REGIONAL INEQUALITY AND THE TRADE CYCLE

Michael Corliss & Phil Lewis
Centre for Labour Market Research, University of Canberra, Australia

Abstract

The debate over regional inequality and economic growth is ongoing. Previous research has shown that economic growth reduces regional disparity in the unemployment rate and increases regional disparity in income. This paper examines the jobless rate and tax income to further explore the effect economic growth has had upon regional inequalities. Here we find while economic growth acts to significantly reduce jobless rates, reducing the differences between SLAs is much more stubborn particularly for remote regions. Additionally, here we show a much stronger link between economic growth and regional divergence in market income, with changes in economic growth impacting mostly upon richer SLAs located in capital cities and remote regions.

1 Introduction

There has been considerable debate about why some economies consistently outperform others and the potential for government intervention to rectify or bolster the economic performance of a given area. Much of the discussion so far has been at the national level. Less work has been done on the regions within countries. The regional level can offer greater insights than does the national level of an economy and the opportunity to observe population and labour market adjustments over time unimpeded by national borders. In particular, the study of regional labour markets and their associated disadvantage can offer government more geographically targeted policy prescriptions.
Internationally, the progressive rise of unemployment in the European Union (EU) since the 1970s has been the focus of great debate with explanations of why the unemployment rate was increasing and associated policy prescriptions in member countries often in competition with one another (for review, see Elmeskov 1993; Bean 1994; Layard et al 1994; OECD 1994; Snower 1994). Much of this analysis however, is focused on the national aspect of the problem. More recently, an increasing amount of attention has been paid to the regional and sub-regional performance of the labour market. A number of US economists have sought to examine and compare the regional labour market dynamics of the USA and the EU (see Blanchard and Katz 1992; Eichengreen 1990, 1993a, 1993b; Bayoumi and Eichengreen 1993; Decressin and Fatas 1995).

The argument put forward by these researchers is that while regional unemployment fluctuations are more pronounced in the USA than in the EU countries, Europe suffers greater levels of regional unemployment disparities and these disparities are far more persistent in EU countries than in the USA (see also OECD 1989). These differences are explained in part by a lesser degree of labour market flexibility in the EU compared with the USA (Freeman 1995, Krugman 1993, Bertola and Ichino 1996). In the USA, negative demand shocks seem to have a relatively short-run effect on regional labour market disparities. This is because labour migration and real wage adjustments operate to reduce the differences in unemployment rates between the different regions and they also reduce the length of time these differences exist. Conversely, in EU countries the mechanisms of wage adjustment and labour migration do not operate as well. Hence any negative demand shock has a more pronounced and longer lasting effect in the EU countries compared with the USA. The issue of regional unemployment differentials is most pronounced in the UK and has been the focus of a great deal of political debate (Martin 1997).
In Australia, while differences in the labour market outcomes of individuals and their families between the various regional areas are long term and enduring, effective policy prescriptions remain elusive (McClure 2000). The McClure report noted a growing divide between job rich and job poor households. Despite the strong employment growth in some areas this has not been distributed evenly across the different regions leaving some regions with high rates of joblessness. In addition to the uneven regional distribution of employment growth, structural change in the Australian economy in recent years, such as technological change and the globalisation of industry and trade, has simultaneously increased the demand for skilled workers and decreased the demand for less skilled workers (Lewis 2008). The changing pattern of demand for workers has resulted in greater inequalities in the Australian labour market between skilled and unskilled workers. A great concern in the McClure report was the entrenchment of social and economic disadvantage of individuals and their families due to poor labour market participation. Also, not just individual families are of concern, but whole communities in which joblessness for some areas is significantly higher than the national average.

In Australia formal models of regional variations in labour market outcomes that have focused on unemployment differentials (see Borland 2000 for a review of this literature), have paid particular attention to the interaction between individual skills, the business cycle and structural changes in the Australian economy which have shifted the demand for labour. These studies find geographic concentrations of low skilled workers as a major determinant of regional disparities in unemployment differentials (examples include Karmel, McHugh and Pawsey 1993, Hunter 1994, and Gregory and Hunter 1995).
However, these studies have examined unemployment variations in metropolitan areas and largely ignored the non-metropolitan areas which have significantly different characteristics and experiences. In addition, we are in a unique position in Australia since we now have data for all four phases of the business cycle in the Census of Population and Housing conducted by the Australian Bureau of Statistics every five years, namely 1991 (trough), 1996 (recovery), 2001 (expansion) and 2006 (peak). Finally, internationally, a number of techniques for measuring disparity between different regions have been developed (Kangasharju 1998) and have not yet been applied to their fullest extent in Australia.

2 Methodology

How should regions be classified? There is not one definitive regional classification method. However any method used should employ homogenous grouping in which areas are grouped together based on similar characteristics. These characteristics may be drawn from disciplines such as economics, geography, or social and cultural determinants. It is important that the grouping be relevant to the object studied.

Regional classification systems are discussed in chapter 3, however, for a full review of classification systems see Garnett and Lewis (2000, 2007). As mentioned previously in chapter 3, the regional classification system employed in this study was developed by the Australia Bureau of Agriculture and Resources Economics (ABARE 2001). This regional classification system, for reasons outlined in chapter 3, is more effective than other regional classification systems at groupings regions into categories which more commonly share similar experiences and characteristics. The regional classification system used here is listed below.
Capital Cities: eight capital cities
Other Metropolitan: other than in capital cities that contain whole or part of an urban centre with population of 100 000 or more
Coastal: within 80km of the coastline
Remote: coded by road distance between populations and from the nearest urban centre, according to the Accessibility/Remoteness Index for Australia (ARIA\(^1\))
Inland: all remaining

Source: ABARE (2001)

The unit used for analysis here is the SLA. SLAs, previously discussed in chapter 3, can be aggregated to any level including region, state or Australia as a whole. We used two data sources which both provided data at the SLA level. The Censuses of population and housing 1991, 1996, 2001 and 2006, and taxation data provided by the Australian Taxation Department to the Bureau of Infrastructure, Transport and Regional Economies. While Census income data include income from all sources including government benefits, taxation data only looks at market income which only applies to those people that are working. Additionally, the taxation data is annual which allows greater comparison between movements in the business cycle and changes in regional income dispersion.

In order to profile labour market outcomes succinctly several commonly used variables are used here: the unemployment rate, the jobless rate, and earnings.

---

\(^1\) ARIA defines remoteness based on the physical road distance people travel to reach service centres where people can access various levels of goods and services.
The standard unemployment rate is defined as the number of unemployed divided by the total labour force multiplied by 100. However, the unemployment rate fails to recognise workers that are discouraged, under-employed or simply unavailable for work. One way to account for some of the failings of the unemployment rate is to use the jobless rate. The jobless rate includes discouraged workers and those counted not in the labour force. The jobless rate is defined as the Working Age Population (WAP) minus employed persons divided by the WAP multiplied by 100. The Working Age Population consists of persons aged between 15 and 65. Finally the earnings measure is taken to be the group median for each SLA.

In order to measure for convergence or divergence of labour market outcomes three measuring techniques have been applied to the variables above. Martin (1997) uses a regional unemployment dispersion index which takes the differential between a region’s unemployment rate and the national unemployment rate and weights the differential by the relative size of the region’s labour market, called absolute dispersion. For instance,

\[ Au = \sum_{r} \left| \frac{L_r}{L_n} (U_r - U_n) \right| \]  

Where \( Au \) is the absolute dispersion around the national unemployment rate, \( L \) is the size of the labour force, \( U \) is the unemployment rate, \( r \) denotes the region and \( n \) national.

Another means of measuring the convergence of labour market outcomes for different areas is the standard deviation, a fairly common statistical measurement. If the standard deviation in, say, 2001 is larger than the standard deviation in 2006 then this is taken to mean that outcomes have converged over
the 2001 to 2006 period. On the other hand, if the standard deviation in 2001 is smaller than the standard deviation in 2006 then this can be interpreted as divergence.

Finally, a popular method of measuring the income distribution is the Gini coefficient. The Gini coefficient is used here to summarise the differences in median income between SLAs of the various regional groups. The lower the Gini coefficient the lower the degree of inequality. Therefore, to the degree that the Gini coefficient is increasing or decreasing indicates whether, respectively, there is divergence or convergence.

3 Regional Jobless

It is interesting to look beyond regional unemployment rates, when examining regional disparity, with the jobless rates because the unemployment rate, according to the Australian Bureau of Statistics definition, only examines those in the labour market. The jobless rate, as defined here, on the other hand looks at everyone of working age and can give a better indication of whether or not the benefits of economic growth are reaching everyone or just those currently participating in the labour market.

From examining the differences in the unemployment rate between and within regional groups, Lewis and Corliss (2012) found that employment opportunities do filter down through the economy reaching the majority of those that participate in the labour market. Given the growth in employment opportunities and the broad reach of these opportunities we might expect to see more people of working age participate in the labour market. However, it is unclear how this will affect differences between and within regional jobless rates.
Regionally the jobless rate is much higher in coastal regions and other metropolitan regions and much lower in capital cities than the national average. While the higher proportion of early retirees in coastal Australia may account for higher joblessness, this is not the case in other metropolitan regions. Like the unemployment rate we can see the impact of the business cycle on the jobless rate in Australia.

**Figure 10.4 Regional Jobless Rates, per cent.**

![Bar chart showing regional jobless rates from 1991 to 2006](chart.png)


During the period 1991 to 1996 both coastal and remote regions jobless rates increased, showing a delayed reaction to the business cycle in these areas. Both coastal and other metropolitan regions benefited the most during the expansion to boom phase of the business cycle each decreasing their jobless rate by 3.6 percentage points.
The jobless rate for the remote regions illustrates that solely looking at unemployment can paint a misleading picture. While Lewis and Corliss (2012) showed there is a low unemployment rate in remote regions, figure 10.4 shows there are many people of working age that are choosing not to or who are unable to participate in the labour force in remote regions. Moreover, the jobless rate is hardly affected by the business cycle implying that joblessness is firmly entrenched.

**Figure 10.5 Regional Jobless Dispersion Index, 1991-2006.**

![Graph showing regional jobless dispersion index from 1991 to 2006.](image)


The effect of the business cycle on jobless dispersion is quite different in magnitude and direction to that of unemployment dispersion as figure 10.5 shows. While nationally the unemployment dispersion index reduced substantially over the period, the jobless dispersion index has only increased as
little as 0.3 percentage points from 1991 to 2006. Jobless dispersion is most pronounced in the regional grouping remote areas where it is as high as 7.9 per cent. The remote regional group has seen a significant increase in the dispersion index over the period of strong economic growth in Australia. While the inland regional group did see a consistent reduction in the jobless dispersion index over the period, the magnitude was relatively small.

Additionally, Australia saw little movement in the convergence/divergence of the jobless rate within regional groupings shown here in figure 10.6. It is important to note that unlike the unemployment rate which was just 5.2 per cent nationally in 2006, the jobless rate was 33.1 per cent nationally in 2006 (Lewis and Corliss 2012). Hence a 1 per cent change in the standard deviation means a lot less change in the jobless rate than a 1 per cent change in the standard deviation of the unemployment rate. Regionally the picture is similar to the national one and very little convergence/divergence is observed with the only notable exception of remote regions. The remote regional group experienced divergence from 2001 to 2006 of 2.9 percentage points. Remote regions have the largest differences in the jobless rate of any of the other regions with a standard deviation of 17.2 per cent in 2006. The next largest standard deviation is found in capital cites which is considerably less at just 8.7 per cent in 2006.

**Figure 10.6 Jobless Convergence by Region (change in standard deviation), over time**
Although economic growth in Australia did coincide with a significant lowering of the jobless rate throughout Australia and its regions, it appears differences between and within regional groups remained relatively constant except in remote regions where there was significant divergence. This suggests that joblessness is far more persistent than unemployment particularly in remote regions.

4 Regional Market Income

Another way of capturing dispersion trends is to use income tax data collected by the Australian Taxation Office which provides annual data from 1990 to 2005. The taxation data takes the form of Real Income per Taxpayer (RIPT) which has been collated into individual SLAs, of which there are 1352. Those who did not submit a tax return or who did not earn over the threshold are not
included and the data therefore for market income is approximately only for those people that are working. Another problem in using Census data is the limited number of time points which are five years apart. However, by using the taxation data, which are annual, we are better able to show correlations between the business cycle and the convergence/divergence in income between and within regional groupings. The consumer price index has been used to convert incomes into $2006. Income here includes all sources of income, not just earnings, but also rents, profits, dividends and interests received. Importantly social security payments are not included.

Figure 10.11 shows the absolute dispersion index nationally and for the five regional groups from 1990 to 2005. Nationally, the dispersion in taxable income has nearly doubled over the period with a slight hiccup around 2001 to 2002 where the dispersion index fell. The coincides with a quarter of negative gross domestic product growth.

Regionally, it appears that capital cities match changes of the national dispersion index but are of greater magnitude. The greatest dispersion is found in capital cities and remote areas. Interestingly remote regions also exhibited a falling dispersion index around the time of a small downturn in the economy but the downturn lagged the falling dispersion index by one period. For the other regions not only is their absolute dispersion index small in comparison to the others but there is very little change observed over the period.

**Figure 10.11 Real Income per Taxpayer Absolute Regional Dispersion, constant 2006 dollars.**
Figure 10.11 shows some evidence of an association between the business cycle and of convergence/divergence of incomes between areas. The growth phase of the business cycle is accompanied by a divergence in the income disparity between areas if not immediately then soon after. Also, a slowing of growth is followed by a convergence in the incomes between areas.

**Figure 10.12 Change in Standard Deviation and Growth Rates Over Time**
Regionally capital cities observed the greatest divergence during the late 1990s and again from 2003 onwards. It appears the 2001 slowing of growth had a significant effect causing a brief period of convergence within capital cities. Remarkably the greatest convergence was recorded in remote regions even though remote regions are among the regions with the greatest dispersion as noted earlier in figure 10.11. This convergence occurred at the same time as the economic downturn in the Australian economy. For the other regions coastal, inland and other metropolitan regions there was relatively little change observed over the period.

**Figure 10.13 Real Income per Taxpayer Convergence (Change in Standard Deviation) by Region, in $2006.**
In figure 10.14 well known measures are applied to the RIPT of all SLAs, namely, the ratio of the lowest 20 per cent (20th percentile) to the median (50th percentile) and the ratio of the highest 20 per cent (80th percentile) to the median (ABS 2009).

At its peak the richest 80th percentile had incomes 19 per cent greater than the income of the 50th percentile. Interestingly, while the economic downturn in 2001 reduced this premium for the richer areas by nearly 3 percentage points down to 16.2 per cent, it increased the poorer SLAs share of the median by nearly 2 percentage points to just over 91 per cent in 2002. The figure also shows that during the recovery to expansion phase of the business cycle, where economic growth was quite strong divergence in incomes between areas took
place particularly for the richer SLAs as their share increased relative to the median. It seems that the richer SLAs are more affected by the business cycle than are the poorer and median income SLAs. Hence convergence between areas takes place during a downturn in the economy as richer areas incomes are reduced in relation to that of the median. During an upturn in the economy divergence take place as the richer areas incomes are increased in relation to that of the median.

**Figure 10.14 Real Income per Taxpayer Percentile Ratios, in $2006**

![Graph showing real income per taxpayer percentile ratios from 1990-2005](image)


A popular method of measuring the income distribution is the Gini coefficient. The Gini coefficient is used here to summarise the differences in real income per taxpayer between Statistical Local Areas of the various regional groups.
Nationally, the Gini coefficient between SLAs is low and shows only a small amount of variation over the reference period. Here the top end of the business cycle coincides with the peak in the Gini coefficient and matches the small economic downturn in 2001 with a dip in the Gini coefficient in 2001 to 2002.

Regionally, as before in the dispersion index the greatest differences between SLA real income per taxpayer are found in the regional group’s capital cities and remote. These regional grouping also have the greatest variation in the Gini coefficient over the reference period. Interestingly while the regional group capital cities appeared to follow the business cycle with the Gini coefficient increasing along with strong economic growth between 1991 and 2001 with a slight dip around the time of the small economic downturn. The regional group remote Gini coefficient dipped corresponding with the economic downturn in 2001 without increasing there after despite the upturn in the economy. This contradicts the picture presented by the dispersion index which shows increasing dispersion after the 2001 downturn for the regional group remote.

The remaining regional groups show only very small differences between the SLAs within them and don’t vary much over the reference period as was the case using the dispersion index.

**Figure 10.15 Gini Coefficient of the Real Income per Taxpayer**
Examining market income reaffirms the findings of Lewis and Corliss (2012) in which they suggest growth is associated with divergence in income and most of the effects of the business cycle are concentrated in capital cities and remote regional groups. After investigating market income however, there was also a clear association between an economic slow down and convergence of income between areas. Moreover it is the richer SLAs that benefit the most from economic growth. And finally, that most of the disparity in income between and within regional groups are concentrated in capital cities and remote regions.

When looking at census data, compared to taxation data, the disparity of income between and within regional groups are much greater (Lewis and Corliss 2012). Furthermore, the census data shows by far the greatest disparity exists in the regional category remote. Alternatively, the taxation data showed capital cities have the greatest disparity of income, although the disparity shown in the
remote category was still relatively high. This shows just how important non-market income is to some SLAs within the regional category of remote.

5 Conclusion

While previous research has shown that job opportunities tend to filter down through the economy benefiting the vast majority of those that participate in the labour force. And this paper showed that the increase in employment opportunities, created by strong growth over the period, did reduce jobless rates around Australia, it did nothing to change the root causes of structural differences between and within regional categories regarding the jobless rate.

Using the tax data it was found that growth was associated with diverging incomes and downturns are associated with converging incomes between areas. The influence of the business cycle mostly impacted upon the regional groups of capital cities and remote regions where there is also the greatest differences between regions. The remaining regional groupings showed considerably less difference between regions and the business cycle was of little consequence. It appears that the business cycle and economic growth has a greater impact upon higher income areas in both the upturn and in the downturn phase of the business cycle.
References


Australian Bureau of Statistics (2011) *Australian National Accounts*, cat.no.5206.0, ABS, Canberra


