

# Experiences of Structural Change

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The Australian economy has experienced almost three decades of uninterrupted growth and undergone a range of structural changes along the way. This paper examines experiences of structural change through a number of Australian and international case studies. It highlights factors that influence the ability of regions, firms and individuals to adjust effectively and take advantage of new opportunities.

## Introduction

The Australian economy has experienced almost three decades of uninterrupted growth and undergone a range of structural changes along the way. These changes have been a combination of market-driven changes led by firms and their employees meeting changing demand and successive governments undertaking microeconomic reforms. The microeconomic reforms pursued in the past few decades have supported productivity gains which in turn have raised overall Australian living standards. These reforms have meant that our financial, product and labour markets are more resilient to continually changing domestic and international trends.

While structural changes have led to broad benefits for the Australian economy, certain regions, firms and groups of workers have found it more difficult to adjust and have felt the costs of adjustment more deeply or for longer periods. Exploring these issues in more detail can help policymakers and the broader community understand the underlying mechanisms of structural change, as well as inform the development of targeted policies to support positive change and assist individuals and regions to take advantage of new opportunities.

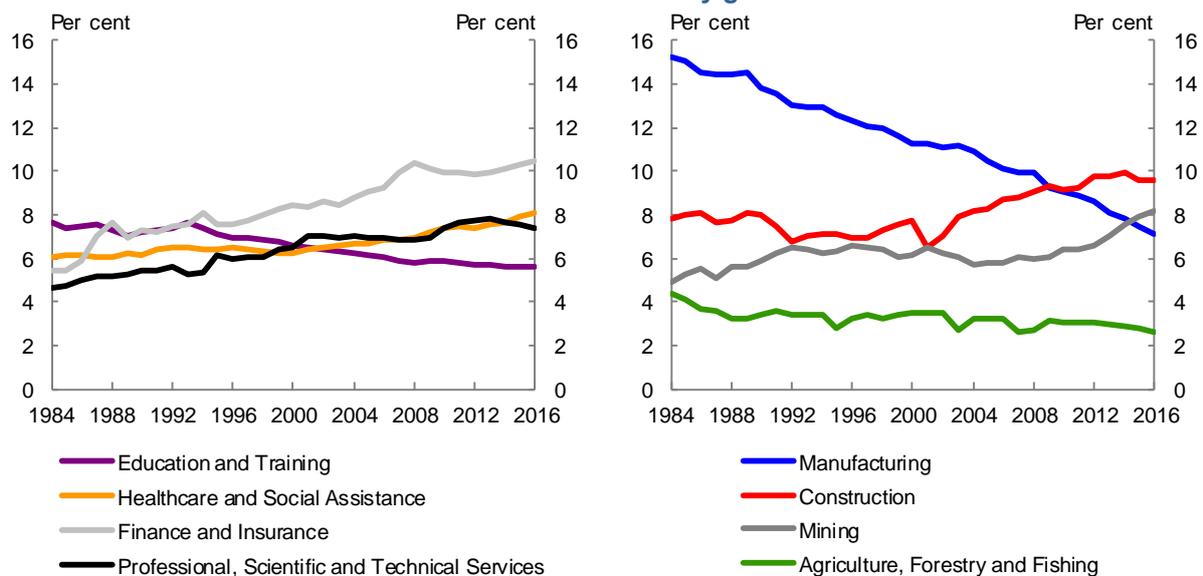
This paper presents an overview of structural change in the Australian economy since the 1970s. Through a series of domestic and international case studies, it highlights factors that affect the ability of regions and individuals to adjust effectively to change.

## Overview of structural change in Australia

Structural change – defined here as compositional shifts in the Australian economy, as measured by longer-term changes in sectoral shares of output and employment – is not new.<sup>1</sup> At the aggregate level, the nature of structural change is well known: there has been a long-term and likely permanent decline in the relative output and employment shares of Australian manufacturing and agriculture, with an increase in the share of the already dominant services sectors (Chart 1 and Chart 2). Other sectors, such as mining and construction, experience cyclical fluctuations. This is not unique to Australia, as the same trend is pervasive across developing and advanced economies.

In 2016, services sectors<sup>2</sup> accounted for 72 per cent of output (gross value added) and 79 per cent of employment in the economy (Australian Bureau of Statistics, November 2016). While there is a long-term upward trend in output and employment shares for services as a whole, the growth rates of particular services sectors have not been uniform. For example, the share of output for the finance and insurance sector has increased more significantly compared to relatively labour-intensive and lower-value add sectors, such as healthcare and social assistance. In contrast, the share of employment for the healthcare and social assistance sector has increased over time, but has decreased for the finance and insurance sector over the same period (Chart 1 and Chart 2).

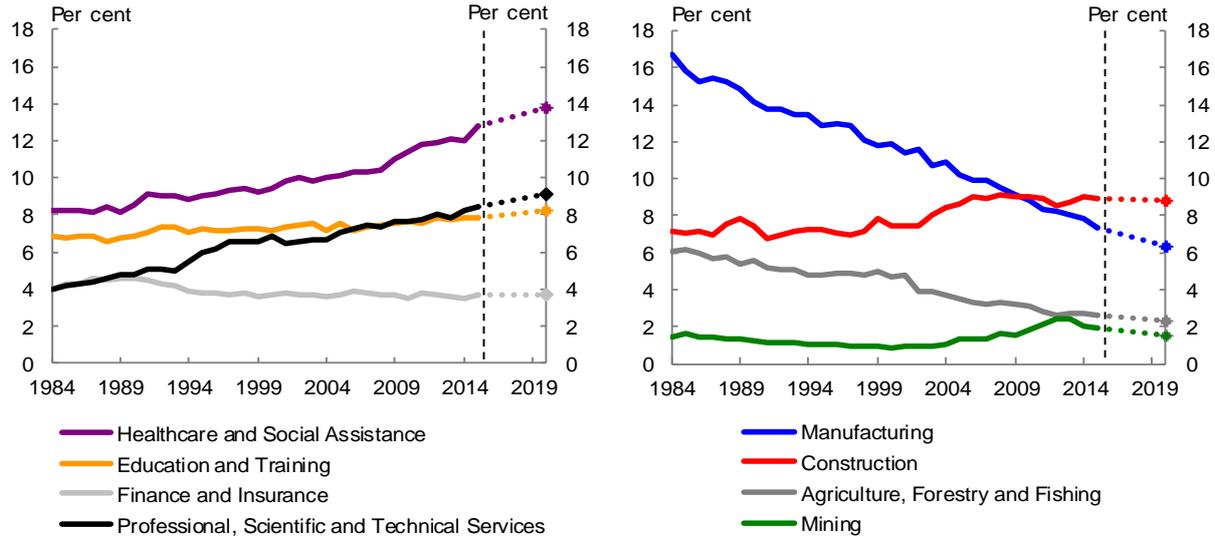
**Chart 1: Sectoral shares of industry gross value added**



Source: ABS Cat. no. 5204.0 (Table 5).

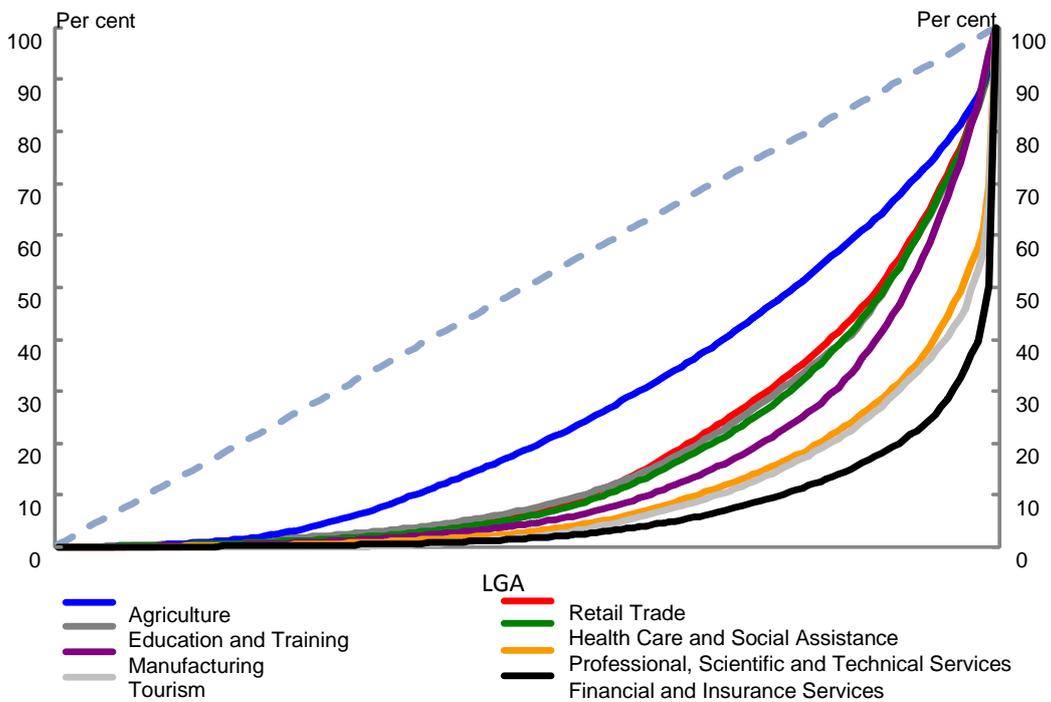
- 1 The Productivity Commission (2013) views structural change as a process through which the sectoral composition of the economy is altered in one or more dimensions. Sectoral shares can change when output and/or employment increases/decreases in absolute terms in certain sectors.
- 2 Consisting of all sectors except for agriculture forestry and fishing, mining, manufacturing and construction.

**Chart 2: Sectoral share of employment**



This sectoral shift has been accompanied by changes in the distribution of activity within Australia, with a greater proportion of the Australian population now living in the capital cities. Employment in sectors such as finance and insurance has been more heavily concentrated in particular geographic areas, while employment is more dispersed in other sectors, such as retail and health care and social assistance (Chart 3). For example, in New South Wales, 50 per cent of employment in the finance and insurance services sector is concentrated in the City of Sydney Local Government Area (LGA), whereas employment in healthcare is more evenly distributed.

**Chart 3: Geographical dispersion of NSW employment, cumulative employment by LGA in NSW**



Note: The closer the curve is to the dotted line, the more evenly distributed the level of employment is across LGAs. The further way the curve is from the dotted line, the more concentrated employment is to certain LGAs.

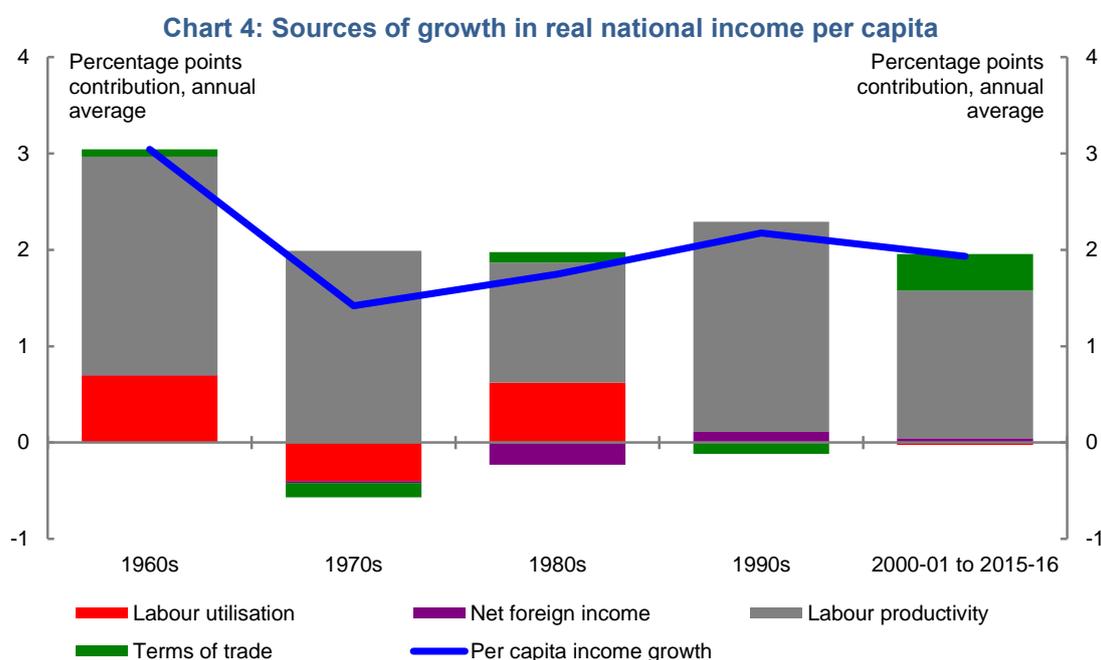
The drivers of structural change are varied and generally fall into two categories – market-driven changes and shifts in government regulation. In Australia, several broad features may be observed:

- expenditure on services comprised a greater share of the consumer budget as incomes increased, moving from around half to two-thirds of household consumption between 1986 and 2013 (Beech et al, 2014);
- changing demographics are influencing consumer demands, as well as the makeup of the labour force;
  - the ageing population will see increased demand for health care and related goods and services and a decrease in the working age population over time;
- technology has created new goods and services previously only found in people’s imaginations, in addition to enabling new business models and facilitating the disruption of a range of industries;
- improvements in technology and transport infrastructure have reduced geographical barriers to competition and allowed firms to source inputs from other locations;
- increased income and improved transport links have provided individuals and families greater choice in choosing place of residence, altering labour markets and demand for goods in regional towns;
- firm-level investments in innovation have increased productivity, raising wages and profits while at times reducing firm specific demand for labour, illustrated by the increased output of the agricultural sector as employment declined;
- increased trade with other economies has opened up new markets to domestic firms, while imports have led to more domestic competition and increased choice for consumers;
- policy reform to reduce barriers to trade, such as tariff reductions, abolition of import quotas and removal of single-desk marketing arrangements, has exposed industries to stronger competition; and
- deregulation of the labour market and competition reforms (such as reforms to strengthen rules against anti-competitive conduct) have supported more efficient and dynamic labour, financial and product markets, making it easier for resources to move to more productive uses.

Structural change has always been a feature of the Australian economy and this will continue. For example, demographic changes will continue to increase demand for aged care and health services, further altering the structure of the economy (Commonwealth of Australia, 2015). Technological advancement will continue to drive innovation and disruption across a range of industries, including influencing market structures and the labour market in terms of the nature of employment and skills required (Productivity Commission, 2016).

Change in the structural composition of the economy can reflect a reallocation of resources to more productive uses; in Australia, the changes have been positive in aggregate. Government reforms to improve flexibility have made it easier for resources to be reallocated to more productive uses and in turn made it easier for the Australian economy to adapt to, and take advantage of, new economic opportunities. This supported sustained growth in incomes through the 1990s and 2000s (Chart 4).

This was particularly important during the recent terms of trade boom, which was a significant contributor to income growth in Australia from 2003 to 2012. That boom had been driven by surging global demand for commodities and was reflected in significantly higher export prices for Australian commodities. Previous reforms to increase the flexibility of the labour market, such as the move away from centralised wage setting, assisted firms to increase their productive capacity to meet this demand (Davis et al, 2016; Atkin, 2014). Firms were able to make the most of the terms of trade boom by attracting new workers from non-mining industries through offering higher wages. Similarly, the flexibility in the labour market will continue to assist the transition now that the boom has ended.

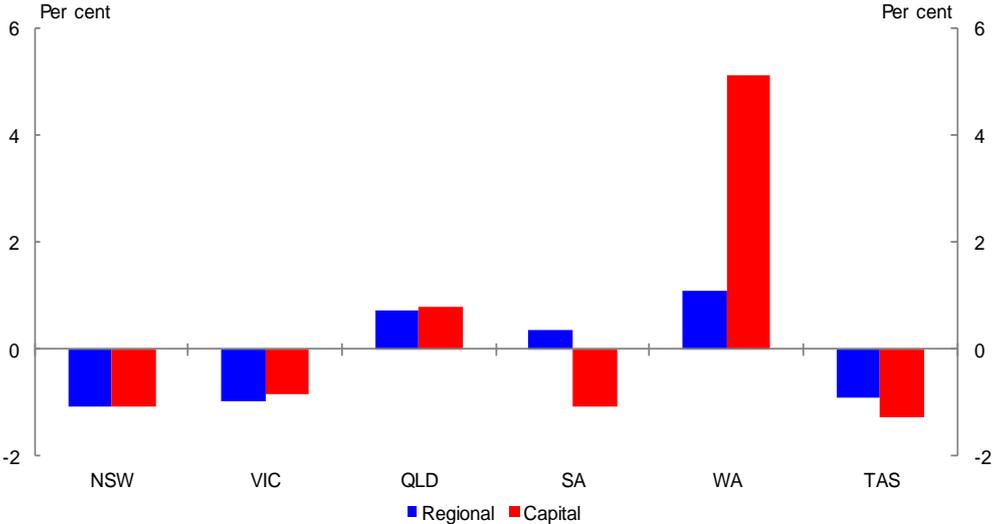


Source: ABS cat. no. 5206.0 and Treasury calculations.

However, the effect of structural change on individuals, regions and firms has not been uniform and has not always been positive. Strong national economic performance masks adverse effects for some individuals, such as long-term unemployment, underemployment, the need to retrain and build new capabilities and withdrawal from the labour market. This reflects that while some cities and regions have experienced growth in investment and employment, others have declined with the fortunes of their major employer or industry.

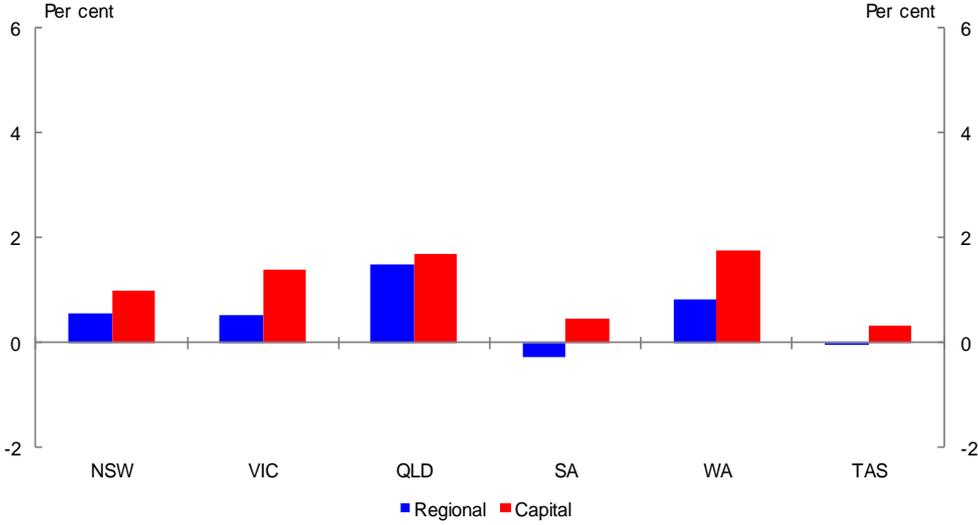
Moreover, regional areas may be less able to absorb displaced workers, as there may be less diverse opportunities than present in bigger cities. While there were significant net manufacturing job losses across Australia (over 11,000) between 1991 and 2016, non-manufacturing employment growth in capital cities was faster than in regional areas across all states (Chart 5 and Chart 6).

**Chart 5: Annual growth in manufacturing employment between 1991 and 2016**



Source: ABS cat. no. 6291.0.55.003, Aug 2016, data cube EQ03.  
Note: Regional areas are defined as all areas outside of capital cities.

**Chart 6: Annual growth in non-manufacturing employment between 1991 and 2016**



Source: ABS cat. no. 6291.0.55.003, Aug 2016 data cube EQ03.  
Note: Regional areas are defined as all areas outside of capital cities.

## Regional effects: geography matters

Regions have different intrinsic advantages and thus over time an uneven geographic distribution of industries has emerged. This means that declines in certain sectors might affect some regions or towns more than others. While some sectors, such as manufacturing, are broadly in decline, the effects are not uniform; employment and output is increasing in some regions and specific subsectors.

### Economic diversity improves outcomes

Broadly, the overall fortunes of regions when presented with structural change are tied to the diversity of the regional economy, or the ability of the region to diversify. BITRE (2014) undertook a detailed study of geographic patterns of Australian settlements and drew the following conclusions:

- remote and inland towns have greater dependence on agriculture and mining compared to larger cities and regional centres;
- while agriculture is also important for coastal towns, coastal regions draw residents attracted to the amenity of the location. This diversifies the local economy as a growing population achieves the scale for local provision of services such as health care;
- as employment in agriculture has declined and some mines move to a fly-in, fly-out model, regional towns that have historically supported these industries have declined as populations have moved to larger centres;
  - in 1911, 40 per cent of the Australian population lived in capital cities; by 2006, this had increased to 61 per cent; and
  - over the same period, the number of towns in regional Australia decreased from 2,460 to 1,708 as the basic function of those towns – for example, delivering locally needed goods and services – disappeared due to improvements in transport and technology. Many goods and services can now be provided through larger centres, with others being delivered through digital channels, such as internet banking and news consumption.

### Lack of diversity arises for historical reasons

Reduced economic diversity in some regional centres – or, indeed, within areas of major cities – frequently arises because investments were made to exploit a specific endowment such as coal, mineral deposits or access to transport.

For example, Newcastle developed around its ability to export coal mined from the rich deposits in the Hunter region. BHP established a steelworks there to take advantage of easy access to coal, leading to manufacturing becoming the dominant industry in the city. Ready access to cheap coal led to electricity generation and the associated mining becoming important in Port Augusta and the Latrobe Valley. The outer northern and south-eastern suburbs of Melbourne became hubs for automotive manufacturing due to plentiful low cost land, access to major transport routes and the availability of a suitable workforce.

In other cases, governments provided incentives for regional development. For example, Whyalla originally existed to support iron ore mining in the Middleback Ranges and subsequently ship building. In the 1950s, the South Australian Government provided incentives to BHP to establish a steelworks in the town so that the value-adding activity of steelmaking was undertaken in the state.

Subsequently, factors such as the decline in competitiveness of Australian basic metal and automotive manufacturing and reduced demand for coal-fired electricity have imposed a significant structural change burden on these regions.

This uneven geographic distribution of structural change is not unique to Australia. Areas of the north of England had concentrations of coal mining. In the United States, regions in states such as Michigan and Pennsylvania have been affected by the decline in steel manufacturing and regional changes in the location of automotive manufacturing.

### What factors affect regional adjustment?

Examining how these regions and towns respond to change points to factors that inhibit or contribute to successful adjustment. The following case studies illustrate these factors.

The Newcastle and Port Macquarie case studies provide an insight into regions that have seen declines in traditional sectors and have adjusted to take advantage of new opportunities. Other regions such as the Latrobe Valley and Whyalla are also undergoing structural changes but face different challenges in adjustment, given the unique characteristics of these regions.

International case studies outline the experiences in Detroit, Flint and Pittsburgh, where responses to structural change have been mixed.

#### Newcastle: economic diversity facilitating regional adjustment

For most of the 20<sup>th</sup> century, the economy of Newcastle and the surrounding Hunter region was dominated by heavy industries: coal mining, steel production, electricity generation and shipping (Hunter Valley Research Association, 2011). Steel production and electricity generation were located in the region due to the ready supply of coal. By 1960, BHP's Newcastle steelworks employed approximately 12,000 people.

Falling global demand and increased international competition in the early 1980s led BHP to reduce production in Australia. Facility closures in Newcastle reduced employment from 10,669 in January 1981 to 6,871 in June 1983 (Lewer, 2013). Following a decision made and announced in 1997, BHP ultimately closed the steelworks in 1999, with a loss of 4,000 jobs.<sup>3</sup> Unemployment in Newcastle peaked at 10.4 per cent in 1999.

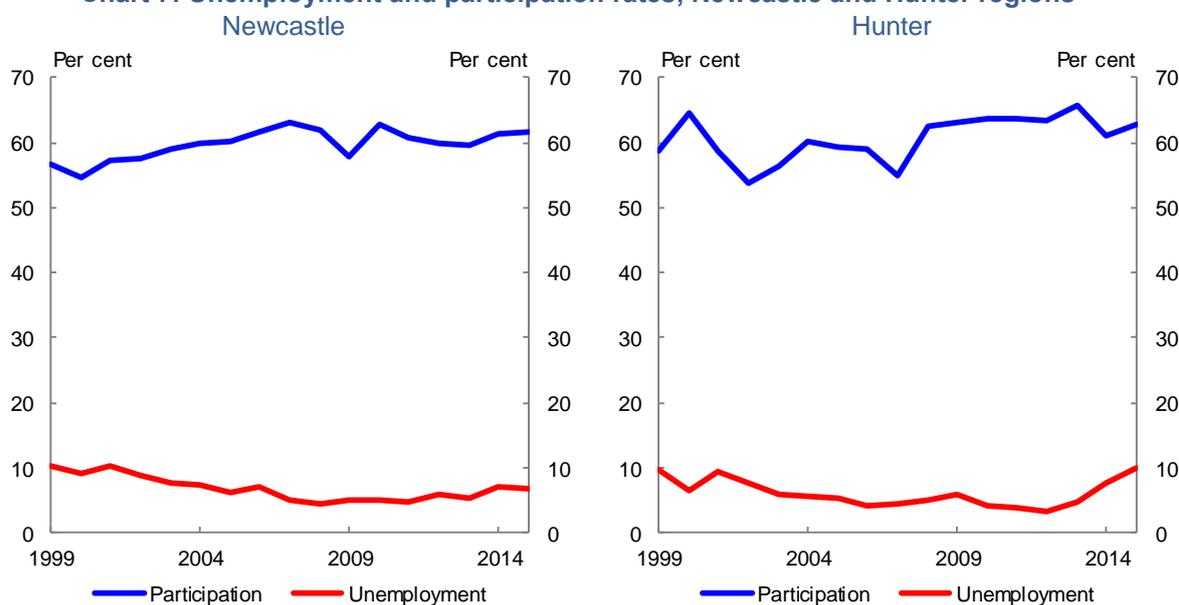
Following the closure, the unemployment rate dropped while the participation rate increased (Chart 7). The decrease in unemployment was driven by absolute increases in employee numbers – not just employment share – in sectors such as healthcare, education, tourism and professional services (Wilkinson, 2011). As the coal mines in the region are also geared for export, they have continued to be important employers.

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<sup>3</sup> The two year period between decision and closure of the Newcastle facility was to allow time for BHP to increase production at the BHP-owned Whyalla steelworks, which had also been scaled back in the early 1980s.

Research undertaken by the Hunter Valley Research Association (2011) suggests that the Newcastle and Hunter economies diversified following the first major redundancies in the 1980s. This diversity allowed the region, viewed as a whole, to successfully adjust to the final closure of the steelworks.

**Chart 7: Unemployment and participation rates, Newcastle and Hunter regions**



Source: ABS Cat No. 6291.0.55.001 (Table 16b).

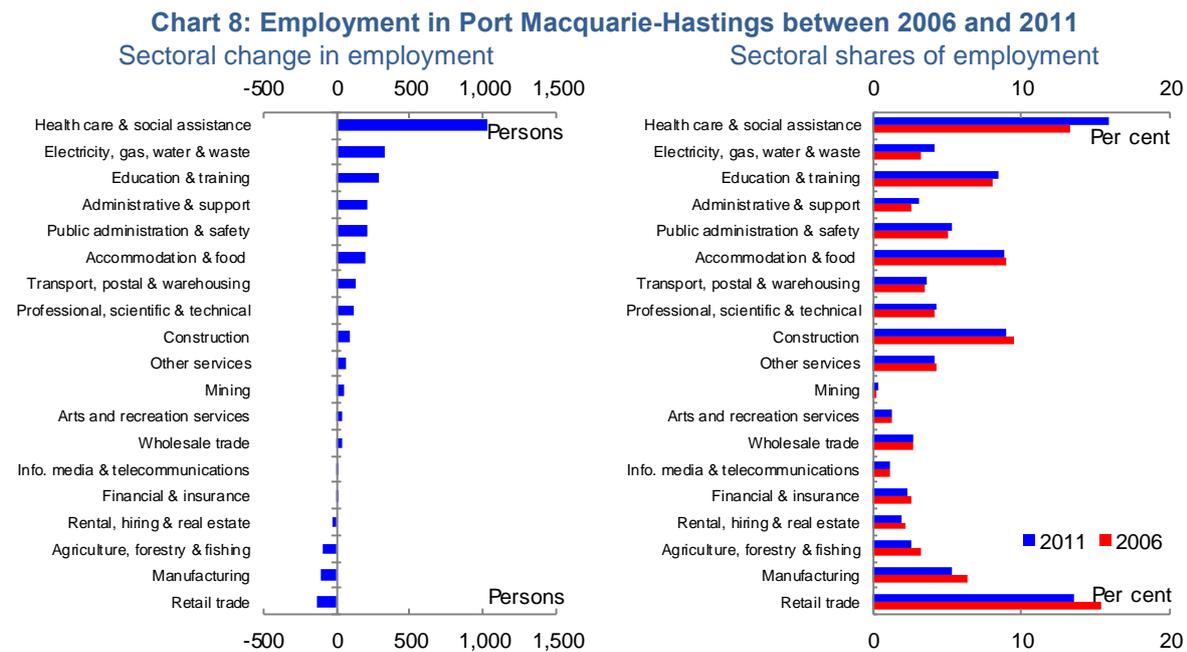
#### Port Macquarie-Hastings: diverse economy with changing demographics

The Port Macquarie-Hastings region is located on the Mid-North Coast of New South Wales with broad-based public and private business sectors. Its population is expected to grow from 78,128 to more than 94,000 in 2036, making it one of the fastest growing regions on the Mid-North Coast (Department of Planning and Environment (NSW), 2017).

It is an example of a region that has been successfully adapting to structural change. Between 2006 and 2011, the employment shares in industries such as retail, manufacturing, agriculture and mining declined. These changes have been accompanied by growth in employment shares for industries such as health care and social assistance, as well as electricity, gas water and waste services (Chart 8).

The strong growth in the health care and social assistance sector could be explained by changing demographics. The population in the region is ageing, with a proportionate fall in those aged in their teens, thirties and forties, and an increase in those aged in their 60s. The median age increased between 2006 and 2011, from 45 to 47 years, above the median age of 37 years for the general Australia population at the time (Australian Bureau of Statistics, 2011a).

This period of change was accompanied by a fall in the unemployment rate from 8.6 per cent in 2006 to 6.9 per cent in 2011. The participation rate remained relatively stable at 49.1 per cent in 2006 and 49.7 per cent in 2011 (Australian Bureau of Statistics, 2011a; Australian Bureau of Statistics, 2011b).



#### Latrobe Valley and Whyalla: isolated regions and lower-skilled labour markets

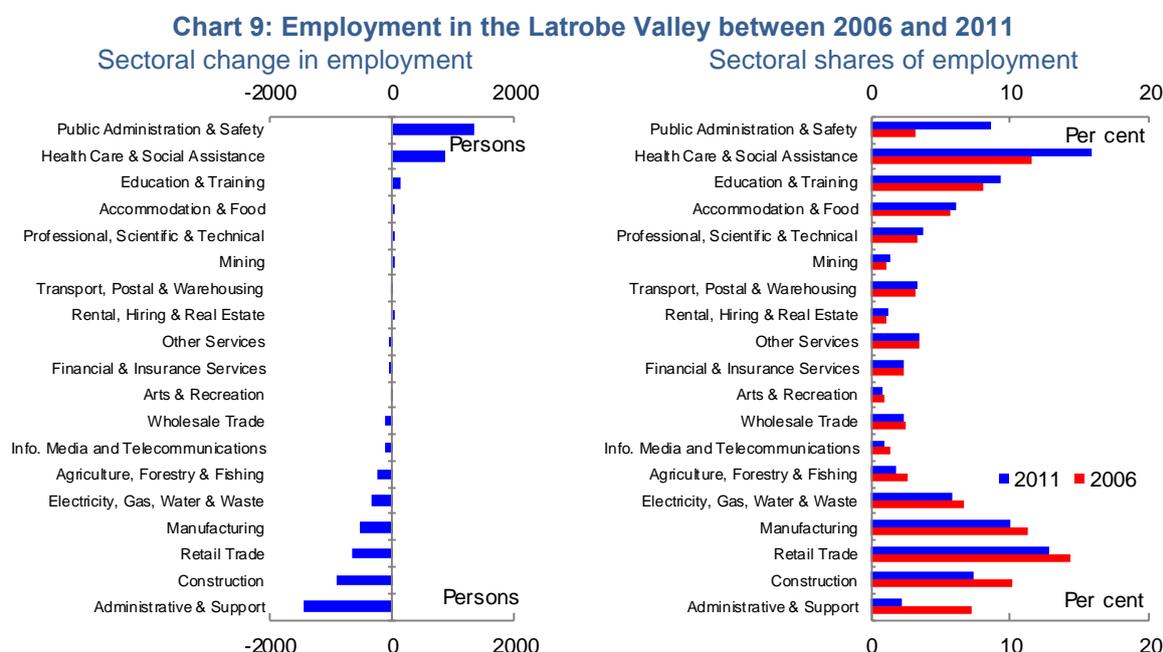
In regions that are more reliant on a small number of industries, such as the Latrobe Valley and Whyalla, the impact of structural change and the need for adjustment are more apparent.

The Latrobe Valley and Whyalla predominantly developed based on natural endowments of brown coal and iron ore, respectively (Department of Education and Early Childhood Development, 2012; Houghton, 2011). Industries which developed around these natural endowments have been significant sources of employment for generations of workers in both of these regions.

Firms in these sectors have had to adjust to changing market conditions and in some cases have not found it sustainable to continue. The closure of significant employers such as Hazelwood and Energy Brix power stations in the Latrobe Valley and the voluntary administration of Arrium, owner of the Whyalla steelworks and iron ore mines in 2016, reflect changing commercial realities and indicate that both regions need to transition toward growth sectors.

A range of external factors has affected the commercial viability of firms in these traditional sectors. In the Latrobe Valley, factors such as the move toward alternative energy sources and excess supply of electricity in the Victorian market contributed to the decision to close the Hazelwood power station in early 2017 (Engie, 2016). In the case of steel, excess global steelmaking capacity has led to a global oversupply of steel, low prices and lower profitability for steel producers across the world (OECD, 2015a). While excess steel capacity has been recognised as a global issue that requires collective action, capacity is expected to continue to increase for the foreseeable future, particularly in non-OECD countries (OECD, 2015b).

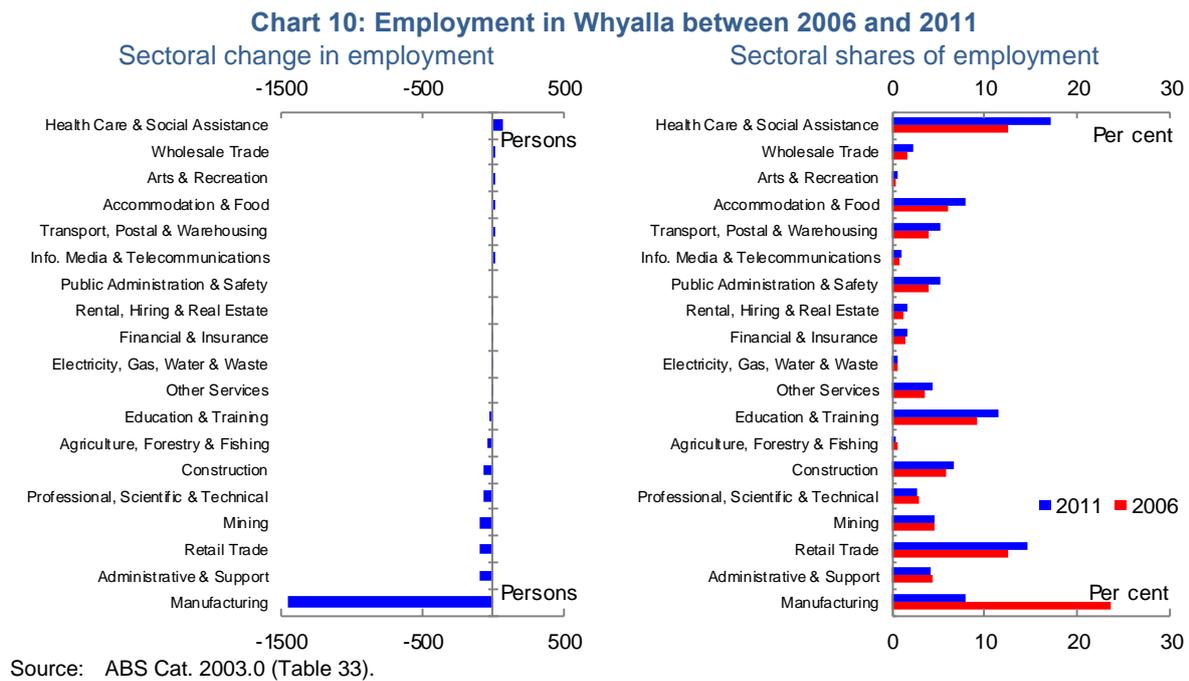
It is important to note that neither region is a stranger to structural change or the transition process. For example, a drive for efficiencies by the then Victorian State Electricity Commission and subsequent privatisation of the Victorian electricity sector in the 1990s resulted in reduced electricity sector employment in the Latrobe Valley. In part, employment in health, retail and construction services has increased (Regional Development Victoria, 2015; Chart 9) to help offset the decline in the electricity sector.



Source: ABS Cat. 2003.0 (Table 33).

Whyalla has also experienced periods of change in response to closure of significant employers. For example, the Whyalla ship yards closed in 1978 largely due to increased overseas competition, accompanied by a reduction in the town’s population. While growth in some niche industries such as aquaculture were exceptions, the Whyalla region’s population and employment continued to decline through the 1990s until new investment in the steelworks and mining reversed this trend in the second half of the 2000s (O’Neil, 2014; Houghton, 2011).

More recently, employment in the manufacturing sector has decreased in Whyalla while there has been no equivalent increase in employment in other sectors between 2006 and 2011 (Chart 10). In recognition of ongoing challenges in the steel market, the Whyalla region is endeavouring to diversify and grow other sectors of the economy, such as tourism, aged and disability care and tertiary education (Commonwealth of Australia, 2016).



The two regions share similar labour market characteristics (Department of Industry, 2016a,b):

- slower population growth: Latrobe's population grew by five per cent between June 2005 and June 2015 and Whyalla's by three per cent. This compares with Australia which grew by 18 per cent over the same period. The largest growth in both regions is among those of retirement age;
- lower workforce participation due to demographics: In Latrobe, 17.5 per cent of persons are aged 65 and over, while in Whyalla it is 16 per cent. This compares with 15 per cent on a national and state level;
- geographically isolated labour markets with most residents working within the regions: 13 per cent of Latrobe residents and 3.5 per cent of Whyalla residents work outside the region, with most commuting from near surrounding regions; and
- higher proportion of residents with lower qualifications than state and national averages: In the Latrobe Valley, 49 per cent of residents have no post-school qualification; the figure for Whyalla is 52 per cent. Bachelor and post-graduate degrees are held by 12 per cent of Whyalla residents and 14 per cent of Latrobe Valley residents. The equivalent figures for Australia are 42 per cent and 25 per cent.

The lower-skilled workforce and isolation of labour markets make these regions less attractive for new investment, especially while demands for their natural resources remain low.

### International case study — Detroit and Flint: less diverse economies and lower-skilled labour markets

Detroit and Flint, Michigan and their surrounding areas were traditionally the home of automotive vehicle manufacturing in the United States for General Motors, Ford and Chrysler. Flint, the birthplace of General Motors, was effectively a one-company town. Precipitated by increased competition from manufacturers located in the southern United States – including plants operated by the ‘Detroit three’ – manufacturing employment in Detroit and Flint entered a long decline, exacerbated by the global financial crisis (Kleir, 2009).

The decline in manufacturing was accompanied by a decline in the population of central Detroit. Its population reduced from 1.5 million in 1970 to 714,000 in 2010. During the same period, the broader Detroit region population was more stable, ranging from 4.43 million in 1970 to 4.3 million in 2010, with a peak of 4.45 million in 2000 (McDonald, 2014).

Not dissimilar to Whyalla or the Latrobe Valley, many displaced workers remaining in Detroit are comparatively low-skilled and are less qualified for the jobs that do exist (Reese et al, 2014).

The recovery in unemployment figures in these regions has been driven by a decrease in the size of the labour market rather than an increase in jobs. In the Detroit region, the labour force fell by 295,000 people, or 13 per cent, between 1999 and 2015; 211,000 of these were lost from central Detroit alone. Job growth in the broader Detroit region has been driven by health and education, although manufacturing has seen some recovery. In Flint, the situation was similar, where the labour force fell by 33,000 people, or 15.2 per cent, between 2000 and 2015 (the Appendix provides statistical charts).

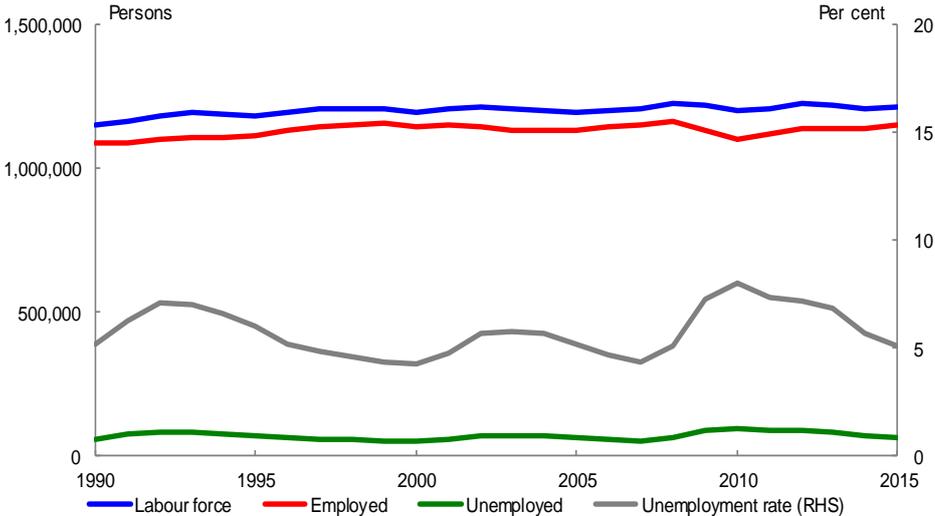
Specific barriers within the Detroit metropolitan areas may act as disincentives to the investment that could otherwise provide employment. Factors such as high property taxes and municipal income taxes may discourage individuals to relocate or take up employment in Detroit.

### Pittsburgh: resurgence, but not for everyone

The downturn in the steel market in the 1980s also affected Pittsburgh in the United States, a city whose 20<sup>th</sup> century economic growth was dominated by steel manufacturing. Over 150,000 people lost their jobs following closures in the steel industry (Mallach and Brachman, 2013), unemployment peaked at just over 17 per cent and population declined by 13 per cent between 1980 and 1990.

Today, Pittsburgh’s unemployment rate is five per cent and proved remarkably resilient to the global financial crisis (Chart 11). Its economy is now dominated by services (Chart 12), supported by a highly-skilled workforce (Pianalto, 2013). The largest private sector employers are the University of Pittsburgh Medical Center, PNC Financial Services and the Giant Eagle supermarket chain, which has its headquarters in the city (Center for Workforce Information and Analysis, 2016). Technology companies such as Google, Apple and Intel have also established offices in Pittsburgh. The broader region is also a source of unconventional gas.

**Chart 11: Pittsburgh labour force**

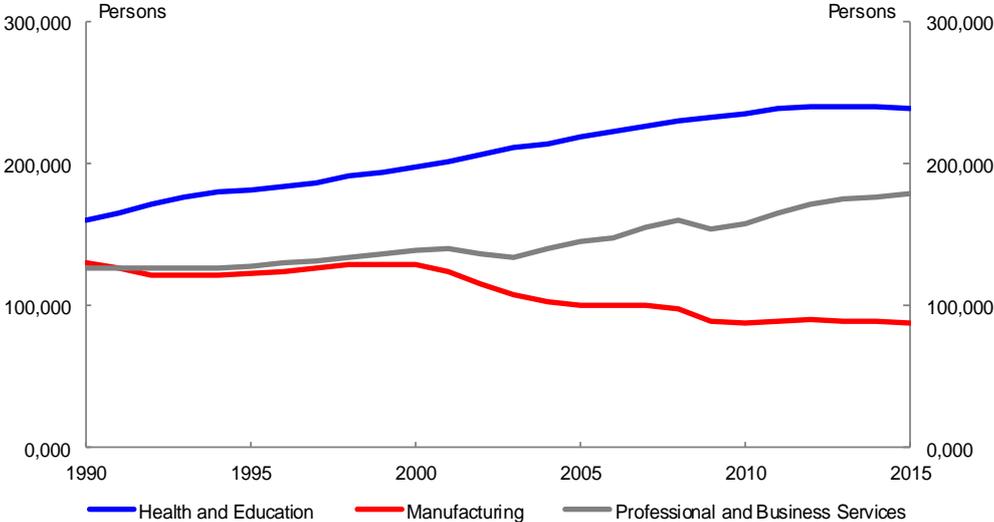


Source: United States Bureau of Labor Statistics series LAUMT423830000000006.

A factor in the economic resurgence has been the presence of the University of Pittsburgh and Carnegie Mellon University. These have attracted the technology companies and underpinned the health care sector.

However, workers displaced from steel and other manufacturing sectors have not always had the existing skills to benefit from this economic resurgence. Rates of poverty remain high in the city itself (Kneebone et al, 2011).

**Chart 12: Pittsburgh employee numbers for selected sectors**



Source: United States Bureau of Labor Statistics series SMU423830030000000001, SMU423830065000000001 and SMU423830060000000001.

## Individual responses: age, skills and mobility matter

The regional case studies demonstrate that the regional effects of and responses to structural change vary. Similarly, the effects of change are not consistent among individuals, even where signals of change<sup>4</sup> – and therefore the need for adjustment – are clear.

At the aggregate level, workers in declining industries are finding alternative employment. The Department of Industry, Innovation and Science's analysis of Census data suggests that in 2011, unemployment amongst people who had been employed in manufacturing or agriculture in 2006 was not significantly higher than unemployment across all industries.

Aggregate outcomes, however, mask the potential disadvantages experienced by some individuals and regions as a result of structural change. Individuals in regional areas might find it more difficult to find alternative employment than those in major cities where more opportunities exist, highlighting the importance of labour mobility. Debelle and Vickery (1998) found that individuals do respond to labour market conditions by migrating to regions where unemployment is relatively lower but this process occurs very slowly, with migration taking place within four years and the adjustment completing after seven.

Lower-skilled workers are less able to take advantage of growth areas where jobs require higher skills. Census data shows that workers in declining sectors have tended not to have post-secondary qualifications, whereas most new employees in growth sectors do (Chart 13 and Chart 14). The Department of Employment projects that employer demand will continue to be for higher-skilled employees (Chart 15).

Drawing on labour market data from 25 OECD countries, Garda (2016) found that lower-skilled workers are at greater risk of displacement and, if displaced, are likely to find it more difficult to obtain alternative employment compared to higher-skilled workers. Similar observations were made by Quintini and Venn (2013), who found that older workers with lower education levels have higher displacement rates, are out of the labour market for longer before finding employment and earn less over their lifetime.

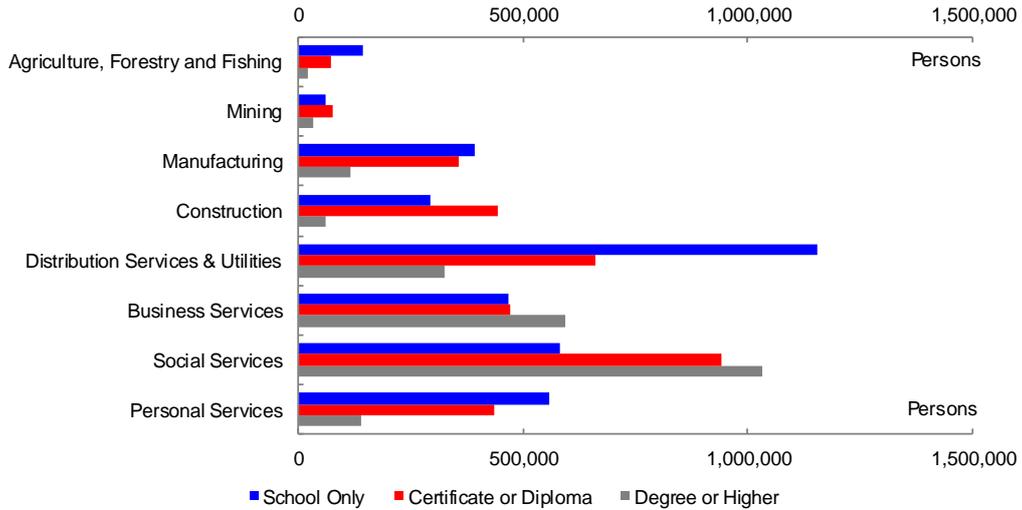
The potential difficulties lower-skilled workers face in finding alternative employment exist in both regional areas (as noted in the earlier examples of Whyalla and the Latrobe Valley) and in or near major cities, as shown by longitudinal studies of workers employed in automotive manufacturing in Australia (see box 1).

Analysis by the Department of Employment (2012) also suggests that older workers face barriers to finding alternative employment. Unemployed people aged over 54 remain unemployed on average for twice as long as younger workers.

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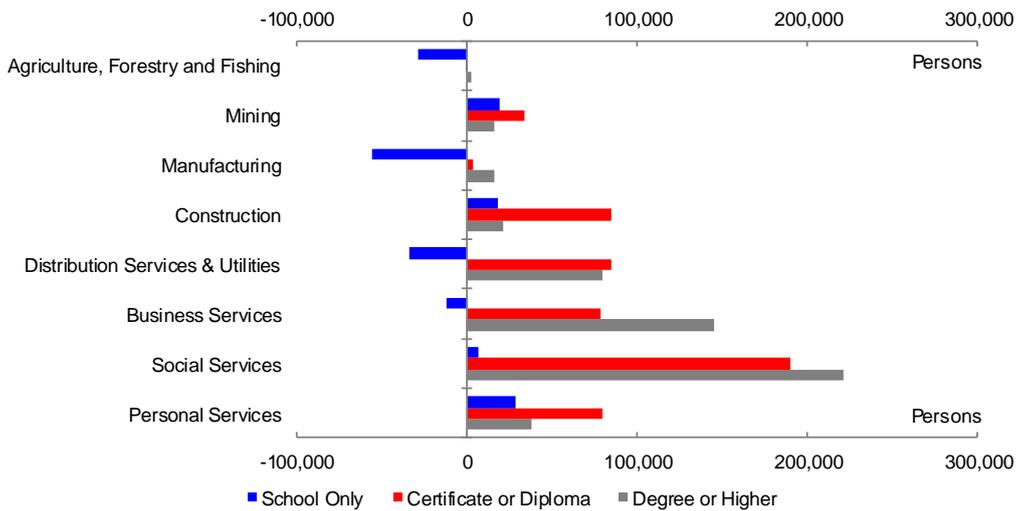
4 Signals might include closure of firms or redundancies in declining sectors, increased wages in growth areas (to the extent wages are set at the firm or individual level) and increased vacancies in growth areas.

**Chart 13: Employee numbers by qualification**



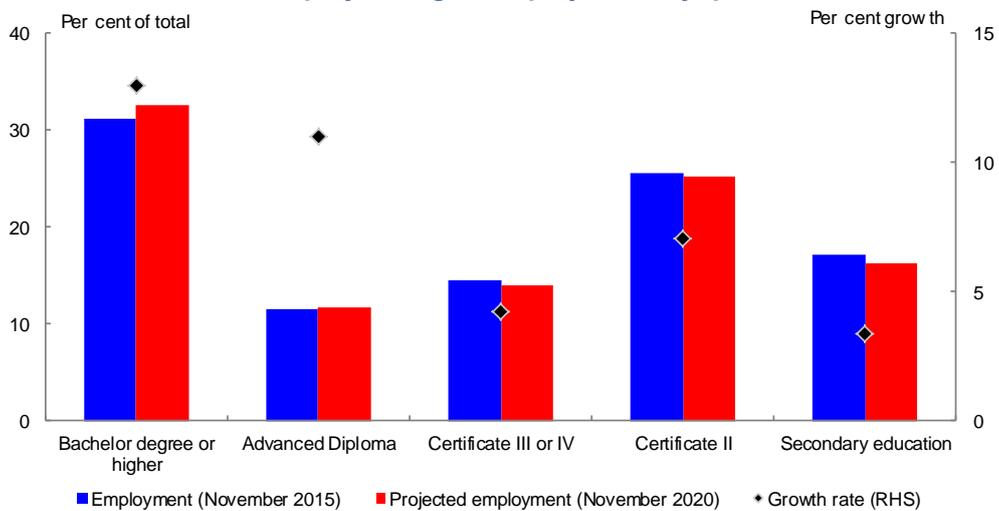
Source: ABS Table Builder 2011 Census.

**Chart 14: Sectoral change in employee numbers by qualification between 2006 and 2011**



Source: ABS Table Builder 2006 and 2011 Census.

**Chart 15: Employment growth projection by qualification**



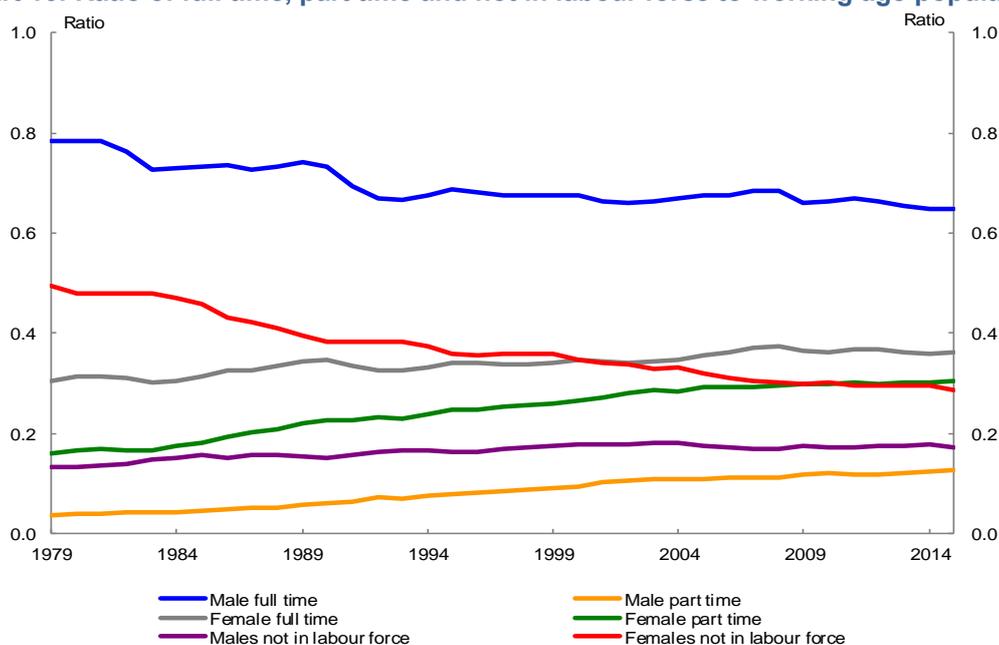
Source: Department of Employment (2016b).

Further, the male participation rate has been in decline, as has the ratio of men in full time employment compared to the male working-age population (Gregory, 2010 and Chart 16). The decline accelerated following each of the 1980s and 1990s recessions and the global economic downturn in 2008. The trends indicate that some previously full time employees displaced from traditionally male industries might have some difficulty finding full time work. Gregory (2010) suggests this is true for older, lower-skilled employees and, in the case of the United Kingdom, is borne out by longitudinal studies of workers displaced from coal mining (see box 2).

Female employment and participation continued to rise over the same period, although it remains at a level well below that of males. This trend reflects societal changes and regulatory changes which reduced barriers to female participation, such as the introduction of anti-discrimination legislation.

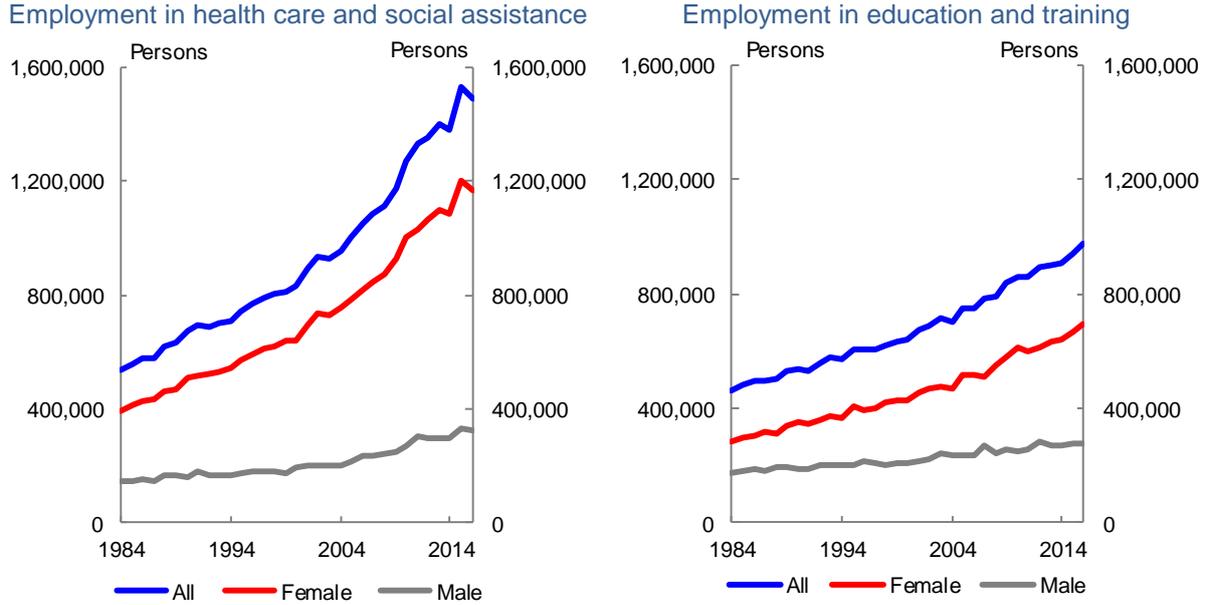
Females continue to dominate employment in industries such as health care and social assistance, education and training and textile, leather, clothing and footwear manufacturing (Chart 17 and Chart 18). Health care and social assistance and education and training have experienced strong growth in their shares of employment, while the employment share for manufacturing overall has fallen (Chart 2). The flexibility of the labour market has facilitated the flow of labour to growing industries and reforms such as the reduction in tariffs has exposed previously highly protected industries like manufacturing to competition.

**Chart 16: Ratio of full time, part time and not in labour force to working age population**



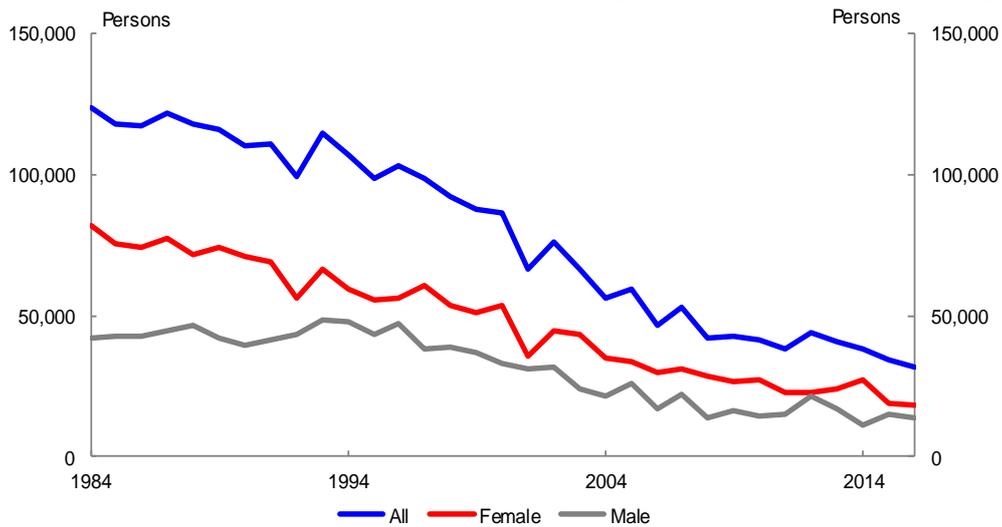
Source: ABS Cat. no. 6202.0 (Table 18).

**Chart 17: Employment in health care and social assistance and education and training**



Source: ABS Cat. no. 6291.0.55.003 (Table 6) and Treasury calculations.

**Chart 18: Employment in textile, leather, clothing and footwear manufacturing**



Source: ABS Cat. no. 6291.0.55.003 (Table 6) and Treasury calculations.

### **Box 1: Automotive manufacturing: reemployment depends on skills**

In 2004, Mitsubishi closed its Lonsdale plant in Adelaide. The Commonwealth and South Australian governments responded with two assistance packages: the Structural Adjustment Fund for South Australia (SAFSA) and the Labour Adjustment Package (LAP).

The SAFSA provided grants to eligible businesses looking to expand and create sustainable new jobs, particularly in the Adelaide area. The LAP provided assistance to workers and their families through services including job matching and placement, skill assessment and certification, training and relocation assistance.

Armstrong et al (2011) reported on a longitudinal study to assess the effect of retrenched workers from the closure and the effectiveness of the Government response.

Using both quantitative and qualitative data collected over an 18 month period, it assesses the employment outcome of Mitsubishi workers made redundant between 2004-05. It concluded that displaced workers did not have the skills required to move into industries such as mining and defence that were, at the time, growing and that the government support packages did not provide assistance in this respect.

- Twelve months after redundancy:
- 34 per cent of displaced workers were back to full time employment;
  - 31 per cent of these people reported lower pay and poorer working conditions compared to working at Mitsubishi;
- 20 per cent were in casual or part time employment;
- 30 per cent did not participate in workforce; and
- 71 per cent of respondents reported that they were now earning less than when employed at Mitsubishi.

Skills are also important for displaced workers wanting to start their own businesses. Reporting on the same study, Beer et al (2006) noted that the 10.6 per cent of displaced workers who were self-employed were often skilled workers taking advantage of their trade qualifications.

These results are consistent with those found by the Department of Employment (2015). It used longitudinal Census data to look at workers who left the automotive manufacturing sector between 2006 and 2011 and found that those with lower educational attainment had a higher rate of unemployment.

### Box 2: United Kingdom coal miners: hidden unemployment

At the start of the 20<sup>th</sup> century, UK coal industry employed over one million men. During the Great Depression, and again in the 1960s, it experienced contraction (Bennett et al, 2000).

Following closure of most remaining mines during the 1980s and 1990s, by 2005 the coal industry employed 7,000 (Beatty et al, 2007).

The coal industry did not shut down overnight as might be commonly perceived, and its decline was long-term. The following table shows the decline in the industry:

Year	No of collieries	Employment
1947	958	704,000
1957	850	699,000
1967	483	456,000
1977	238	242,000
1987	101	115,000
1997	15	8,000

Source: Bennett et al (2000).

Beatty et al (2007) used UK Census data to look at the effects on men<sup>5</sup> displaced from jobs in the coal industry. By looking at the number of job losses, the increase in the size of the workforce and the number of people who either left coal mining areas or commute to jobs outside those areas, the authors estimated that there is a shortfall of about 247,600 jobs in coal mining areas. However, this number does not show up in unemployment statistics, even when workers who have reached retirement age are considered.

The authors infer, by looking at claimants for Incapacity Benefits and Severe Disablement Allowance, that a significant number of displaced workers are 'hidden'. They further suggest that this group of males would have worked/attempted to find work if their employment prospects were higher.

### Labour mobility facilitates adjustment to change

The Productivity Commission (2013) found that labour mobility has been an important mechanism for adjustment to structural change by improving the match between labour demand and supply. It also found that mobility is easier today owing to improved transport and communication linkages meaning that individuals need not always have to move to take advantage of new opportunities.

However, mobility is not likely to solve the adjustment problem for everybody. An earlier study by the then Industry Commission (1993) found that residents were more likely to remain in a town such as Whyalla despite long-term unemployment.

<sup>5</sup> The focus was on men because of their almost total dominance amongst coal miners.

The Productivity Commission (2014b) identified several barriers to labour mobility that might affect individual adjustment to change, particularly in moving from a declining region to one with better employment prospects. These include:

- family circumstances, as well as social networks and other connections to a particular region;
- differential housing costs, which imposes a financial constraint on workers moving from one region to another, particularly from a declining region where property prices are falling;
- occupational licensing, which prevents some workers easily taking up jobs in a different state;
- lack of skills for jobs in a different area; and
- geographic based employment services, which limit matching of potential workers to jobs in other regions.

The Productivity Commission also recognised that the decision-making process about whether or not an individual should move is complex and is often a decision made by a couple or family.

## Firm responses to structural change

Successful adjustment by regions and individuals might be facilitated by firms themselves restructuring to ensure continued viability. Two examples from the automotive manufacturing sector – one in Australia and one in New Zealand – demonstrate how firms have survived the closure of domestic manufacturing by changing their business models or moving into new markets.

### Textor Technologies: capital investment leading to new markets

Textor Technologies, based in northern Melbourne, historically made textiles for the domestic motor vehicle manufacturers. Seeing the decline in the automotive sector, Textor's management shifted the focus of the company to servicing the hygiene industry.

The company entered into a research partnership with the CSIRO that led to development of the UltraAbsorb synthetic textile used in disposable nappies. The product is exported to Kimberley-Clark plants worldwide.

Textor's management took advantage of a high exchange rate to invest in new equipment for the production of textiles for the hygiene market, which has positioned it well to meet the demands of its export clients.

### Toyota New Zealand: turning policy change into an advantage

Campbell Motor Industries started assembling Toyota vehicles at its assembly plant in Thames in April 1968. Toyota gradually acquired ownership of the plant over the next 25 years, renaming it Toyota New Zealand Thames in 1977 and assuming full ownership of the plant in 1992.

From 1984, motor vehicle import licencing restrictions in New Zealand were progressively relaxed, tariffs were progressively reduced and free trade with Australia in motor vehicles and components was allowed. Further liberalisation occurred in 1988. The liberalisation of trade resulted in a significant increase in the amount of used vehicles being imported, increasing from less than 3,000 in 1985 to more than 85,000 in 1990.

With a poor outlook for locally assembled new vehicles in the face of import competition, Toyota New Zealand launched its 'Signature Class' program in September 1997. Under the Signature Class program, Toyota refurbishes ex-lease vehicles, purchased new in either New Zealand or Japan, at its Thames facility. A thorough inspection is undertaken, parts are replaced where necessary and the paintwork is reconditioned to produce high-quality used cars with a three year unlimited kilometre warranty.

Assembly of new vehicles at Toyota New Zealand Thames ceased in October 1998. Some of the workforce was retained to continue working on the Signature Class program and on fitting accessories to new vehicles imported fully assembled from Japan, which helped to reduce the impact of the closure of the assembly line on the local economy.

## Conclusions

The case studies have drawn out features relevant to adjustment to structural change in the economy and illustrate how structural change affects different regions, industries and workers. Consideration of these features will be useful in determining whether government intervention should occur in the short-run and broader policy reform that can facilitate structural change:

- firms can positively influence structural change. This may occur through incumbents restructuring their existing operations in response to market signals or new firms entering to take advantage of opportunities;
- employees and managers of firms have an important role to play in identifying the opportunities presented by structural change and implementing changes to adapt to, and take advantage of, these opportunities;
- the skill levels, labour mobility and age of displaced employees affect reemployment prospects. As illustrated by the coal mining and automotive cases, this can be the case even where the sectoral decline occurs over a long period;
- the isolation, economic diversity and attractiveness to new investors and residents are important for regions seeking to adjust to change. Size can matter, especially where it also represents economic diversity, but even large centres such as Detroit have struggled with adjustment; and
- the speed and timing of structural adjustment can matter, although there are examples of slow adjustments that nevertheless had problematic outcomes (for example, UK coal) and examples of faster adjustments that regions were better able to handle (for example, the second stage of the Newcastle steel shutdown occurred over two years).

## References

Australian Bureau of Statistics 2011a, *Time Series Profile – Port Macquarie-Hastings*, cat. no. 2003.0 (accessed 1 May 2017, [http://www.censusdata.abs.gov.au/census\\_services/getproduct/census/2011/communityprofile/LGA16380?opendocument&navpos=230](http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA16380?opendocument&navpos=230)).

Australian Bureau of Statistics 2011b, *Australian Demographic Statistics*, June Quarter, cat.no. 3101.0, December 2011, accessed 1 May 2017, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202011?OpenDocument>.

Australian Bureau of Statistics 2016, *Labour Force, Australia, Detailed, Quarterly*, cat.no. 6291.0.55.003, November 2016, accessed 20 January 2017, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003Nov%202016?OpenDocument>.

Armstrong, K., Bailey, D., de Ruyter, A., Mahdon, M., & Thomas, H. 2008, Auto plant closures, policy responses and labour market outcomes: a comparison of MG Rover in the UK and Mitsubishi in Australia, *Policy Studies*, vol 29, no. 3, Taylor & Francis.

Atkin, T., Caputo, M., Robinson, T. & Wang, H. 2014, *Australia after the Terms of Trade Boom*, Reserve Bank of Australia Bulletin, vol. March Quarter 2014, pp 55-62.

Atkins, P. 2011, *Responding to manufacturing job loss: what can economic development policy do?*, Metropolitan Policy Program at Brookings, Washington.

Beatty, C., Fothergill, S., & Powell, R. 2007, *Twenty years on: has the economy of the UK coalfields recovered?*, *Environment and Planning A*, vol 39, Sage.

Beech, A., Dollman, R., Finlay, R. & La Cava, G. 2014, *The Distribution of Household Spending in Australia*, Reserve Bank of Australia Bulletin, vol. March Quarter 2014, pp. 13-22.

Beer, A., Baum, F., Thomas, H., Lowry, D., Cutler, C., Zhang, G., Jolley, G., Ziersch, A., Verity, F., MacDougall, C. & Newman, L. 2006, *An Evaluation of the Impact of Retrenchment at Mitsubishi Focussing on Affected Workers, Their Families and Communities: Implications for Human Services Policies and Practices*, HSRIP Report, Flinders University, Adelaide.

Bennett, K., Beynon, H., and Hudson, R. 2000, *Coalfields regeneration: dealing with the consequences of industrial decline*, The Policy Press, Bristol.

Bureau of Infrastructure, Transport and Regional Economics (BITRE) 2014, *The evolution of Australian towns*, Report 136, Canberra.

Bureau of Infrastructure, Transport and Regional Economics (BITRE) 2015, *Changes in Australia's industry structure: cities and regions 2006-2011*, Information Sheet 57, Canberra.

Bureau of Transport and Regional Economics (BTRE) 2003, *Focus on regions no. 1: industry structure*, Information Paper 49, Canberra.

Center for Workforce Information & Analysis 2016, *Top 50 employers, 2<sup>nd</sup> Quarter, 2016: Allegheny County*, accessed 19 December 2016, [http://www.workstats.dli.pa.gov/Documents/Top%2050/Allegheny\\_County\\_Top\\_50.pdf](http://www.workstats.dli.pa.gov/Documents/Top%2050/Allegheny_County_Top_50.pdf).

Commonwealth of Australia 2015, *Intergenerational report: Australia in 2055*, Canberra.

- Commonwealth of Australia 2016, *Senate Economics References Committee: Official Committee Hansard 5 April 2016*, Future of Australia's Steel Industry, Canberra, p 28.
- Davis, K. McCarthy, M. & Bridges, J. 2016, *The Labour Market during and after the Terms of Trade Boom*, Reserve Bank of Australia Bulletin, vol. March Quarter 2016, pp 1-10.
- Debelle, G., & Vickery, J. 1998, *Labour market adjustment: evidence on interstate labour mobility*, Reserve Bank of Australia, Research Discussion Paper 9801.
- Department of Education and Early Childhood Development 2012, *State of the Valley: a profile of the Latrobe Valley*, Melbourne.
- Department of Employment 2012, *Workforce ageing*, Canberra.
- Department of Employment 2016a, *Industry projections – five years to 2020*, <http://lmip.gov.au/PortalFile.axd?FieldID=2787734&.xlsx>, accessed 19 December 2016.
- Department of Employment 2016b, *2016 Skill level projections*, <http://lmip.gov.au/PortalFile.axd?FieldID=2787736&.xlsx>, accessed 19 December 2016.
- Department of Industry 2014, *Australian industry report 2014*, Canberra.
- Department of Industry, Innovation and Science 2016a, (unpublished) *Whyalla: economic update May 2016*.
- Department of Industry, Innovation and Science 2016b, (unpublished) *Latrobe Valley: economic update September 2016*.
- Department of Planning and Environment (NSW) 2017, *North Coast Regional Plan 2036*, New South Wales Government, Sydney, accessed 1 May 2017, <http://www.planning.nsw.gov.au/~media/Files/DPE/Plans-and-policies/north-coast-2036-regional-plan-2017.ashx>.
- Engie Australia 2016, *Hazelwood to close in March 2017*, media release, 3 November 2016, Melbourne, accessed 1 March 2017, [gdfsuezau.com/hazelwood-closure/Announcement](http://gdfsuezau.com/hazelwood-closure/Announcement).
- Friedhoff, A., Wial, H., & Wolman, H. 2010, *The consequences of metropolitan manufacturing decline: testing conventional wisdom*, Metropolitan Policy Program at Brookings, Washington.
- Garda, P. 2016, Working Paper: *The Ins and Outs of Employment in 25 OECD Countries*, OECD Publishing, Paris.
- Gregory, R.G. 2010, *Dark corners in a bright economy: the lack of jobs for unskilled men*, Centre for Economic Institutions Working Paper Series No. 2010-6.
- Houghton, K. 2011, *Characteristics of economic sustainability in regional Australia*, HC Coombs Policy Forum, Canberra.
- Hunter Valley Research Association 2011, *Diversification of the Hunter economy – post BHP*, Newcastle.
- Industry Commission 1993, *Impediments to regional industry adjustment*, Report No. 35, Canberra.

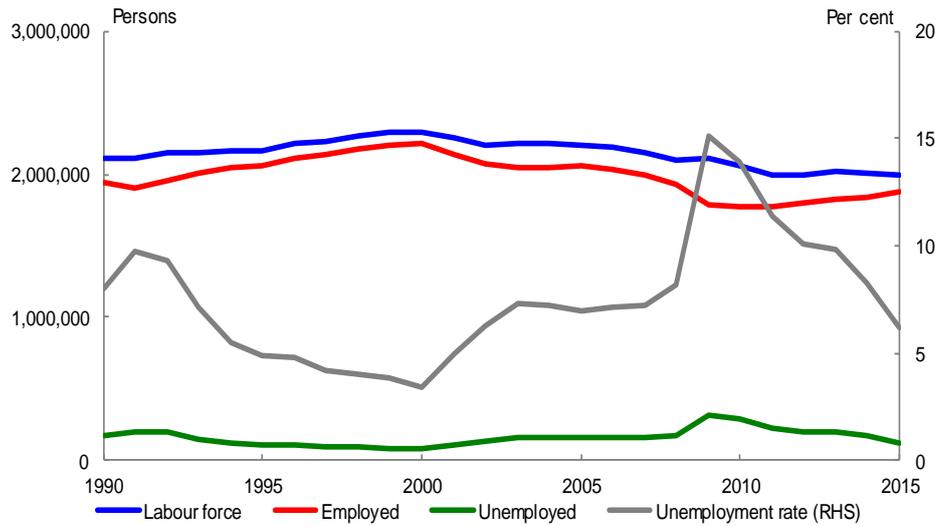
- Kleir, T.H. 2009, *From tail fins to hybrids: how Detroit lost its dominance of the U.S. auto market*, *Economic Perspectives*, vol 33 no. 2, Federal Reserve Bank of Chicago.
- Kneebone, E., Nadeau, C., & Berube, A. 2011, *The Re-emergence of concentrated poverty: metropolitan trends in the 2000s*, Metropolitan Policy Program at Brookings, Washington.
- Lewer, J. 2013, *Employee involvement and participation under extreme conditions: the Newcastle steelworks case*, *Journal of Industrial Relations*, vol 55 no. 4, Sage.
- Mallach, A., and Brachman, L. 2013, *Regenerating America's legacy cities*, Policy Focus Report 34, Lincoln Institute of Land Policy, Cambridge.
- McDonald, J.F. 2014, *What happened to and in Detroit?*, *Urban Studies*, vol 51, no. 16, Sage.
- Michigan Department of Treasury n.d., *What cities impose an income tax?*, accessed 19 December 2016, [www.michigan.gov/taxes/0,4676,7-238-75545\\_43715-153955--,00.html](http://www.michigan.gov/taxes/0,4676,7-238-75545_43715-153955--,00.html).
- O'Neil, M. 2014, *Structural change: lessons from Port Augusta's experience in the 1990s*, South Australian Centre for Economic Studies Economic Issues No. 42, Adelaide.
- OECD 2015a, *Capacity Developments in the World Steel Industry*, OECD Publishing, Paris.
- OECD 2015b, *Excess Capacity in the Global Steel Industry and the Implications of New Investment Projects*, OECD Science, Technology and Industry Policy Papers, No. 18, OECD Publishing, Paris.
- Pianalto, S. 2013, *Reflections on What Works in Supporting the Economy*. Federal Reserve Bank of Cleveland, [www.clevelandfed.org/newsroom-and-events/speeches/sp-20131008-reflections-on-what-works-in-supporting-the-economy.aspx](http://www.clevelandfed.org/newsroom-and-events/speeches/sp-20131008-reflections-on-what-works-in-supporting-the-economy.aspx).
- Productivity Commission 2013, *Looking back on structural change in Australia: 2002-2012*, supplement to *Annual Report 2011-12*, Canberra.
- Productivity Commission 2014a, *Australia's automotive manufacturing industry*, Inquiry Report No. 70, Canberra.
- Productivity Commission 2014b, *Geographic Labour Mobility*, Research Report, Canberra.
- Productivity Commission 2016, *Digital Disruption: What do governments need to do?*, Research Paper, Canberra.
- Quintini, G. & Veen, D. 2013, *Back to Work: Re-employment, Earnings and Skill Use after Job Displacement*, OECD Publishing, Paris.
- Reese, L.A., Sands, G. & Skidmore M. 2014, *Memo from Motown: is austerity here to stay?*, *Cambridge Journal of Regions, Economy and Society*, vol 7, no. 1, Oxford Journals.
- Regional Development Victoria 2015, *Latrobe regional city profile*, [http://www.rdv.vic.gov.au/\\_\\_data/assets/pdf\\_file/0008/1164590/RDV-Cities-Profiles-Nov2015\\_Latrobe.pdf](http://www.rdv.vic.gov.au/__data/assets/pdf_file/0008/1164590/RDV-Cities-Profiles-Nov2015_Latrobe.pdf).
- Sands, G., & Skidmore, M.L. 2015, *Detroit and the property tax: Strategies to improve equity and enhance revenue*, Cambridge, MA: Lincoln Institute of Land Policy.

Wial, H. & Friedhoff, A. 2009, *Bearing the brunt: manufacturing job loss in the Great Lakes region, 1995-2005*, Metropolitan Policy Program at Brookings, Washington.

Wilkinson, J. 2011, *The Hunter region: an economic profile*, e-brief 16/2011, NSW Parliamentary Library Research Service, Sydney.

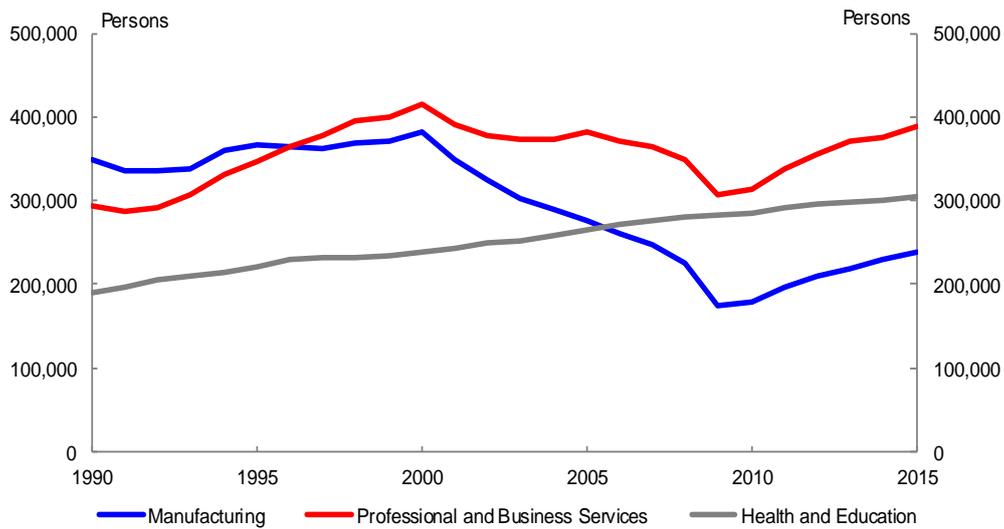
## Appendix A: Detroit and Flint labour markets

**Chart A1: Detroit labour force**



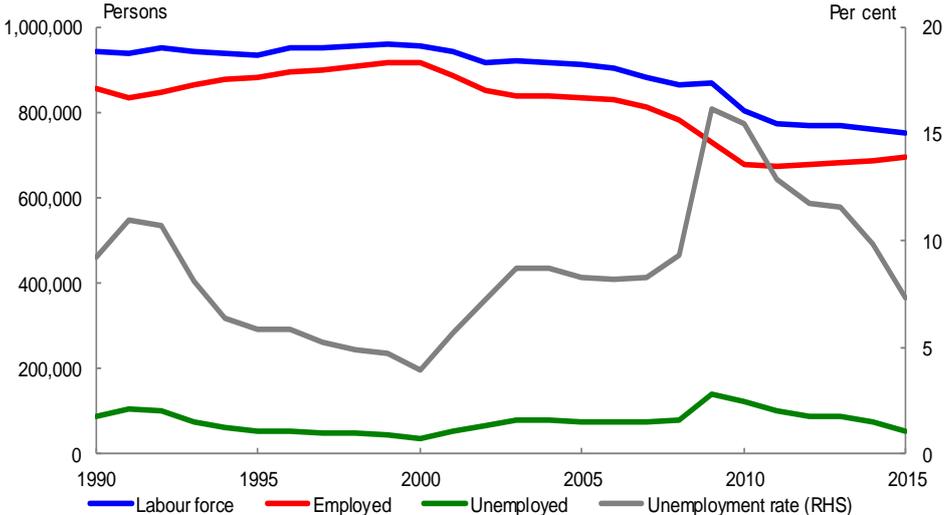
Source: United States Bureau of Labor Statistics series LAUMT2619820000000006. Data are for the Detroit-Warren-Dearborn metropolitan statistical area, which includes the Detroit metropolitan area and surrounding suburban areas.

**Chart A2: Selected sectoral employment figures, Detroit region**



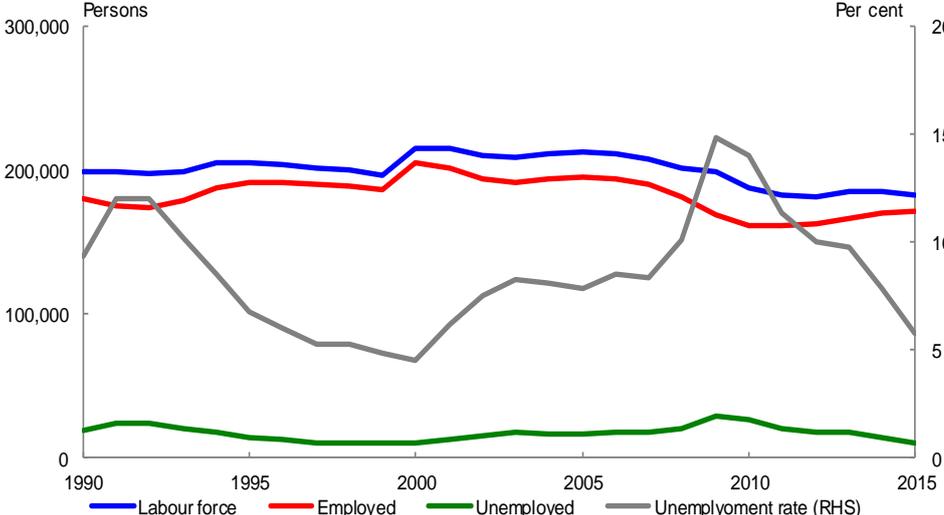
Source: United States Bureau of Labor Statistics series SMU261982030000000001, SMU261982065000000001 and SMU261982060000000001. Data are for the Detroit-Warren-Dearborn metropolitan statistical area, which includes the Detroit metropolitan area and surrounding suburban areas.

**Chart A3: Detroit metropolitan area labour force**



Source: United States Bureau of Labor Statistics series LAUDV261980400000006. Data are for the Detroit metropolitan area.

**Chart A4: Flint labour force**



Source: United States Bureau of Labor Statistics series LAUMT262242000000006.