# 4 Structural change in employment

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| Key points |
| * In the decade to 2012, structural change in employment has taken place in the context of a historically low rate of unemployment and generally solid growth in the number of people employed. * Structural change indexes suggest that the recent natural resources boom has not been associated with an unprecedented rate of structural change in employment. Higher rates of structural change in employment were experienced in the late 1970s and early 1980s across sectors, and in the mid-1990s across states and territories. * Over the last 25 years, relatively few industries have experienced large changes in their share of total employment. * The largest decreases in employment shares were in Manufacturing and Agriculture. * Employment in Professional, scientific and technical services and Health care and social assistance experienced the greatest increases. * The rate at which employment shares in these industries has changed has been relatively constant. * The states, territories and regions differ in their factor endowments, population and labour force profiles and industrial composition. Consequently, they tend to differ in the nature and rate of their structural change in employment. * Western Australia and Queensland have seen rapid growth in mining employment, while Victoria and New South Wales have experienced pronounced declines in the employment share of manufacturing, and rises in the employment share of services. * These industry trends resulted in structural change in employment being particularly concentrated in certain regions of the jurisdictions involved. * Analysis of the geographic composition of employment suggests that the shift in employment shares occurred mostly between states and territories, rather than between regions and capital cities within jurisdictions. |
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This chapter describes structural change that has taken place in the Australian labour market during parts of the twentieth and twenty‑first centuries. To that end, a range of employment indicators are presented that reflect various aspects of structural change. These indicators describe developments occurring nationally at the sectoral and industry employment levels (sections 4.1 and 4.2, respectively), as well as happening at the state and territory and regional levels (section 4.3).

Labour market changes are a key element of structural change. As industries react to changes in demand for their outputs, patterns of labour demand are altered, leading to changes in aggregate employment and unemployment, as well as in the distribution of workers across sectors (mostly broad groupings of industries) and geographic areas.

In recent times, structural change has occurred within the context of a historically low rate of unemployment and generally solid growth in the number of people employed (figure 4.1). Between 2002 and 2012, total employment increased from 9.3 to 11.5 million people, while the unemployment rate remained below 6.5 per cent. Even in the last four years, when employment growth slowed in some quarters due to the Global Financial Crisis and its aftermath, the unemployment rate remained below the 6 per cent that prevailed following the 1971-1972 boom in the price of rural commodities (PC 2012a).

Figure 4.1 Changes in employment and unemployment, 1979 to 2012**a**

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a Change in employment is the annual change to June in each year. Unemployment is the monthly unemployment rate. Both series are trend data.

*Source*: ABS (*Labour Force, Australia*, Cat. no. 6202.0).

A key observation that can be made from the series presented in figure 4.1 is that, irrespective of the amount of structural change undergone by the economy between 2002 and 2012, the overall labour market generally proved resilient. Indeed, Borland (2011) termed the 2000s ‘the quiet decade’ for that market.

## 4.1 Structural change at the sectoral level

This section presents indicators of structural change in the labour market, at a broad sectoral level. To contextualise and draw a distinction with Australia’s recent experience, these indicators cover both the past decade and the longer term.

Figure 4.2 shows the growth in employment across broad sectors over the past one hundred years. Between 2002 and 2012, total employment in services increased by over 2.2 million people (from around 7.6 million) while, in the mining sector,[[1]](#footnote-2) around 180 000 new workers were added, in addition to the 80 000 employed at the start of this period. That is, the mining workforce more than trebled in 10 years. Over the same period, employment in agriculture and manufacturing both declined by around 90 000 people, from around 425 000 and 1 million persons, respectively.

Figure 4.2 Aggregate employment by broad sectors, 1912–2012**a, b**

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a Data presented are for financial years. b Refer to appendix A for details of the four‑sector aggregation.

*Sources*: Productivity Commission estimates using Withers, Endres and Perry (1985) and ABS (*Labour Force, Australia, Detailed, Quarterly*, Cat. no. 6291.0.55.003).

Figure 4.3 provides the ‘stacked shares’ equivalent of figure 4.2. The employment share of agriculture has experienced a relatively steady, long‑term decline over the entire period. In contrast, the share of manufacturing rose until the late 1940s, but declined thereafter. From around the same time, services have recorded a strongly rising share, now amounting to almost 90 per cent of total employment in the economy.

Figure 4.3 Australian employment shares by broad sectors,  
1912 to 2012**a, b**

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a Data presented are for financial years. b Refer to appendix A for details of the four‑sector aggregation.

*Sources*: Productivity Commission estimates using Withers, Endres and Perry (1985) and ABS (*Labour Force, Australia, Detailed, Quarterly*, Cat. no. 6291.0.55.003).

To some extent, this broad picture is similar to that which has occurred in other developed nations, characterised by the decline of agriculture and the rise of services (Herrendorf, Rogerson and Valentinyi 2011). However, Australia is distinctive given the relative size of its mining sector workforce. After declining in relative terms for virtually all of the twentieth century, the employment share of mining almost trebled between 2000 and 2012. At the end of that period, mining employment comprised around 2.2 per cent of all employment, a figure much greater than the OECD average of less than 0.5 per cent (OECD 2012b).

The historical trends in figure 4.3 reflect significant change in Australia’s economic structure, particularly over the course of the twentieth century. Early in that century, the country was ‘riding on the sheep’s back’, with agriculture accounting for more than 23 per cent of employment in 1920.[[2]](#footnote-3) By the mid‑1960s, agriculture’s share of total employment had fallen to less than 10 per cent, and it has continued to decline ever since.

The prolonged decline in employment in agriculture has coincided with a strong shift to employment in the services sector, a trend that shows little sign of abating. This is illustrated further in table 4.1 which shows the changes in the share of employment in different sectors between 1958 and 2012. This table disaggregates services into five broad components (appendix A), most of which have increased their share of total employment over recent decades. Most notable are the increases in the proportion of employment in the social services sector, from around 10 per cent in 1958 to over 25 per cent in 2012, and employment in business services from around 5.5 per cent in 1958 to around 17 per cent in 2012. (The increasing share of social services employment is particularly striking, given that this sector’s share of total output declined from 1978 to 2012 (table 3.1). As mentioned in chapter 3, this is likely to have been an artefact of the way in which the ABS measures the output value of non-market services.)

Table 4.1 Changes of sectoral shares in employment, 1958 to 2012**a, b**

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|  | Share of total employment | | |  | Change in share of total employment | |
|  | 1958 | 2002 | 2012 |  | 1958 to 2002 | 2002 to 2012 |
|  | % | % | % |  | Percentage point | Percentage point |
| Agriculture | 12.2 | 4.8 | 2.9 |  | -7.4 | -1.9 |
| Mining | 1.4 | 0.9 | 2.2 |  | -0.5 | 1.3 |
| Manufacturing | 26.2 | 11.4 | 8.4 |  | -14.8 | -3.0 |
| Construction | 27.6 | 23.7 | 22.4 |  | -3.9 | -1.3 |
| Distribution services | 8.2 | 7.6 | 8.9 |  | -0.6 | 1.4 |
| Business services | 5.5 | 15.5 | 16.9 |  | 10.0 | 1.3 |
| Social services | 10.9 | 22.9 | 25.8 |  | 12.0 | 2.9 |
| Personal services | 8.0 | 13.2 | 12.5 |  | 5.2 | -0.7 |

a 1958 data are for the 1958‑59 financial year. 2002 and 2012 data are annual averages of quarterly data, ending in the May quarter of each year. Employment is in terms of total number of people employed. b Refer to appendix A for definitions of sectors.

*Sources*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003) and E. Connolly (RBA, Sydney, pers. comm., 13 August 2012, unpublished data).

The bulk of these increases took place between 1958 and 2002, and were accompanied by correspondingly large decreases in the shares of manufacturing and agriculture. For its part, mining has more than doubled its share of total employment in the last decade, following a slight contraction from 1958 to 2002.

The rate at which the structure of employment in Australia has changed can be summarised by a ‘structural change index’ (SCI). In figure 4.4, the rate of structural change in employment occurring between eight broad sectors — agriculture; mining; manufacturing; construction; distribution services and utilities; business services; social services; and personal services — is shown over time. In essence, the SCI measures the net overall share of the workforce that has changed sector over a period of time. The higher the index, the greater the amount of structural change that is deemed to have occurred in the labour market. Note that an SCI does not capture the gross flows underlying transitions of individual workers, a measure covered in chapter 5. Appendix B contains further information on the methodology underlying SCIs.

Figure 4.4 Employment structural change index by sector, 1958 to 2012**a, b**

Eight–sector aggregation of industries

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a Data are for financial years until 1985, and annual averages of quarterly data, ending in the May quarter of each year, from 1986 to 2012.  b Sectors are defined in appendix A. Appendix B gives details of SCI methodology.

*Sources*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003) and E. Connolly (RBA, Sydney, pers. comm., 13 August 2012, unpublished data).

As shown by the eight‑sector SCI above, the natural resources boom has not been associated with an unprecedented rate of structural change in employment; previous periods were times of more rapid change. The average for 2000–2009 was 2.8, compared to the peak of 4.1, recorded in the 1980s. The annual SCI values suggest that in the late 1970s and early 1980s the redistribution of employment between sectors amounted to about 5 per cent of employment, in contrast to around 3 per cent since the turn of the twenty‑first century.[[3]](#footnote-4)

It is beyond the scope of this supplement to examine the reasons behind the structural change that occurred in earlier periods. Nevertheless, writing about the 1970s peak in the Australian employment SCI, the Commission stated that ‘the impact of the two oil shocks in the 1970s, including the commodity price boom of 1973‑74, is clearly evident’ (1998, p. 16).

### Comparison of structural change in employment and output

Structural change indexes in employment and in output are likely to be related, given that they both reflect aspects of an economy’s transformation.[[4]](#footnote-5) Figure 4.5 reveals both similarities and differences between the two indexes. After some divergence in the early 1970s and mid‑1980s, the indexes were similar for most of the 1990s and 2000s. Examination of the underlying data (not shown) suggests that the divergence in the two indexes during the mid‑1980s was driven primarily by changes in manufacturing, and business and social services:

* Employment in manufacturing as a proportion of total employment declined more sharply than manufacturing output as a proportion of total output.
* The employment shares of business and social services increased more rapidly than their respective shares of output.

Conceptually, two variables can explain the divergence between a sector’s share of output and share of employment. The first is labour productivity — a sector’s level of real output per worker. When labour productivity in different sectors changes at different rates, a ‘wedge’ is introduced between the output and employment SCIs.

It is likely that some of the major competition and labour market reforms introduced in the 1980s were at least partly responsible for some of the differences observed between output and employment SCIs during that period (chapter 2). For instance, De Laine, Lee and Woodbridge (1997) found that, in manufacturing, the average annual decrease in employment due to improved labour productivity was greater between 1983‑84 and 1992‑93 (a period that they associate with microeconomic reform) than between 1977‑78 and 1983‑84. This finding is consistent with the observation that manufacturing was a major source of output and employment SCI divergence during the 1980s.

Figure 4.5 Employment and real output structural change indexes, 1969 to 2011**a, b**

Eight‑sector aggregation of industries

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a This figure combines the employment structural change index shown in figure 4.4 and the real output structural change index shown in figure 3.2. Employment data are for financial years until 1985, and annual averages of quarterly data, ending in the May quarter of each year, from 1986 to the present. Real output data reflect financial years. b Sectors are defined in appendix A. Appendix B gives details of SCI methodology.

*Sources*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly*, Cat. no. 6291.0.55.003; *Australian System of National Accounts*,Cat. no. 5204.0) and E. Connolly (RBA, Sydney, pers. comm., 13 August 2012, unpublished data).

The differing use of part‑time employment — across sectors and over time — is the second possible explanation for the divergence between output and employment SCIs. The latter index traditionally uses ‘headcount’ measures of employment to calculate sectoral shares. These shares may differ from the ‘hours worked’ shares if some sectors are more prone than others to using part‑time and casual staff. To investigate this possibility, figure 4.6 plots SCIs calculated using both the total number of people employed and total hours worked. The latter measure gives an indication of the total labour ‘used’, and is not affected by changes in the level of part‑time work.

The indexes generate broadly similar results, although it is notable that, since 1998, structural change in terms of hours worked has risen above structural change in total employment. This implies that the change in the distribution of hours worked has exceeded the change in the distribution of people employed across sectors. A possible explanation for this trend is that some sectors intensified their use of part‑time work, while others reduced it. This possibility is investigated further in chapter 5.

Figure 4.6 Employment structural change indexes, 1994 to 2012**a, b**

Number of people employed and hours worked

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aData are derived from annual averages over quarterly data, ending in August of each year, from 1986 to the present. From these data, 5‑year moving averages of employment shares across eight sectors are calculated. The structural change index is calculated by halving the sum, over all sectors, of the absolute values of the difference in employment shares between year *t* and year *t‑5*. b Sectors are defined in appendix A. Appendix B gives details of SCI methodology.

*Source*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003).

## 4.2 Structural change in employment at the industry level

The graphs and tables presented in section 4.1 illustrate changes in employment at the level of the sector. However, they do not identify specific industries as having expanded or contracted their share of overall employment over time. A more disaggregated examination of industry changes is presented below.

### Which industries have expanded or contracted?

To focus on the sources of structural change in employment at the industry division level, figure 4.7 shows the change in employment share of individual industries between 1986 and 2002, and between 2002 and 2012. Industries are categorised by whether their relative share of total employment has grown (overall) since 1986, and ranked in descending order of (overall) percentage point change in employment.

Figure 4.7 Changes in employment shares by industry, 1986 to 2012**a**

Percentage point change in share of total employment

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a Percentage point changes are calculated as the difference between the annual averages (over quarterly data to May).

*Source*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003).

It is readily apparent that, in both sub‑periods, the largest declines in employment share occurred in the Manufacturing and Agriculture industries. In contrast, the two industries with the largest expansions in employment share over the whole period were Professional, scientific and technical services, and Health care and social assistance. Interestingly, for all four major ‘movers’, there was no discernible change in the underlying trends of growth (positive or negative) between 1986–2002 and 2002–2012. By contrast, for some of the smaller movers, the trends reversed between the two periods.

Figure 4.7 does not show annual fluctuations in employment shares of individual industries. In order to analyse some of these fluctuations, figure 4.8 plots annual employment shares between 1986 and 2012 for the four industries with the largest percentage point changes in their employment shares over this period.

Figure 4.8 Shares of employment of selected industries, detailed,  
1985 to 2012**a**

Per cent of total employment

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a Quarterly data averaged annually to May for each year. ANZSIC industry divisions are used in this figure; ‘Agriculture’ is Agriculture, forestry and fishing, ‘Professional’ is Professional, scientific and technical services and ‘Health care’ is Health care and social assistance.

*Source*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003).

It appears from this graph that the rates of change have been relatively constant over time. By and large, the employment share of each of the industries represented has been rising or declining at a steady rate since 1986, with no clear breaks or reversals. The drop in Agriculture’s share in 2002‑03 was the result of the drought prevailing at that time (PC 2005d). Exchange rate pressures faced by traditional exporters during the 2000s do not appear to have significantly altered the long‑term trends, with the possible exception of Manufacturing, where the trend has accelerated slightly since 2007‑08.[[5]](#footnote-6)

The detailed industry picture emerging from figures 4.7 and 4.8 confirms that the key features of structural change in employment, at least since the mid‑1980s, were:

* a contraction in the shares of Manufacturing and Agriculture
* an expansion in the shares of Health care and Professional services.

These graphs also reveal that, underlying the overall expansion of services, were some notable contractions, as well as expansions. While the Professional services and Health care industries expanded for reasons analysed in chapter 2, other service activities such as Wholesale trade and Transport experienced significant declines in their employment share over the period.

## 4.3 Patterns of regional structural change in employment

Australian states and territories,[[6]](#footnote-7) and the geographic regions within them, differ in many respects, including in terms of their factor endowments, population and labour force profiles, demand for labour and industrial composition. Consequently, they can be expected to respond differently to pressures for structural change.

Structural change may be examined in geographic terms using two related approaches:

* By looking at the changing sectoral or industry distribution of employment within a region or state.
* By looking at the changing distribution of employment across all regions (or states).

These approaches are complementary because, in many cases, changes in the geographic distribution of employment are due to changes in its industry distribution, combined with the fact that some industries tend to be geographically concentrated.

### At the sectoral and industry level

The broad changes in sectoral shares of national employment between 1986 and 2012 were mirrored in all jurisdictions, to a greater or lesser extent (table 4.2). The largest contractions in the employment share of manufacturing — and corresponding increases in the employment share of services — were recorded in New South Wales, Victoria, South Australia and Tasmania. These trends existed before the onset of the resources boom and continued thereafter.

Table 4.2 Change in sectoral employment shares by state and territory**a, b**

Percentage point change between 1986 and 2002, and 2002 and 2012

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Agriculture | |  | Mining | |  | Manufacturing | |  | Services | |
|  | 1986 to 2002 | 2002 to 2012 |  | 1986 to 2002 | 2002 to 2012 |  | 1986 to 2002 | 2002 to 2012 |  | 1986 to 2002 | 2002 to 2012 |
| New South Wales | ‑0.9 | ‑1.8 |  | ‑0.9 | 0.7 |  | ‑5.7 | ‑2.4 |  | 7.4 | 3.5 |
| Victoria | ‑1.4 | ‑1.3 |  | ‑0.2 | 0.3 |  | ‑5.6 | ‑4.4 |  | 8.6 | 5.1 |
| Queensland | ‑2.0 | ‑2.9 |  | ‑0.6 | 2.0 |  | ‑1.8 | ‑3.1 |  | 5.4 | 3.5 |
| South Australia | ‑1.4 | ‑2.2 |  | ‑0.9 | 1.1 |  | ‑4.1 | ‑4.4 |  | 7.4 | 5.1 |
| Western Australia | ‑2.7 | ‑1.9 |  | ‑1.0 | 5.3 |  | ‑2.2 | ‑1.9 |  | 6.8 | ‑2.1 |
| Tasmania | 0.3 | ‑4.1 |  | ‑0.9 | 1.2 |  | ‑3.2 | ‑3.2 |  | 6.3 | 5.5 |
| Northern Territory | 1.0 | ‑2.1 |  | ‑4.1 | 2.3 |  | 0.4 | ‑1.2 |  | 2.7 | 0.1 |
| ACT | ‑0.3 | ‑0.2 |  | 0.0 | 0.1 |  | ‑1.0 | ‑1.4 |  | 1.3 | 0.9 |
| Australia | ‑1.3 | ‑1.9 |  | ‑0.6 | 1.5 |  | ‑4.5 | ‑3.1 |  | 7.8 | 3.3 |

a Years to November, averaged over four quarters. b Sectors are defined in appendix A.

*Source*: ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003).

In Queensland and Western Australia, there was also a large decline in agriculture’s share of employment. In Queensland, this was offset by an expansion in services and, to a lesser degree, mining. In Western Australia, mining‑related employment increased substantially in the 2002–2012 period, with resulting falls in the shares of all other sectors. The scale of the resources boom in Western Australia is reflected in the fact that it is the only jurisdiction to have experienced a fall in the employment share of services between 2002 and 2012.

As well as taking place within states and territories, changes in the industry structure of employment are also evident within regions, as shown in figure 4.9 for the period 2008–2012. As this figure illustrates, structural change index values in the top quintile (20 per cent) were recorded in all mining regions, except the Northern Territory. Moreover, around 75 per cent of the statistical regions in Queensland had SCI values that were in the top two quintiles across the country.[[7]](#footnote-8) The growth in mining‑related employment was the key reason behind the high levels of structural change in Queensland and Western Australia. In contrast, the high rates of change recorded in parts of Victoria and New South Wales reflected growth in the employment share of services, alongside the fall in employment in the manufacturing and agricultural sectors.

Figure 4.9 Regional structural change in employment, 2008 to 2012**a, b**

Structural change index by quintile and Statistical Region

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| Figure 4.9 Regional structural change in employment, 2008 to 2012  Structural change indexes at a regional level measure the change in sectoral shares of employment in that region between 2008 and 2012. Employment shares are averaged over the year to August in each year. The darker the region, the higher the quintile of the structural change index for that region.  This figure includes a map of Australia which includes regions coloured according to the level of structural change experienecd between 2008 and 2012. Regions are coloured according to quintile. |

a Structural change indexes at a regional level measure the change in sectoral shares of employment in that region between 2008 and 2012. Industry‑level employment data have been aggregated to 9 sectors using the aggregation described in appendix A. Employment shares are averaged over the year to August in each year. b Highest quintile = top 20 per cent of SCI values. Lowest quintile = bottom 20 per cent.

*Source*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003).

### At the geographic level

To examine the rate of change in the geographic composition of employment across Australia over time, figure 4.10 plots two SCIs:

* A ‘state/territory’ SCI, based on employment shares of states and territories.
* A ‘region’ SCI, based on employment shares of regions (where jurisdictions are disaggregated into capital cities and the balance of each state).

By construction, the region SCI is always greater than, or equal to, the state/territory SCI, as changes in state or territory shares of total employment over time must also involve changes in regional shares. However, within‑jurisdiction changes, such as would be caused by the movement of people between a capital city and regional areas (in either direction), are only recorded by the region SCI. Given that the two indexes shown in figure 4.10 generally track each other, it is apparent that redistribution of employment shares mostly occurred *between* states and territories, in net terms, rather than between regions and capital cities *within* states (the period between 1999 and 2003 being an exception).[[8]](#footnote-9)

Interestingly, the rate of redistribution of employment across jurisdictions or regions in figure 4.10 is substantially below the rate of redistribution between sectors (figure 4.4). The long‑term average SCI at the jurisdictional level is around half the corresponding average at the sectoral level (around 3 percentage points).[[9]](#footnote-10) This difference suggests that much of the structural change in employment by sector in Australia happens without a significant redistribution of employment shares between states and territories, such as would be caused by work-related interstate migration. (Geographic labour mobility is examined further in chapter 5. This issue is also the subject of a current Productivity Commission commissioned study, which is due to release a draft report in December 2013 — see www.pc.gov.au for details.)

Figure 4.10 Employment structural change indexes, by states and territories and regions, 1988 to 2012a, b

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a The ‘State/territory SCI’ is calculated using employment shares of all eight states and territories. The ‘Region SCI’ is calculated using employment shares of the state capital cities and of the balance of the states. For the ACT and the Northern Territory, the entire territory’s share is used in both indexes. Each index is calculated as half the sum of the (absolute) five‑year change in the five‑year moving average of state territory/region shares of output, with the final (financial) year indicated (as per: Connolly and Orsmond 2011; and Connolly and Lewis 2010). A Region SCI that exceeds the state/territory SCI signals that changes in employment shares are occurring *within* each jurisdiction, between the capital city and the balance of that jurisdiction (the direction of urban/regional change is indeterminate from the SCI). b Data are for financial years.

*Source*: Productivity Commission estimates using ABS (*Labour Force, Australia, Detailed, Quarterly,* Cat. no. 6291.0.55.003).

#### Structural change and the distribution of unemployment

As well as affecting the distribution of employment across Australian jurisdictions and regions, structural change may influence the distribution of unemployment. As regions with different industry profiles expand or contract at varying speeds, the spread of unemployment rates across Statistical Local Areas (SLAs) will change. This could be due to time lags in labour market equilibration, as a result of imperfect job matching or labour market segmentation, wage inflexibility or low geographic labour mobility. However, in time and all else equal, jobseekers are likely to move from low growth areas to high growth areas, where expected incomes are higher.[[10]](#footnote-11) This would tend to reduce regional disparities in unemployment. Debelle and Vickery (1998) have found internal labour migration to play such an equilibrating role among Australian states.

To some extent, the mechanisms described above seem to work as depicted. Mining regions have tended, over the decade to 2012, to have unemployment rates that were below the national average, while areas with a high concentration of manufacturing‑ and tourism‑related employment have tended to have higher‑than‑average unemployment rates. Regions with higher employment in agriculture have generally reported unemployment rates closer to the national average (Productivity Commission estimates (not shown) from DEEWR *Small Area Labour Markets* database (2012c)).

While regional unemployment disparities remain, there is evidence that they have been moderated by labour mobility, at least with respect to some regions. Cunningham and Davis (2011) attribute the low average unemployment rates in agricultural and mining regions to significant labour mobility into, and out of, those regions, depending on economic conditions. This is consistent with the expectation that workers tend to move in search of higher income. By contrast, Cunningham and Davis found that labour mobility has not played as important a role in manufacturing- and tourism-dominated regions, suggesting differences in locational amenities.

Alongside structural change, a competing explanation for changes in the dispersion of regional unemployment rates lies with national economic conditions. Debelle and Vickery (1998) found that movements in the national unemployment rate explained most the variation in state unemployment rates. At the regional level, the distribution of unemployment rates has shifted over time, ‘compressing’ in times of growth, and expanding in times of increased unemployment (figure 4.11). In the early 1990s, the distribution initially widened, as the proportion of SLAs with relatively high levels of unemployment increased:

* In 1990, unemployment exceeded 10 per cent in only 15 per cent of SLAs, while unemployment was less than 5 per cent in two out of five SLAs.
* In contrast, by 1994 around 34 per cent of SLAs had an unemployment rate in excess of 10 per cent, with only 10 per cent reporting unemployment below 5 per cent.

As national unemployment decreased from its 1993 peak (figure 4.1), the regional distribution of unemployment rates became more compressed, with the median unemployment rate across SLAs falling. This generally continued throughout the following decade, marked by strong employment growth across the economy.

Figure 4.11 Distribution of regional unemployment rates**a**

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a Distribution of regional unemployment rates are produced using a Gaussian kernel density estimator. Data are from the June quarter of the indicated year, with the exception of 1998 and 2008, which are taken from the September quarter, due to data availability.

*Source*: Productivity Commission estimates from DEEWR *Small Area Labour Markets* database.

The second panel of figure 4.11 shows the continued narrowing of the dispersion in regional unemployment rates until 2008. In the first quarter of 2008, the national unemployment rate reached a low point of 4.1 per cent, after which it began to increase as the Global Financial Crisis took hold. Correspondingly, as unemployment increased to 5.4 per cent towards the end of 2012, the distribution of regional unemployment rates widened slightly, compared with its 2008 profile. In 2012, the distribution of regional unemployment rates resembled that observed in 2004.

The data presented in figure 4.11 suggest that overall economic activity was the main driver of the dispersion in regional unemployment rate disparities during the 2000s (and earlier). This conclusion is consistent with Debelle and Vickery’s (1998) findings for states. It is also consistent with Cunningham and Davis’ (2011) observation that the dispersion of regional unemployment rates decreased overall in the decade to 2011, irrespective of which industry dominated a particular region.

1. The terms ‘natural resources sector’, ‘resources sector’, ‘mining sector’ and ‘Mining industry’ are used interchangeably in this supplement. Appendix A provides a definition of the natural resources sector. [↑](#footnote-ref-2)
2. Analysis of the history of wool exports from Australia — which in 1921 accounted for 26.7 per cent of the value of total exports — can be found in Cashin and McDermott (2002). [↑](#footnote-ref-3)
3. This redistribution may be due to the physical movement of workers between sectors. However, sectoral shares of employment can expand or contract even if no worker changes jobs. This can happen when overall endowments of labour increase, for example, through higher immigration or greater labour force participation, resulting in some sectors expanding their workforce faster than others. (See appendix B for details of the interpretation of structural change indexes.) [↑](#footnote-ref-4)
4. Despite the conceptual link between output and employment structural change indexes, the correlation coefficient between the two measures is equal to around 0.55, suggesting only a moderate correlation. [↑](#footnote-ref-5)
5. Productivity Commission estimates suggest that the combined effect of the rising dollar and the Global Financial Crisis served to bring forward the structural decline of this industry’s employment share by between 1.7 and 3.5 years, relative to the pre‑existing trend (PC 2012a). [↑](#footnote-ref-6)
6. In the remainder of this section, the word ‘states’ is occasionally used to refer to all states and territories. [↑](#footnote-ref-7)
7. Structural change index values in this analysis range from 4.2 to 7.5. However, their construction precludes direct comparison with employment SCIs calculated at the national level (figure 4.4), due to a different industry aggregation and time span. [↑](#footnote-ref-8)
8. The absence of major net redistribution of employment between a capital city and the remainder of that state does not preclude the possibility that gross flows of equal but opposite magnitude have taken place. [↑](#footnote-ref-9)
9. In undertaking this comparison, the number of sectors in figure 4.4 is equal to the number of states and territories in figure 4.10 (that is, eight). As with sectors, a finer disaggregation of jurisdictions or regions would result in a greater level of structural change measured by state/territory or region employment SCIs (appendix B). [↑](#footnote-ref-10)
10. Labour mobility occurring between regions within a state or territory (excluding capital cities) is not captured by the region SCI shown in figure 4.10. [↑](#footnote-ref-11)