

Regional Capitals in the WA Settlement Hierarchy

Briefing Paper 2: Employment Change and Job Creation

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The views expressed and the conclusions reached in this publication are those of the author(s) and not necessarily those of persons consulted.

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Published in March 2013

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Key Findings

This report provides an overview of the employment dynamics of Western Australia over the past decade, situating the members of the Western Australian Regional Capitals Alliance (WARCA) within this broader geographical context. This report is the second in a series of reports that are intended to enhance understanding of the growth potential and local competitiveness of the members of WARCA both now and into the future.

The evidence suggests the following regarding recent trends in employment dynamics:

- There has been a strong and consistent pattern of employment growth across the Western Australian settlement system over the past decade.
- The settlements that constitute WARCA are important drivers of employment growth, adding more than 23,000 direct jobs to the state's economy over a decade.
- The dynamics of jobs growth amongst WARCA is more similar to the Perth metropolitan area than the rest of regional Western Australia.
- The ability of centres to generate jobs is volatile and varies considerably over time depending on economic base and macro-economic conditions.
- This overall pattern of employment growth has masked significant differences in the ways in which localities have performed both within the WARCA alliance and relative to the Perth metropolitan area and regional Western Australia.
- There is evidence of divergence in job creation rates across the Western Australian settlement hierarchy, with larger localities forging ahead and smaller settlements experiencing lower rates of job creation or declining employment over the 2001-2011 period.
- Policy approaches that aim to address uneven development are important if the gap between more and less prosperous centres is to be reduced.
- Given the unique size of the WARCA labour markets, and the dynamics of jobs growth, these centres will require different policy responses to both the Perth metropolitan area, and the rest of regional WA.

1. Overview

The first report in this series, *Regional Capitals in the WA Settlement Hierarchy: Population*, identified significant variability in the demographic performance across the State. It noted that, while Perth has become increasingly dominant over the past decade, the State's regional cities occupy an important position in the settlement hierarchy, with many experiencing strong growth in the period 2001-2011. This report extends the analysis of population dynamics by assessing employment change and job creation. The central objective is to determine how the State's regional capitals have performed within the context of WA's settlement hierarchy, with particular reference to the State's regional capitals. Specifically, the report considers: i) the changing spatial organization of employment in the Western Australian settlement hierarchy; ii) rates of job creation and how this varies over time and by location. Collectively, this analysis provides insights into the role that regional cities are playing in generating jobs within Western Australia, and the ways in which this fits within the broader State labour market.

2. 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. However, it should also be noted that one limitation widely reported by regional local governments is the likely undercount of employees by the ABS. This arises out of difficulty in capturing fly-in/fly-out workers and other temporary residents.

There is no immediate means of overcoming this data limitation, except to use ‘place of enumeration’ data as has been done here. In addition, by reporting on all settlements in Western Australia the report captures the broad dynamics of employment change and job creation.

3. Patterns of employment and job creation

This section describes general patterns of employment and job creation across Western Australia and compares the differential performance of WARCA members, the Perth metropolitan area, and regional WA. In this report, job creation is defined as the net growth of employment between census periods.

3.1 Employment by regional grouping

Table 1 shows that the number of persons employed in Western Australia increased from 827,802 in 2001, to 935,837 in 2006, and 1,101,990 in 2011. This represents an overall increase in employment between the 2001 and 2006 census periods of 13%, and between 2006 and 2011 of approximately 18%. Though the number of persons employed grew more rapidly in Perth (14.8%) than in either WARCA (7.9%) or regional WA (7.6%), between 2001-2006 WARCA members grew more rapidly (22.3%) than both Perth (17.4%) and regional WA (16.9%) between 2006-2011. That is, the relatively lower 2001-2006 rate of jobs growth in WARCA compared to Perth reversed, with employment growth gaining momentum over the census periods and exceeding the 2006-2011 rate of employment growth for the rest of WA.

Table 1: Employment totals by regional grouping

	Employment 2001	Employment 2006	Employment 2011	Growth 2001-2006	Growth 2006-2011
Perth	625,515	717,888	842,907	0.148	0.174
Regional	129,331	139,202	162,775	0.76	0.169
WARCA	72,956	78,747	96,308	0.79	0.223
Total WA	827,802	935,837	1,101,990	0.131	0.178

In the period 2001-2011, all WARCA members recorded increases in the total level of employment. The largest increases were recorded in the Pilbara, with Roebourne rising 7,929 to 15,544 and Port Hedland from 6,164 to 9,526 (Table 2). Most of this growth occurred during the 2006-11 intercensal period, and was linked to expanding opportunities in the minerals and petroleum industries. Smaller increases were recorded in other cities, with variability linked to the underlying structure of the local economies. Table 2 also shows, for employment size, the ranking the WARCA members against all other local governments in the State¹. Overall, the ranking of WARCA cities within the WA urban settlement system has been relatively stable.

Table 2: Rank order of employment levels within WACRA, 2001-2011

	Employment 2001	Employment 2006	Employment 2011	WA rank 2001	WA rank 2006	WA rank 2011
Port Hedland	6164	5619	9526	32	36	32
Broome	7586	7985	9303	30	31	33
Roebourne	7929	9234	15,554	27	26	21
Albany	12,064	13,789	14,711	21	21	22
Geraldton-Greenough	12,470	13,902	16,601	19	19	19
Bunbury	12,619	13,841	14,711	18	20	22
Kalgoorlie-Boulder	14,124	14,377	15,902	16	17	20

3.2 Employment concentration and dispersion in Western Australia

The first report in this series noted that the population of Western Australia's settlement system is characterized by a high degree of concentration in the Perth metropolitan area. Indeed, more than three quarters of the population reside in Perth. In this report we use a simple measure of concentration/dispersion to determine the extent to which employment in Western Australia is highly concentrated or dispersed in geographic terms and, importantly, if this is changing. The measure of concentration/dispersion used is

¹ In this analysis we have included all local government areas in the Perth metropolitan area. If LGAs in Perth had been taken as a single unit, then rankings for WARCA members would be higher.

the ‘coefficient of variation’, which is simply the standard deviation across each of the regional groupings (e.g. Western Australia, WARCA etc.) divided by the average number of persons for each of these groupings. The lower the coefficient the more dispersed employment is across the groupings local government areas, while a higher coefficient indicates that employment is concentrated in a small number of LGAs.

The results of this analysis are presented in Table 3. It shows that between 2001 and 2006, employment became increasingly spatially concentrated within Western Australia, most notably in regional WA and within the WARCA group. In other words, employment in regional Western Australia became increasingly concentrated into a small number of LGAs, while in WARCA jobs became more concentrated within a few of the cities (notably Roebourne, Albany, Bunbury and Geraldton-Greenough). Perth became less concentrated, and in large part this is as a result of employment becoming more evenly spread within the metropolitan region (though we would note that it remains highly concentrated in relative terms).

The period between 2006 and 2011 is quite different to the earlier period, with levels of geographical concentration falling across WA and WARCA members. In essence, employment was ‘spreading out’ or becoming more dispersed. This suggests that more local government areas were sharing in the employment growth being created by the State’s strong economic conditions and, in particular, the resources boom. Indeed, amongst WARCA members this is particularly evident, with the level of ‘equality’ between the membership increasing, in large part because of the strong growth recorded in the smallest LGAs (Port Hedland, Broome and Roebourne), which all began to ‘catch up’ with the larger centres of Albany, Bunbury, Geraldton-Greenough and Kalgoorlie-Boulder. The exception to this trend was the remainder of regional Western Australia, which continued to record concentrations in employment levels. In part this is explained by the strong growth of smaller mining towns and the widespread decline of agricultural service centres. The outcome of this is a widening gap between the levels of employment in the State’s smaller local governments.

Table 3: Concentration/Dispersion in Employment Across Local Government Areas (coefficient of variation)

	Employment 2001	Employment 2006	Employment 2011
Perth	0.967	0.945	0.922
Regional	1.219	1.325	1.461
WARCA	0.298	0.317	0.221
Total WA	1.992	1.999	1.970

3.3 Job creation across Western Australia

One of the concerns for policymakers is not simply the number of jobs or their distribution, but the extent to which employment is being created. This is an important indicator of the performance of a regional economy, and also has implications for socio-economic wellbeing. Table 4 provides a summary both of job creation in Western Australia and the members of the WARCA alliance relative to the Perth metropolitan area and regional Western Australia.

Based upon this exploratory analysis, the overall picture is one of positive job creation across Western Australia for both the 2001-2006 and 2006-2011 periods. The average growth rate was greater in 2006-2011 than in the 2001-2006 census period. However, the standard deviation and interquartile range statistics indicate that there was increasing variability in the ability of local and regional economies to create jobs. Put differently, the gap between the best performing and worst performing local government areas widened over these time periods.

This divergence in job creation rates occurred for all groupings, including WARCA members, although there are significant differences between the groups. For both periods regional Western Australia as a whole experienced the slowest rate for job creation but the greatest degree of spatial variability in growth rates. In the 2001-2006 period Perth had a higher rate of job creation and more spatial inequality than the WARCA alliance. In contrast, in the 2006-2011 period Perth experienced a lower rate of job creation than WARCA and a lower degree of internal spatial inequality.

Table 4: Summary statistics for rates of employment growth (%), 2001-2011²

		Mean	Median	Standard deviation	Interquartile range
Perth	2001-2006	0.143	0.106	0.122	0.134
	2006-2011	0.175	0.129	0.142	0.181
Regional	2001-2006	0.016	-0.013	0.264	0.183
	2006-2011	0.084	0.012	0.350	0.257
WARCA	2001-2006	0.072	0.097	0.087	0.125
	2006-2011	0.282	0.165	0.283	0.618
Total	2001-2006	0.049	0.034	0.238	0.180
WA	2006-2011	0.115	0.072	0.314	0.238

Table 5 shows the rates of job creation amongst individual WARCA members for the periods 2001-2006 and 2006-2011. This is shown in both absolute terms, and relative to Western Australia as a whole. There are several points to note. The first is that considerable diversity in employment growth exists both between the members of WARCA and between the three census periods. In many respects this is not surprising given the different underlying economies of the various cities. The impact of the resources boom is particularly evident in Port Hedland, Roebourne, Kalgoorlie-Boulder and Broome for the period 2006-2011, with the other cities also recording solid growth.

This marks a sharp contrast with the 2001-2006 period, where growth rates were more modest across the board. In essence, the picture is one of strengthening local economies. However, the second point to note is that when set against the growth of Western Australia as a whole, the relative performance of the WARCA members is more circumscribed. For the most recent period, 2006-2011, only Port Hedland, Geraldton-Greenough and Roebourne outperformed the level of job creation at the State level. From a policy perspective this suggests that while all regional cities are performing well, it is important to ensure that all cities are able to benefit from the State's job growth. At present, not all cities have benefited from the wider expansion of the

²These summary statistics are computed using unweighted averages on growth rates, so will differ from those computed for employment weighted measures which take into account the relative size of each LGA.

jobs base within the State.

*Table 5: Job Creation Amongst WACRA members
2001-2006 and 2006-2011*

	Growth 2001-2006	Growth 2006-2011	Growth relative to WA 01-06	Growth relative to WA 06-11
Roebourne	0.165	0.684	0.033	0.507
Albany	0.143	0.067	0.011	-0.11
Geraldton-Greenough	0.115	0.194	-0.017	0.017
Bunbury	0.097	0.063	-0.035	-0.114
Broome	0.053	0.165	-0.079	-0.012
Kalgoorlie-Boulder	0.018	0.106	-0.114	-0.071
Port Hedland	-0.088	0.695	-0.22	0.518

4. Modeling employment growth

This section brings together the exploratory analysis in section 3 a step further by considering the relationship between the total number of jobs in a locality and the rate of job creation. The ways in which employment levels and the rate of job creation vary across localities is a key relationship in understanding the evolution of the settlement system in Western Australia. On the one hand if small localities, as measured in terms of employment, are catching up with larger localities then we would expect those localities to growth at a faster rate than their larger counterparts, and we would observe convergence across the Western Australian urban settlement system. In contrast, if larger economies are forging ahead of their smaller counterparts then we would expect to observe diverging, and concomitant increasing spatial inequality, across the Western Australian urban settlement system.

4.1 Relationship between 2001-2006 and 2006-2011 growth rates

Figure 1 shows the overall relationship between job creation (employment growth) in

2001-2006 and job creation (employment growth) in 2006-2011 across Western Australia. Note that WARCA members are identified by the orange dots. Overall, there appears to be a weak positive relationship between job creation across these two periods, although there is considerable scattering around this overall positive trend. That is, those localities that grew rapidly in the initial period (2001-2006) also grew rapidly in the subsequent period (2006-2011). The converse is also the case, with localities that grew slowly in 2001-06 also growing slowly between 2006 and 2011. One of the outliers noted in the table is Ravensthorpe, which had an exceptionally high job creation rate in 2001-2006 as a result of new mining activity, but then lost jobs in the 2006-2011 period following the temporary closure of the former BHP-Billiton mine. In contrast, Perenjori lost jobs over the 2001-2006 period, but had an unusually high rate of job creation in the 2006-2011 period.

Figure 1: The relationship between LGA growth rates, 2001-2006 to 2006-2011



Figure 2 breaks down the relationship between the growth rates in the different census periods by regional grouping. The graphs highlight the quite different employment

dynamics underlying the overall pattern in Western Australia shown in Figure 1. Specifically, in regional Western Australia there is evidence of both a widely dispersed pattern of employment growth rates and a large number of localities that have experienced modest (at best) rates of job creation over the two time periods. In part, this can perhaps be partly explained by a higher degree of instability in employment growth in relatively small communities. In contrast, there is evidence of a strong positive relationship between employment growth within the Perth metropolitan area, with fast growth LGAs in the early period also growing rapidly in the subsequent period. Finally, the WARCA alliance is characterized by a diversity of job creation over the two periods. During the 2001-2006 period, all members experienced job growth with the exception of Port Hedland. In the subsequent 2006-2011 period, all localities experiences job growth with outstanding performances by Roebourne and Port Hedland.

Figure 3 shows the relationship between initial employment levels and subsequent growth rates for the 2001-2006 and 2006-2011 periods. Note that the WARCA members are identified by red dots on this figure. In both cases, the evidence suggests a positive relationship between initial employment and subsequent growth rates and, hence, that larger localities are forging ahead of their small counterparts. The magnitude of this is approximately equivalent between these two time periods, suggesting that this pattern of change was stable across the decade. This finding is consistent with the evidence on population dynamics from the first report on the evolution of the Western Australian urban settlement system.

Figure 2: Relationship between LGA growth rates disaggregated by regional grouping

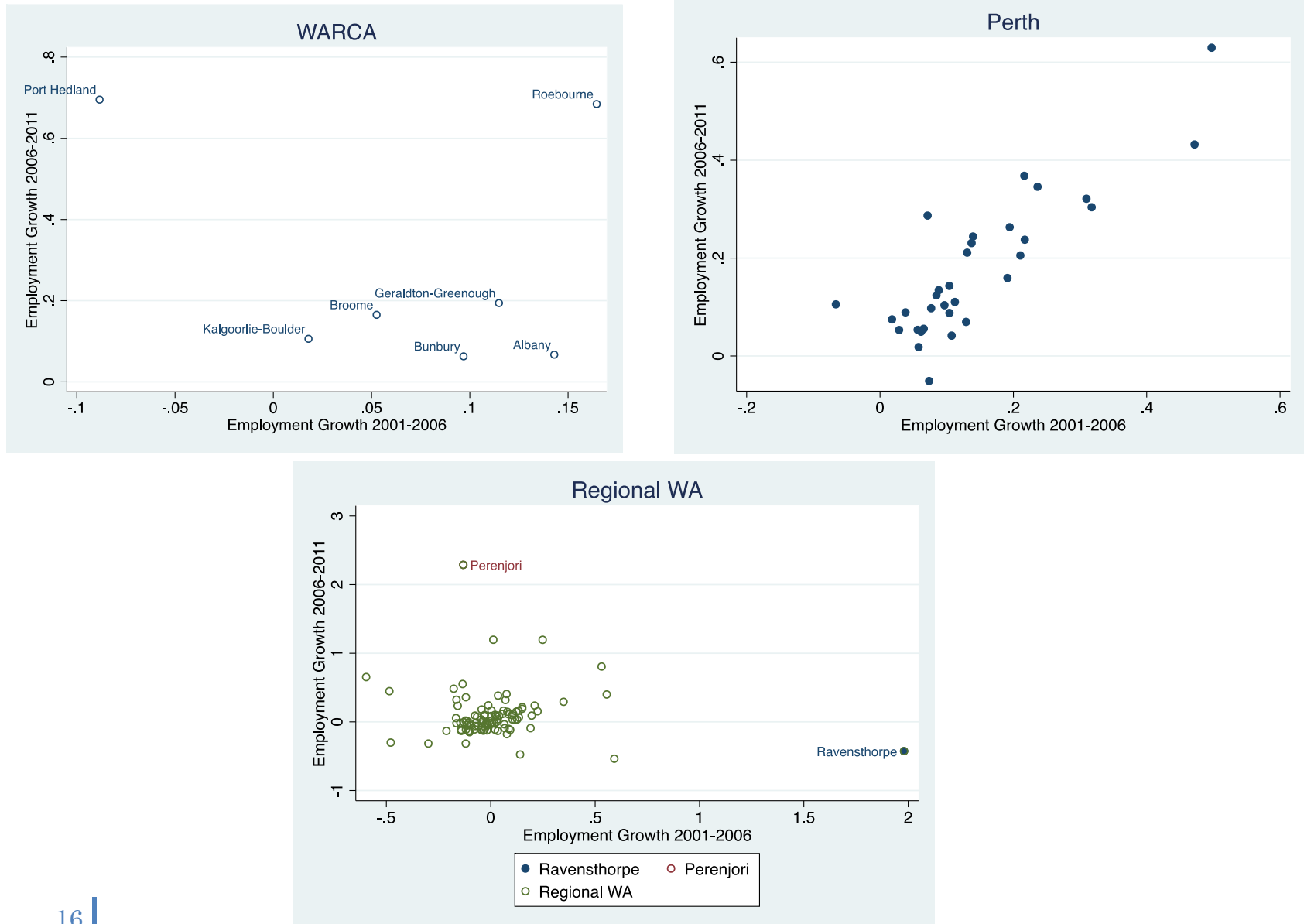
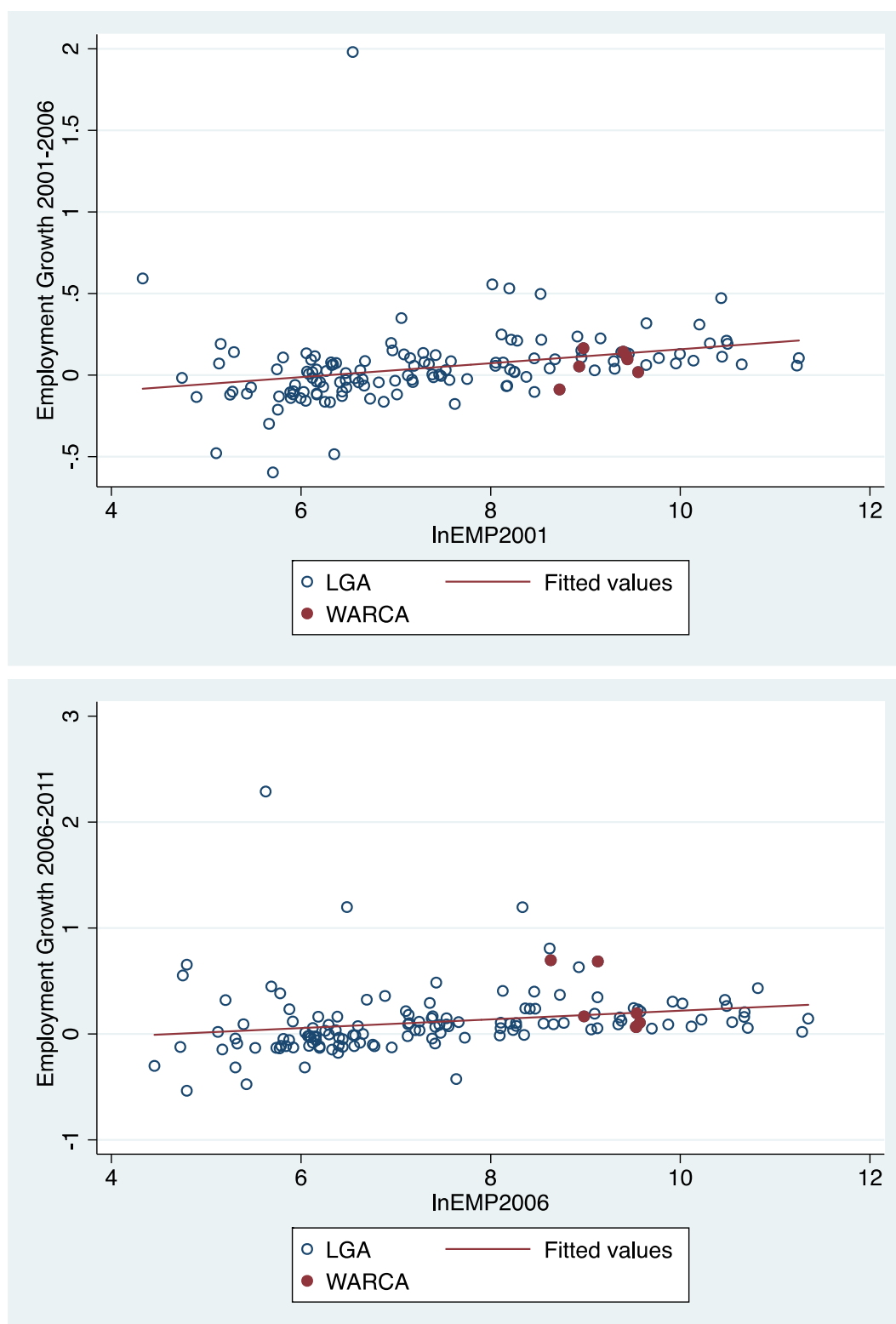


Figure 3: Relationship between initial employment and subsequent growth rates, 2001-2006 and 2006-2011



4.2 Expected and actual growth rates across WARCA

Figure 4 focuses on employment growth across the WARCA members for the two census periods. Set within the context of a widening gap in rates of job creation across the Western Australian settlement system, the evidence indicates that Roebourne and Albany created more jobs over the 2001-2006 than would have been expected given their initial employment levels in 2001. Other members of WARCA produced fewer jobs than expected (predicted) by this simple employment growth model. In contrast, there are three distinct groupings of WARCA members emerging from the 2006-2011 period. Port Hedland and Roebourne dramatically exceeded the expected growth, suggesting that these economies are, indeed, forging ahead. Geraldton and Broome grew at approximately the expected growth, whilst Kalgoorlie, Bunbury, and Albany created fewer jobs than might have been anticipated (at least relative to employment dynamics across the whole of WA during this period).

Figure 5 digs deeper into the processes of catching up and forging ahead by breaking employment dynamics into regional groupings. During 2001-2006, the job creation differentials within the WARCA alliance was greater than that within either the LGAs of the Perth metropolitan or the remainder of regional Western Australia. Despite the trend towards divergence in job creation within both Perth and Regional Western Australian groupings, there is evidence that within the WARCA group a greater degree of equality emerged between 2006 and 2011. This suggests that the successful LGAs within both Perth and Regional Western Australia are forging ahead of their less successful group members, whilst the less successful members of WARCA, at least in terms of job creation, caught up with the more successful members. These results may be in part due to the small number of LGAs in WACRA, as well as a reflection of the changing relative performance of members within the group.

*Figure 4: Expected and actual employment growth for WARCA members
2001-2006 and 2006-2011*

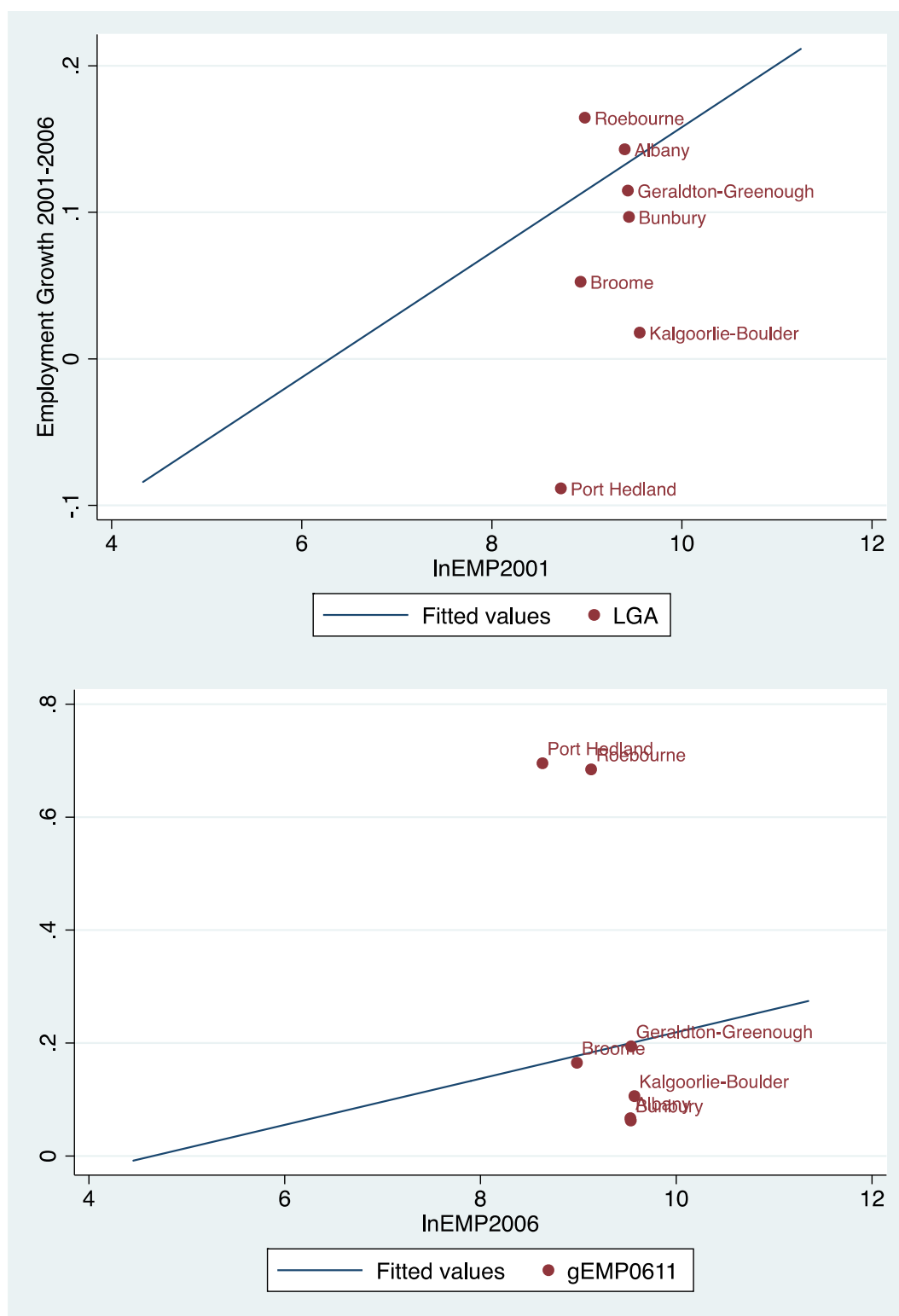
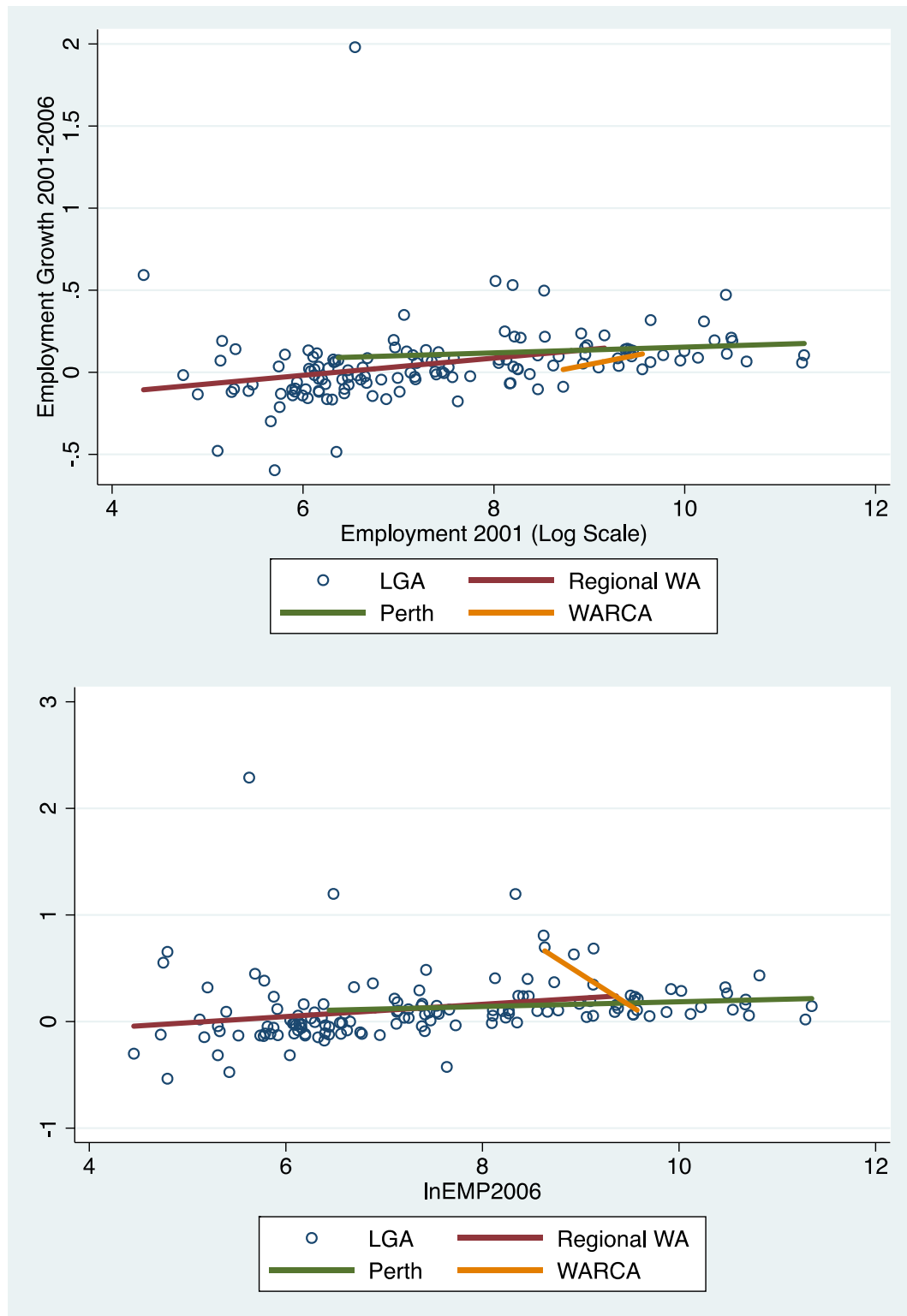


Figure 5: Employment dynamics disaggregated by regional grouping



5. Concluding Remarks

This report has provided an overview of the evolution of employment and job creation across the Western Australian settlement system, focusing on how the members of the WARCA alliance have fared relative to the Perth metropolitan area and regional Western Australia. From this analysis a number of key trends are apparent:

- Employment growth within Western Australia has been strong across the 2001-2011 period, though gathered momentum between 2006 and 2011.
- The members of the WARCA play an important role in the State's labour market, and collectively have made an important contribution to its growth.
- All WARCA members have been important locations of job creation, though they perform differently over time. Between 2001 and 2006, the strongest growth was recorded in Roebourne, Albany, Geraldton-Greenough and Bunbury. Between 2006 and 2011, the effects of the resources boom becomes more evident with the strongest growth recorded in Port Hedland, Roebourne and Geraldton-Greenough
- In general terms, larger centres across the settlement hierarchy tend to be forging ahead, while smaller centres falling behind. Put another way, there is no sense in which lagging regions are catching up – quite the opposite.

From a policy perspective, this report emphasises the strategic role that Western Australia's regional cities play in generating new jobs in Western Australia, with WARCA members adding over 23,000 new jobs between 2001 and 2011, with most of this growth coming in the past decade. However, the data also indicate that not all places are performing equally, and that performance varies considerably over time. This suggests that regional policies that continue to address the problem of uneven development are important if there is not to be a

widening gap in Western Australia between those centres that perform well, and those that are less prosperous. However, it is also apparent that the WARCA members have quite different labour markets and job creation dynamics than both the Perth metropolitan area and the rest of regional Western Australia. Given this, it is unlikely that policies aimed at metropolitan labour markets, or rural/regional labour markets, will be appropriate for the State's regional centres. More specialized policy responses are likely to be required that take account of the performance, economic base/structure, diversity and competitiveness of these cities. These areas are the subject of further scrutiny in the next two reports in this series.