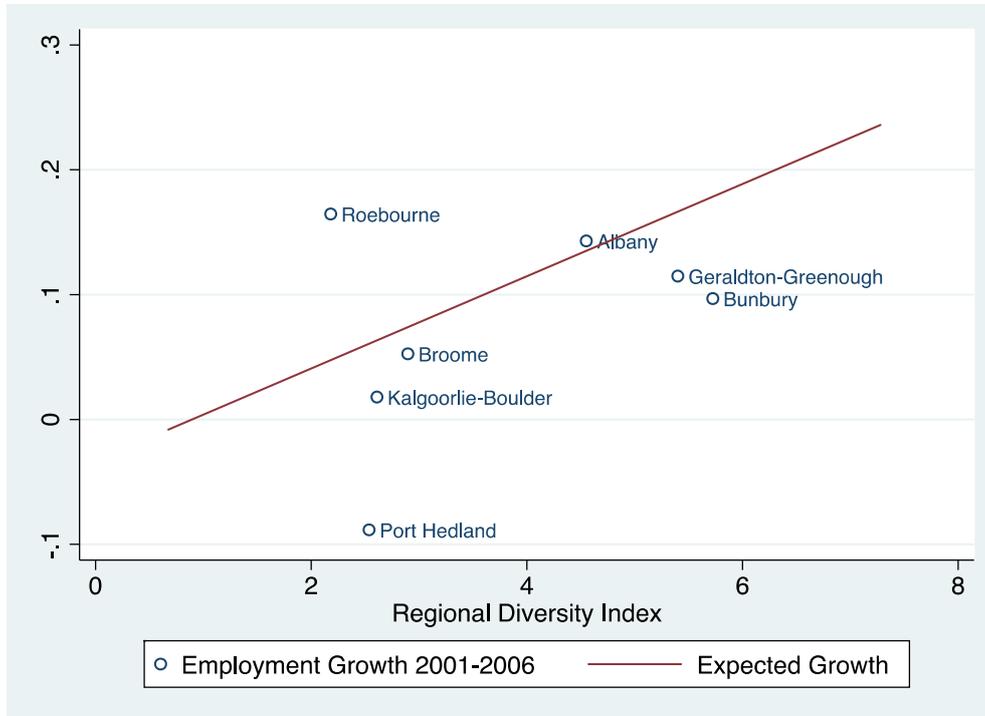


Figure 4b: Actual and expected relationship between job creation and economic diversity across WARCA, 2006-2011

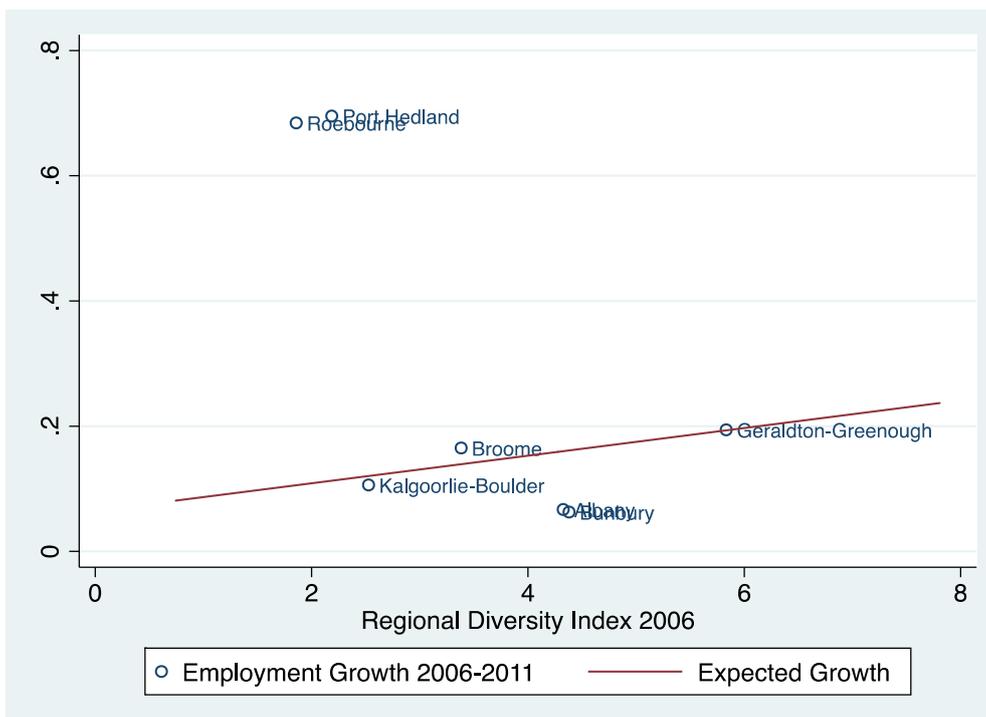


Figure 5 disaggregates the expected relationship between job creation and RDI by regional grouping. During 2001-2006, there was a positive relationship between job creation and industrial diversity for each grouping that was higher in the regions and WARCA than Perth. For 2006-2011, the nature of the relationship between job creation and diversity is more complex between groupings across Western Australia. As in 2001-2006 there is a positive relationship between job creation and regional economic diversity across regional Western Australia. That is, more diverse, or less specialized, LGAs experiences higher rates of employment growth. For the Perth metropolitan area a previously positive relationship has been replaced with a negligible relationship, suggesting that economic specialization might not impact upon employment growth. Finally, for WARCA the relationship between employment growth and diversity has shifted from positive to negative, such that in the 2006-2011 period less diverse and, hence, more specialized LGA experienced more employment growth,

Figure 5a: Job Creation and Regional Industrial Diversity: the Relationship within Regional Groupings, 2001-2006

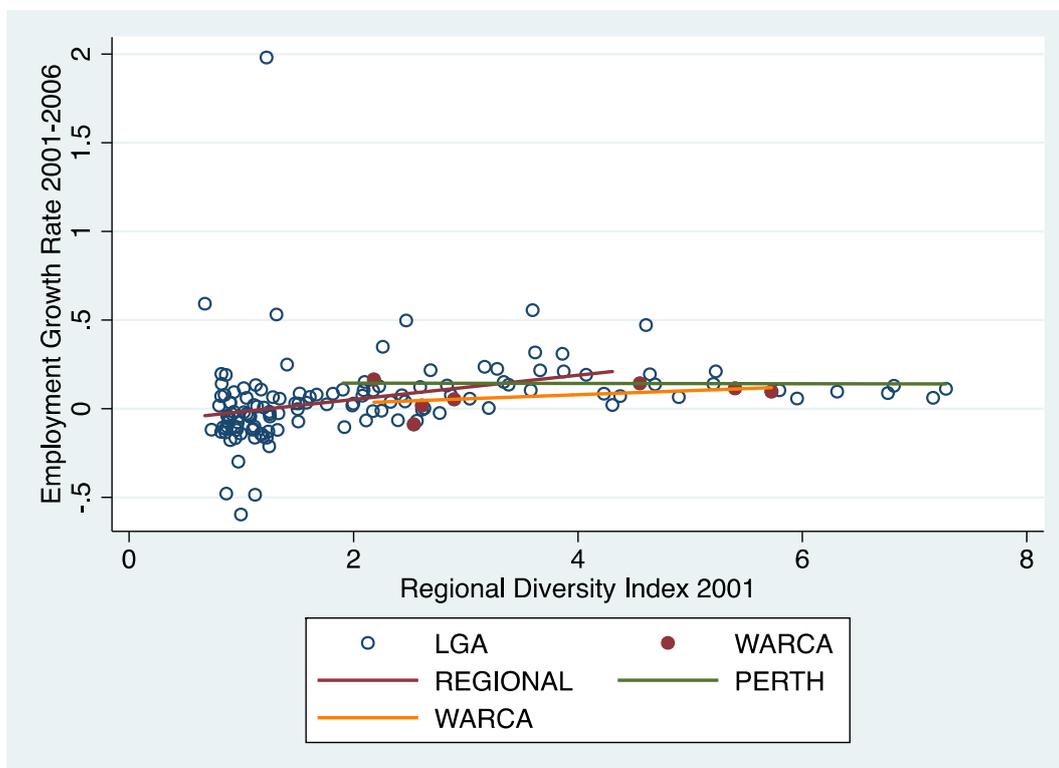
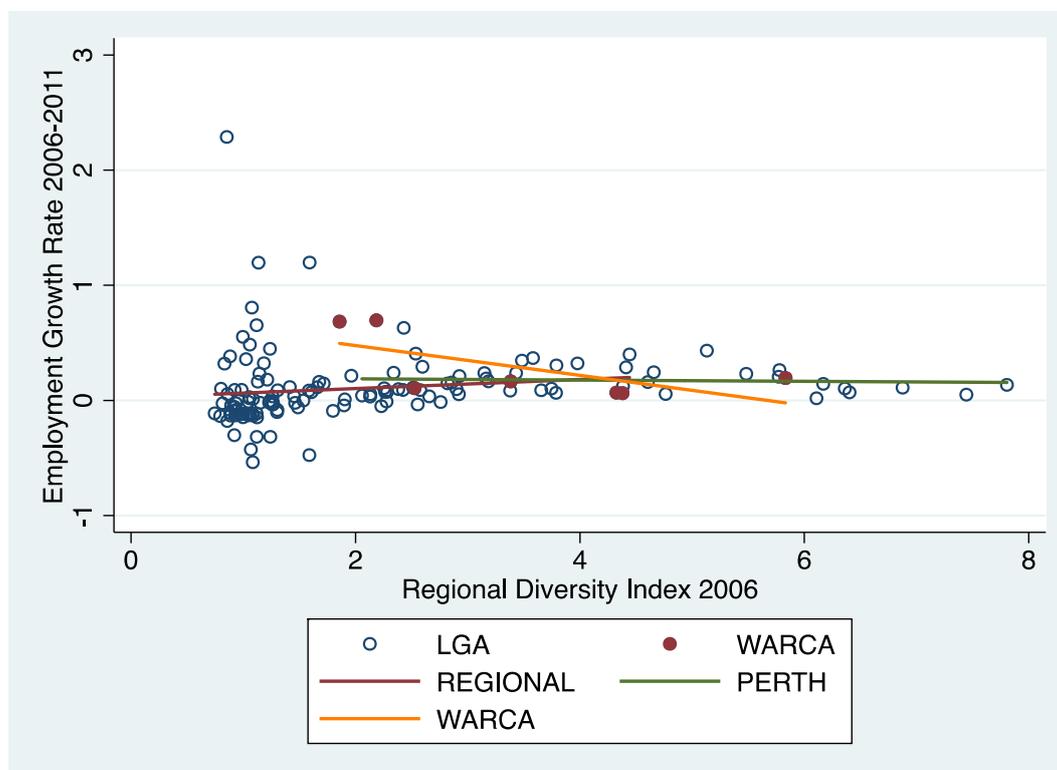


Figure 5b: Job Creation and Regional Industrial Diversity: the Relationship within Regional Groupings, 2001-2006



4. Concluding Remarks

The evidence presented in this report suggests that Western Australia’s regional cities occupy an important and distinctive position within the settlement system. Not only are these centres important generators of jobs, but they all have a distinctive economic function and level of specialization. In addition, from a policy perspective this report suggests that some of the ‘taken for granted’ ideas about the relationship between economic diversity, specialization, growth and resilience needs to be refined, at least in the Western Australian context. How, why, and when a diverse economic base may enhance the growth and resilience may depend as much on the industries in which a locality specializes as much as the overall degree of diversity of local economy. As a corollary, regional local and local public policy directed towards increasing the growth potential and long-run resilience of locality through the promotion of a diverse economic base needs to be refined and treated in a more nuanced manner: a one size fits all policy stance seems unlikely to be effective. This

point is particularly appropriate in the context of WARCA, where the most specialized localities have experienced the highest rates of employment growth over the course of the recent resource boom. Subsequent reports will focus on moving towards a more nuanced policy stance, focusing on the ways in which employment structure and local competitiveness contribute in different ways to the growth and resilience of WARCA members.

Appendix A: Data Description

This report uses Australian Bureau of Statistics (ABS) Census of Population and Housing time series profiles which count the number of persons in each industry of employment based on place of enumeration for all 138 local government areas in Western Australia (LGAs) for the census periods 2001, 2006, 2011. The members of the Western Australia Regional Capitals Alliance (WACRA) are Albany, Broome, Bunbury, Kalgoorlie-Boulder, Geraldton, Port Hedland, and Roebourne. In addition, in this report we differentiate between WARCA, the Perth metropolitan area and the remainder of Western Australia, which we designate as regional Western Australia. This aggregation allows the direct statistical comparison of differential employment experiences both within and between WARCA, the Perth metropolitan area and regional Western Australia. Boundaries for all 138 LGAs, as well as the division between metropolitan Perth (32 LGAs) and regional WA (excluding WARCA members), are according to the ABS 2011 definition.

To calculate a measure of regional industrial diversity in employment, each LGA is disaggregated by industry sector identified the number of persons employed by Australian and New Zealand Standard Industrial Classification (ANZSIC) first digit industry of employment coding ¹. We then construct a Regional Diversity Index (RDI), which aggregates the relative specialization of each economic sector in a locality into a scalar measure. The use of a summary scalar measure allows us to compare the overall degree of diversity across different sized localities that may be specialized in quite different economic activities. The larger the value of the RDI the more diverse a locality and, as a corollary, the less specialized is that locality. Mathematically, the index is stated as follows:

$$RDI_r = \frac{1}{\mathring{a}_i |s_{ir} - s_{nr}|} = \frac{1}{\mathring{a}_i \left| \frac{E_{ir}}{E_r} - \frac{E_{in}}{E_n} \right|} = \frac{1}{\mathring{a}_i \left| (LQ_i - 1) \frac{E_{in}}{E_n} \right|}$$

where E_{ir} is the number of people employed in industry i in LGA r , E_r is the number of people employed in LGA r , E_{in} is the number of people employed in Western Australia in industry i , and E_n is the number of people employed in Western Australia.

¹ Found at <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2901.0Chapter5802011>

Appendix B: ANZ Standard Industrial Classification and Abbreviation

ANZAC Classification

Agriculture, forestry & fishing	AGR
Mining	MIN
Manufacturing	MAN
Electricity, gas, water & waste services	EGW
Construction	CON
Wholesale trade	WHO
Retail trade	RET
Accommodation & food services	AAF
Transport, postal & warehousing	TPW
Information media & telecommunications	IMT
Financial & insurance services	FAI
Rental, hiring & real estate services	RHR
Professional, scientific & technical services	PST
Administrative & support services	AAS
Public administration & safety	PAS
Education & training	EAT
Health care & social assistance	HAS
Arts & recreation services	AAR
Other services	OTS
Inadequately described/Not stated	INS