03

The spatial distribution of economic growth

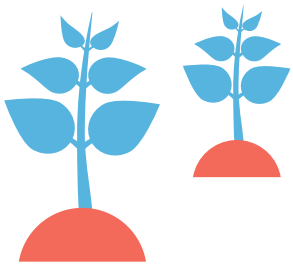
68%
of growth over the past 15 years occurred in **capital cities**

3.2%
average growth per year

These factors are driving economic activity to cities

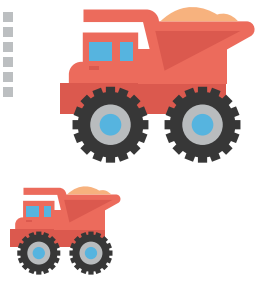
- Changing demographics
- Openness to trade
- Industry structure

19%
in non-mining **regional areas**



2.5%
average growth per year. Below the national average

11%
of growth was in **mining regions**



5.9%
average growth per year

Over the last quarter of a century, the Australian economy has grown at about three per cent per year. The experience of Australia's regions however, has been far from uniform. The annual growth rate of Melbourne's central business district (CBD) was four times higher than the growth rate of Hume[87] in regional Victoria since 2000–01. During this period, there was also a shift of economic activity to mineral-rich regions in the investment phase of the mining boom.[88] This resulted in Mining regions[89] growing faster than capital cities.

Using a new time series of Gross Regional Product (GRP), this chapter explores how Australia's economy has changed *spatially* since 2001 (see Box 3.1). Upon establishing the spatial distribution of economic growth, the chapter will then turn to why these differences exist. Factors such as shifting demographics, openness to trade and changing industry composition can help explain why economic activity concentrates in some areas and not in others.

The chapter then moves on to discuss the implications of economic concentration in Australia's capital cities; persistent comparative inequality in terms of GRP per capita and difficulty in predicting long-term sources of growth for regional areas. Such concentration also has implications for cities — in part, the future economic success of Australia will depend on having cities that can cope with increasing demand for their resources.

Analysis throughout this chapter focuses on sub-state regions known as Statistical Area Level 4s (SA4s). These boundaries are the largest sub-state regions in the Australian Statistical Geography Standard (ASGS), as defined by the Australian Bureau of Statistics (ABS). There are 88 SA4s in Australia, with 46 located in greater capital city areas. The remaining 42 are in regional locations. SA4s are intended to be a proxy for labour markets. But as the boundaries are also restricted by population limits, they often cut across or combine labour markets — having implications for regional economic analysis.

87 Hume refers to the SA4 of Hume which encompasses a large area north-east of Melbourne. The Victorian City of Hume is not within the Hume SA4 boundaries.

88 The investment phase of the boom was between 2006 and 2014.

89 The term 'Mining regions' refers to the SA4s of Hunter Valley excluding Newcastle; Central Queensland; Mackay-Isaac-Whitsunday; WA — Outback (North); and WA — Outback (South).

Box 3.1: Notes on method used to calculate Gross Regional Product estimates

The methodology used to derive the experimental estimates of GRP is based on the work of Queensland Treasury and Trade, which produces GRP estimates for Queensland regions. Estimates of GRP are derived from the 2015–16 Gross State Product (GSP) of each State and Territory (published in the State National Accounts), and based on the income approach of measuring GSP. The income approach is the sum of incomes earned through the production of goods and services in each industry, in each State and Territory. The components of the income approach are:

- Compensation of Employees (incomes earned by employees and the self-employed)
- Gross Operating Surplus and Mixed Income (which includes business profits and imputed rental income through the ownership of dwellings)
- Taxes less subsidies.

To allocate GSP to regions, Queensland Treasury and Trade used an apportioning approach to estimate each SA4's share of GSP. A similar approach is used to derive the estimates presented in this chapter.

Head office effects have not been fully accounted for when calculating the experimental estimates of GRP. Head office effects refer to the recording of business data (such as profit) in capital cities where head offices are located, rather than in the region where the economic activity occurred.

Head office effects are more prevalent for some industries than others (e.g. Mining). To account for head office effects, industry-regional-specific datasets were used when possible to try and apportion production back to the region where it occurred. In addition, when calculating SA4-to-state ratios from the Census, 'place of work' data was used to try and capture economic activity where it was occurring, rather than where the individuals earning the incomes lived.

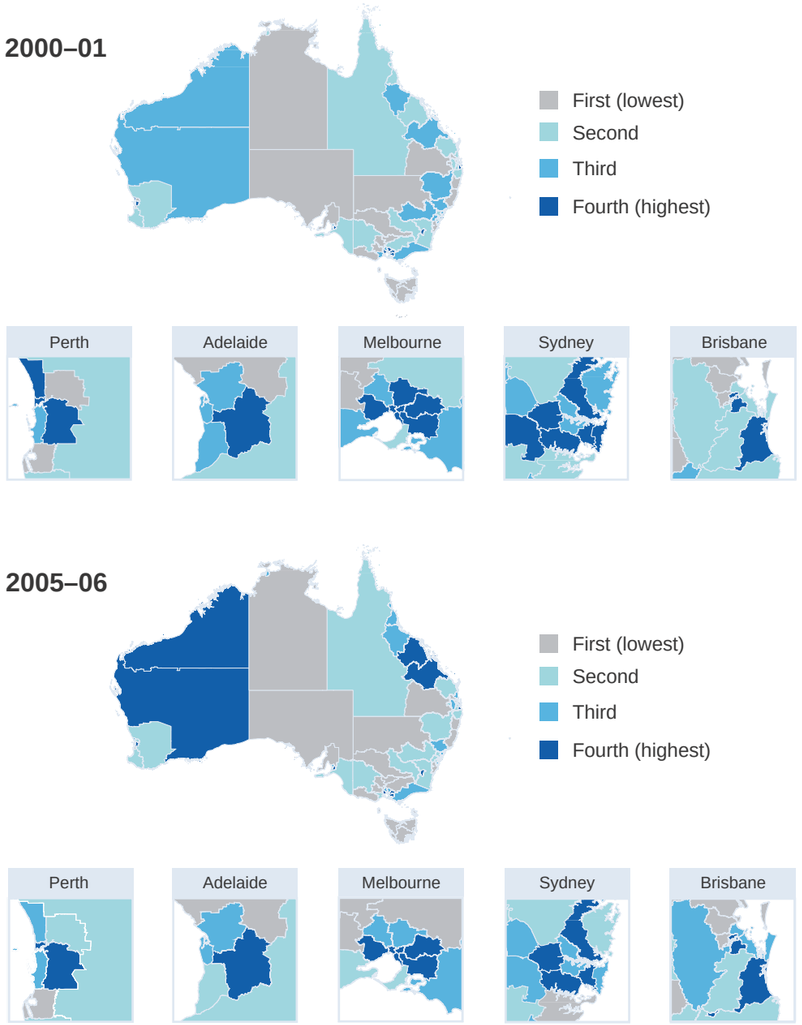
Notes: For a detailed description of methodology please refer to Chapter 7 of the Australian Industry Report 2016. This method has been extended to previous Census years to create a time series.

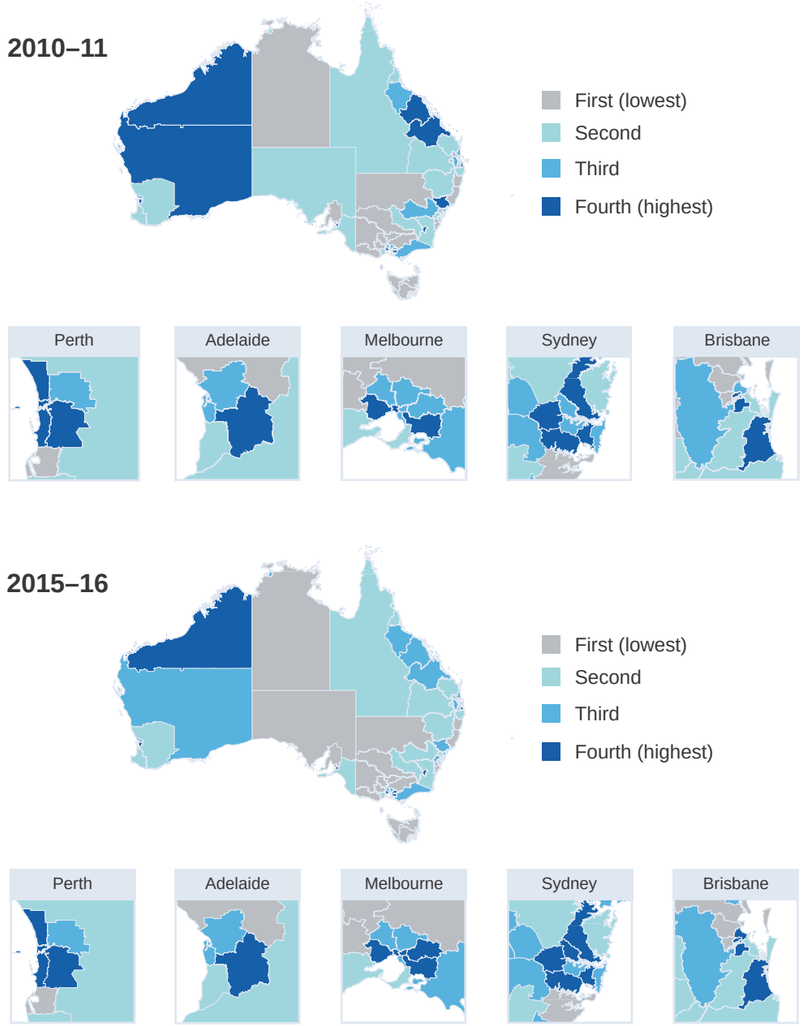
Source: A detailed description of Queensland Treasury and Trade's methodology can be found at www.qgso.qld.gov.au/products/reports/experimental-estimates-grp/

Most economic activity occurs in capital cities

Between 2000–01 and 2015–16, Australia's distribution of economic activity was largely concentrated in and around major cities. These areas have consistently generated around two-thirds of Australia's economic activity.[90] Figure 3.1 shows GRP estimates across Australia for the years 2000–01, 2005–06, 2010–11 and 2015–16.

Figure 3.1: Gross regional product (GRP) by Statistical Area Level 4 (SA4), quartile ranking, 2000–01, 2005–06, 2010–11 and 2015–16





Notes: For all years, SA4s are split into quartiles based on their GRP estimates. The darkest shade of blue represents the fourth quartile (SA4s reporting GRP in the top 25 per cent). GRP estimates based on Queensland Treasury and Trade methodology. GRP figures are in 2015–16 prices.

Source: Department of Industry, Innovation and Science.

90 The term 'capital cities' refers to the Greater Capital City Statistical Areas of Greater Sydney, Greater Melbourne, Greater Brisbane, Greater Adelaide, Greater Perth, Greater Hobart, and Greater Darwin.

Between 2000–01 and 2015–16, two key changes occurred to Australia's economic geography.

- The first was the concentration of economic activity into the CBDs of capital cities. These areas now contribute 25 per cent to national economic activity,[91] despite accounting for less than 0.05 per cent of Australia's land mass.[92] Australia is one of the most urbanised countries on earth, apart from city-states like Monaco and Singapore.[93] This favours Australia's transition to a knowledge-based economy, as cities create spill overs, deeper labour markets and economies of scale.
- The second major change to Australia's economic geography was the mining boom. Between 2000–01 and 2015–16, Australia experienced one of the biggest mining booms in its history. The Mining industry went from around five per cent of the economy to close to seven per cent in 2015–16.[94] At a regional level, in 2010–11 the Mining regions of the Bowen Basin, the Pilbara, WA Goldfields and Hunter Valley accounted for around nine per cent of Australia's economic activity, compared to almost five per cent in 2000–01. In 2015–16, these regions contributed seven per cent to the Australian economy.

Generally, the SA4s in the top quartile are located in capital cities. The exception to this is the Mining regions. Between 2005–06 and 2010–11, the WA outback — home to the Goldfields and the Pilbara — and areas of the Bowen Basin, were all in the top 25 per cent.[95] The Pilbara region remains in the top 25 per cent, while other mining regions are in the top 50 per cent. Regions in the third quartile tend to be in outer capital city areas or along the eastern coast. In 2015–16, SA4s in the top 50 per cent accounted for 77 per cent of national economic activity and were home to 66 per cent of the population.

Over two-thirds of the SA4 regions in the first and second quartiles (the bottom 50 per cent) consisted of the outback areas of Queensland, SA and the NT, and regions outside the greater capital city areas of all states. Less than a third of the SA4 regions in the first and second quartiles were located in greater capital city areas. These consisted of areas such as the Logan-Beaudesert region in Queensland, Hobart and the Outer South West of Sydney. In 2015–16 these two quartiles contributed 23 per cent to Australia's total economic activity, despite being home to 34 per cent of the population.

The distribution of economic activity within states is consistent with the national story — each state or territory is driven by its capital city. Figure 3.2 highlights how much the mining boom affected the resource-intensive states of WA and Queensland, where a large proportion of economic activity can be attributed to regional areas.

In terms of economic activity, NSW and Victoria dominate, and the same can be said for their capital cities. Sydney and Melbourne are the two largest capital cities. Combined, these two areas consistently contribute over 40 per cent to Australia's economic activity. In part this can be attributed to their larger populations and the concentration of industries with relatively high labour productivity.[96]

91 From 23 per cent in 2000–01.

92 ABS, Regional Population Growth, Australia, 2015–16, cat. no. 3218.0.

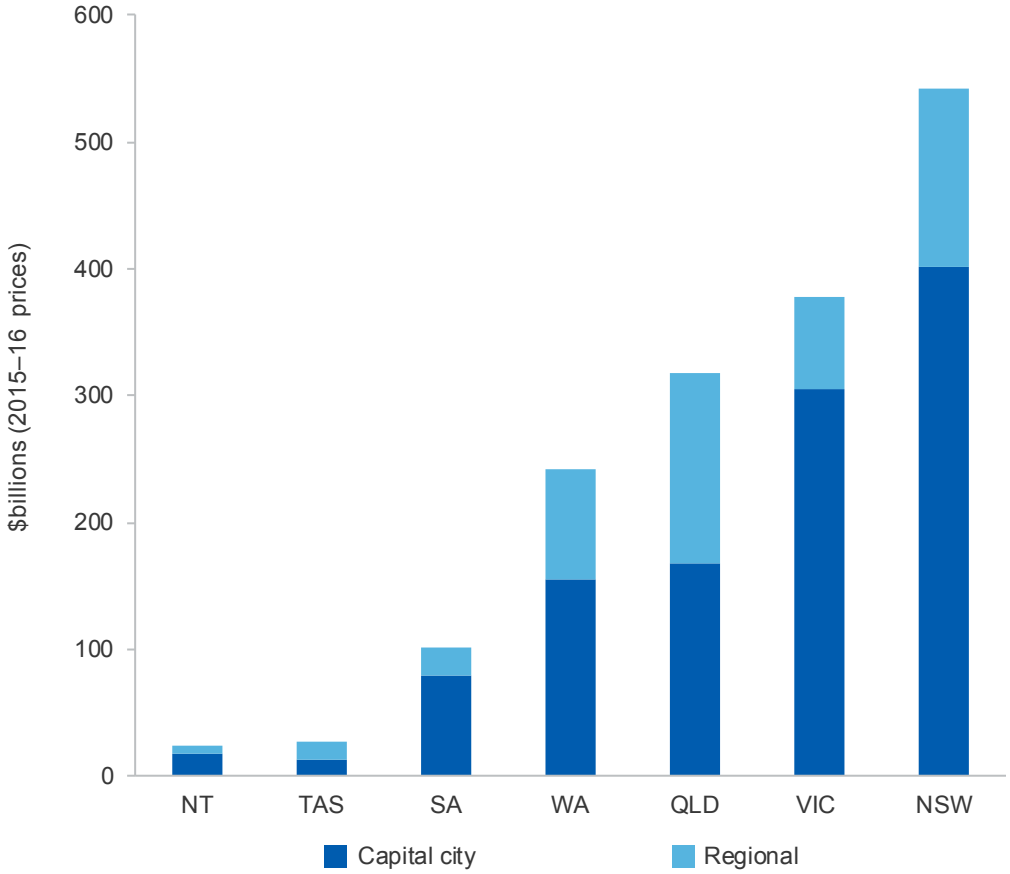
93 Department of Infrastructure and Regional Development 2012, *State of Australian Cities 2012,* 2012, Canberra, p. 17.

94 This refers to mining gross value added as a share of GDP, ABS, Australian System of National Accounts, 2015–16, cat. no. 5204.0, Table 5. Figures based on chain volume measure.

95 The Bowen Basin is defined to encompass the SA4s of Central Queensland and Mackay — Isaac — Whitsunday.

96 SGS Economics & Planning 2016, Australian Cities Account, 2015–16, Canberra, p. 12.
An example of an industry with relatively higher labour productivity is finance and professional services.

Figure 3.2: Gross regional product (GRP) by capital city and regional area, 2015–16



Notes: GRP estimates based on Queensland Treasury and Trade methodology.

Source: Department of Industry, Innovation and Science estimates.

Capital cities growing faster than regional Australia

Between 2000–01 and 2015–16, the Australian economy grew on average 3 per cent per year. Despite this, when examining GRP growth over the past 15 years it is evident growth has not been uniform.

- More than two-thirds (70 per cent) of Australia's growth occurred in capital cities. This equates to average growth of 3.2 per cent per year.[97]
- A further 11 per cent of national growth was generated in Australia's Mining regions, equating to average growth of 5.9 per cent per year.
- The remaining 19 per cent of growth was in non-Mining regional areas, equating to average growth of 2.5 per cent per year.

SA4s growing above the national rate were mainly in the resource-intensive states of Queensland and WA. Table 3.1 lists the top 10 SA4s in terms of 15–year annual average GRP growth. The impact of the mining boom on Queensland and WA is evident — both their capital cities and regional areas experienced higher growth rates. This highlights that wealth generated by Mining is also captured in cities where the businesses that support the industry are located.[98]

The largest 15-year annual average growth occurred in WA — Outback (North), home of the Pilbara, which grew on average 11 per cent per year. This region now contributes around $43 billion to the economy (3 per cent of total economic activity). Higher growing SA4s that are located in capital cities also tended to have a 15-year annual average population growth rate that was higher than the national average (1.3 per cent).

Table 3.2 lists the 10 SA4s reporting the lowest annual GRP growth. SA4s that experienced low GRP growth can be characterised by low population growth, and for some a transition away from the agricultural industry has resulted in little growth. New England and North West in regional NSW has grown an average of 1.1 per cent per year. In 2000–01 the largest employing industry in the region was Agriculture — 29 per cent of total employment. Fast forward to 2015–16 and Agriculture only accounts for 7.8 per cent of employment, and Health Care is now the largest employing industry — 13.6 per cent. Other SA4s, on the outer edges of capital cities, had similar experiences with the decline of manufacturing. Melbourne — Outer East and Adelaide South had growth rates of –1 and 0.6 per cent respectively. In both instances Manufacturing was the top employing industry, which has now been overtaken by Heath Care or Construction.

While Health Care is featuring as the largest employing industry in both the top 10 and bottom 10 list of SA4s, the shift to Health Care over the past 15 years has been more pronounced in the 10 SA4s reporting the lowest annual GRP growth. Health Care accounted for 9.4 per cent of employment in the top 10 SA4s in 2000–01 and 12.1 per cent in 2015–16. In the bottom 10 SA4s, it accounted for 9.5 per cent in 2000-01 and 13 per cent in 2015–16.

97 The Australian Capital Territory was included in the calculation of 'capital cities'.

98 SGS Economic & Planning 2012, Leveraging sustainability and prosperity from resources, Urbecon Volume 3 2012, viewed 29 August 2017, www.sgsep.com.au/publications/leveraging-sustainability-and-prosperity-resources

Table 3.1: Statistical Area Level 4s (SA4s) reporting highest annual gross regional product (GRP) growth, ranked high to low, 2000–01 to 2015–16

Rank	Statistical Area Level 4 (SA4)	State or territory	Classification of SA4	GRP ($billions) 2015–16	GRP growth 15-year annual average (per cent)	Population ('000) 2015–16	Population growth 15-year annual average (per cent)	Largest employing industry, 2000–01 (per cent of total)	Largest employing industry, 2015–16 (per cent of total)
1	WA — Outback (North)	WA	Mining	43	11.0	90	0.8	Mining (14.0)	Mining (21.0)
2	Darwin	NT	Capital city	17	6.6	140	1.6	Public Admin and Safety (15.5)	Public Admin and Safety (15.4)
3	Perth — South East	WA	Capital city	36	6.4	490	1.9	Retail Trade (12.2)	Health Care (12.3)
4	Brisbane Inner City	QLD	Capital city	60	6.2	250	2.2	Prof, Scientific and Tech (13.3)	Health Care (15.9)
5	Perth - South West	WA	Capital city	26	6.1	400	2.1	Manufacturing (13.4)	Health Care (11.3)

Rank	Statistical Area Level 4 (SA4)	State or territory	Classification of SA4	GRP ($billions) 2015–16	GRP growth 15-year annual average (per cent)	Population ('000) 2015–16	Population growth 15-year annual average (per cent)	Largest employing industry, 2000–01 (per cent of total)	Largest employing industry, 2015–16 (per cent of total)
6	Moreton Bay — North	QLD	Capital city	8	6.0	240	2.4	Retail Trade (10.7)	Retail Trade (12.5)
7	Brisbane — North	QLD	Capital city	19	5.9	210	1.3	Retail Trade (13.7)	Health Care (15.9)
8	Perth — North East	WA	Capital city	14	5.7	250	1.8	Retail Trade (13.4)	Construction (13.0)
9	Mackay — Isaac — Whitsunday	QLD	Mining	18	5.4	170	1.5	Retail Trade (12.6)	Mining (15.9)
10	Sunshine Coast	QLD	Regional	16	5.4	350	2.4	Retail Trade (13.5)	Health Care (13.4)

Notes: GRP and population figures have been rounded. GRP figures are 2015–16 prices. GRP estimates based on Queensland Treasury and Trade methodology.

Source: ABS, *2016 Census of Population and Housing* (TableBuilder extract); ABS, Labour Force, Australia, Detailed, Quarterly, May 2017, cat. no. 6291.0.55.003, RQ1; Department of Industry, Innovation and Science estimates.

Table 3.2: Statistical Area Level 4s reporting lowest annual gross regional product (GRP) growth, ranked low to high, 2000–01 to 2015–16

Rank	Statistical Area Level 4 (SA4)	State or territory	Classification of SA4	GRP ($billions) 2015–16	GRP growth 15-year annual average (per cent)	Population ('000) 2015–16	Population growth 15-year annual average (per cent)	Largest employing industry, 2000–01 (per cent of total)	Largest employing industry, 2015–16 (per cent of total)
88	Melbourne — Outer East	VIC	Capital city	20	-1.0	500	0.4	Manufacturing (15.8)	Construction (11.5)
87	Sydney — North Sydney and Hornsby	NSW	Capital city	40	-0.6	410	0.8	Prof, Scientific and Tech (16.0)	Prof, Scientific and Tech (20.2)
86	North West	VIC	Regional	8	0.1	150	0.0	Agriculture (26.6)	Health Care (16.9)
85	Adelaide — South	SA	Capital city	12	0.6	360	0.6	Manufacturing (14.0)	Health Care (18.2)
84	Northern Territory — Outback	NT	Regional	6	0.7	90	-0.3	Public Admin and Safety (25.3)	Public Admin and Safety (22.0)
83	Sydney — Eastern Suburbs	NSW	Capital city	15	0.7	270	0.6	Prof, Scientific and Tech (15.7)	Prof, Scientific and Tech (17.5)

Rank	Statistical Area Level 4 (SA4)	State or territory	Classification of SA4	GRP ($billions) 2015–16	GRP growth 15-year annual average (per cent)	Population ('000) 2015–16	Population growth 15-year annual average (per cent)	Largest employing industry, 2000–01 (per cent of total)	Largest employing industry, 2015–16 (per cent of total)
82	Melbourne — Inner South	VIC	Capital city	18	0.9	400	0.9	Manufacturing (12.0)	Prof, Scientific and Tech (13.9)
81	Hume	VIC	Regional	7	1.0	170	0.8	Manufacturing (12.6)	Health Care (14.6)
80	New England and North West	NSW	Regional	10	1.1	180	0.1	Agriculture (28.6)	Health Care (13.7)
79	Sydney — Inner South West	NSW	Capital city	23	1.3	570	0.9	Manufacturing (15.6)	Retail Trade (12.1)

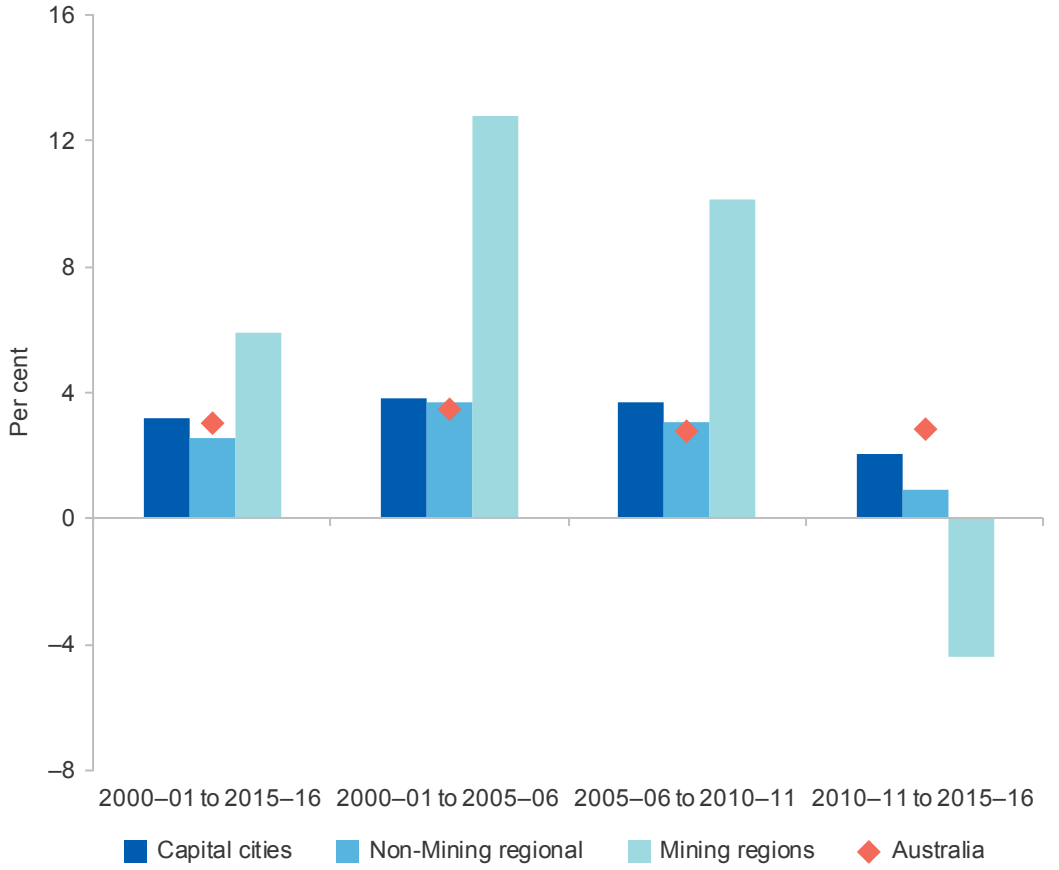
Notes: GRP and population figures have been rounded. GRP figures are 2015–16 prices. GRP estimates based on Queensland Treasury and Trade methodology.

Source: ABS, *2016 Census of Population and Housing* (TableBuilder extract); ABS, Labour Force, Australia, Detailed, Quarterly, May 2017, cat. no. 6291.0.55.003, RQ1; Department of Industry, Innovation and Science estimates.

The difference between the regions becomes particularly evident when examining growth by region type. Figure 3.3 shows that over the past 15 years, Mining regions have experienced the fastest growth, an average of 5.9 per cent per year. The annual average growth of capital cities was slightly above the national rate at 3.2 per cent.[99] While non-Mining regional areas fell below the national rate, growing 2.5 per cent per year. The significant difference between non-Mining regional areas and Mining regions is demonstrated in regional Queensland. The SA4 of Mackay-Isaac-Whitsunday, part of the Bowen Basin, grew on average three times faster than its neighbouring SA4, Queensland-Outback. For every $1 of economic activity produced in Queensland-Outback, $2 of economic activity was produced in Mackay-Isaac-Whitsunday.

Growth in capital cities was driven by CBDs. Over 15 years, the economic activity of these areas nearly doubled — $236 billion in 2000–01 compared to $419 billion in 2015–16 (3.9 per cent per year), making up 29 per cent of Australia's total economic growth. Brisbane CBD grew the fastest (6.2 per cent per year). This small area now contributes around $60 billion to the Australian economy and accounts for nearly 4 per cent of total economic activity.

Figure 3.3: GRP growth rates by region type



Notes: GRP estimates based on Queensland Treasury and Trade methodology. National figures based on chain volume measure. GRP figures based on 2015–16 prices.

Source: Department of Industry, Innovation and Science estimates; ABS, *Australian National Accounts: State Accounts*, 2015–16, cat. no. 5220.0, Table 1.

99 It is important to note that GRP growth in capital cities is occurring off a higher base. Since 2000–01, in absolute terms, there has been much higher growth in GRP in capital cities compared to both Mining and non-Mining regional areas. Over this period, absolute growth in GRP amounted to more than $430 billion of additional economic activity in capital cities, compared to around $175 billion in all regional areas.

Also evident in Figure 3.3 is that the rate of growth is slowing for all regions. For each five-year period, capital cities have consistently grown faster than regional areas and the difference between the two is increasing. Overall, growth in non-Mining regional areas has remained positive over the past 15 years. In over two-thirds of these non-Mining regional areas, growth in the number of people employed in non-market industries such as Health Care, Education and Public Administration has outstripped growth in the number of people in all other industries. Since the end of the investment phase of the mining boom, growth in Mining regions has been negative. This is a result of many factors including the downturn in the commodity price cycle.

Box 3.2 will describe the relative movement between SA4s in more detail.

Box 3.2: Regional growth and GRP per capita inequality

The concentration of economic activity in capital cities has implications for individual regions and the economy as a whole. Over the 15 years, there has been persistent comparative inequality in terms of GRP per capita. This makes it difficult to predict long-term sources of growth for regional areas. In contrast, income growth has been comparable across cities and regions. But as economic activity continues to shift to capital cities, there will also be implications for cities. As rapid growth increases pressure on infrastructure, cities will need to adjust to growing demands.

The concentration of economic activity in capital cities creates comparative inequality between SA4s in terms of output per capita. In 2000–01, 40 SA4s had an estimated GRP per capita below 75 per cent of Australia's GDP per capita ($55,810). This has remained consistent over the past 15 years. In 2015–16, 44 SA4s had an estimated GRP per capita below 75 per cent of the national average ($69,421). Table 3.3 shows this in more detail.

The information in Table 3.3 is based on each SA4's GRP per capita as a share of national GDP per capita — relative GRP per capita. For the years 2000–01 and 2015–16, SA4s were assigned to ranges based on their relative GRP per capita — an SA4 with a relative GRP per capita of 69 per cent would be assigned to the 50–70 per cent range.

The first column *n* gives the number of SA4s that were in each range in 2000–01. The second column lists the ranges SA4s were assigned to — in 2000–01 there were three SA4s with a relative GRP per capita of 50 per cent or less.

The top row of the table lists the relative GRP ranges for 2015–16. The main diagonal of the table shows the share of SA4s that were in the same relative GRP per capita range in 2000–01 and 2015–16.

Reading along the third row of the table, in 2000–01 37 SA4s had a relative GRP per capita between 50 and 75 per cent. In 2015–16, 76 per cent of these SA4s remained in this range, 8 per cent fell to the 50 per cent or less range, 14 per cent moved up to the 75–100 per cent range, and 3 per cent moved to between 100 and 125 per cent. SA4s that remained in the 50 and 75 per cent range included Coffs Harbour — Grafton; Ballarat; Launceston; and North East Tasmania. The large share that remained in the same range shows the persistent inequality in terms of GRP per capita.

Examining Table 3.3, it is evident that SA4s below the national average — relative GRP per capita below 100 per cent — remain below, and those above the average stay there. Typically, those regions that have gone down a range between 2000–01

and 2015–16 have been SA4s in outer capital city areas, for example Moreton Bay — South in outer Brisbane.

SA4s with a relative GRP per capita of 100 per cent or more, in either 2000–01 or 2015–16, tended to be those in the inner capital city areas or Mining regions. Mackay-Isaac-Whitsunday, an area of the Bowen Basin, transitioned from the 100 to 125 per cent range to the greater than 125 per cent range.

Table 3.3: Transition matrix of gross regional product (GRP) per capita relative to national GDP per capita, per cent, 2000–01 to 2015–16

			2015–16 relative GRP per capita				
	n	Per cent	<50	50 – <75	75 – <100	100 – <125	>125
2000–01 relative GRP per capita	3	<50	33	67	0	0	0
	37	50 – <75	8	76	14	3	0
	30	75 – <100	0	33	57	7	3
	8	100 – <125	0	0	0	25	75
	10	>125	0	0	0	0	90

Notes: National figures based on chain volume measures. GRP figures based on 2015–16 prices. GRP estimates based on Queensland Treasury and Trade methodology.

Reading the table: In 2000–01 there were 30 SA4 regions where the GRP per capita as a ratio of Australia's GDP per capita was between 75:100 and <100:100 (i.e. 75 per cent to less than 100 per cent). In 2015–16, 57 per cent of these SA4s maintained the same ratio range, 33 per cent deteriorated to a ratio range of between 50 per cent to less than 75 per cent, 7 per cent of the SA4s improved to a ratio range of between 100 per cent to less than 125 per cent, and 3 per cent of the SA4s improved to a ratio range of 125 per cent or higher.

Source: Department of Industry, Innovation and Science estimates; ABS, *Australian National Accounts*: State Accounts, 2015–16, cat. no. 5220.0, Table 1.

Drivers of economic activity to capital cities

The increasing concentration of Australia's productive activity is — at least in part — the product of agglomeration economies that result from co-location. Benefits of greater concentration can take the form of deeper labour markets, increased access to specialised suppliers (inputs and services), economies of scale and knowledge spill overs.[100]

The Productivity Commission conducted a study into the transition of regions post-mining boom. As part of this study, an index of relative adaptive capacity was developed. The Productivity Commission found the following factors to influence the capacity of regions to be resilient:

- Skills and education of regional workforces
- Access to infrastructure and services
- Availability of natural resources
- Availability of financial resources to businesses and individuals
- Industry diversity. [101]

According to this index, most major cities have a relatively higher adaptive capacity than most remote and outer regional areas. This has implications for how regions perform and can transition following changes in Australia's economy and industry structure. These results also have implications for the shifting of economic activity to capital cities.

The remainder of this section discusses some of the key drivers of economic concentration as identified in the literature. The GRP estimates are considered in light of each driver to better understand the trade-off and why the concentration of economic activity has benefited some SA4s more than others.

100 NSW Department of Industry — Centre for Economic Development (2016) *Regional Economic Growth Enablers*, Sydney, p. 22. Offsetting these benefits are costs relating to concentration, including higher rents, greater congestion, and more pollution. The trade-off between these benefits and costs determine which areas are relatively better off and which areas grow relatively faster or slower.

101 Productivity Commission 2017, *Transitioning Regional Economies*, Productivity Commission Study Report, December 2017.

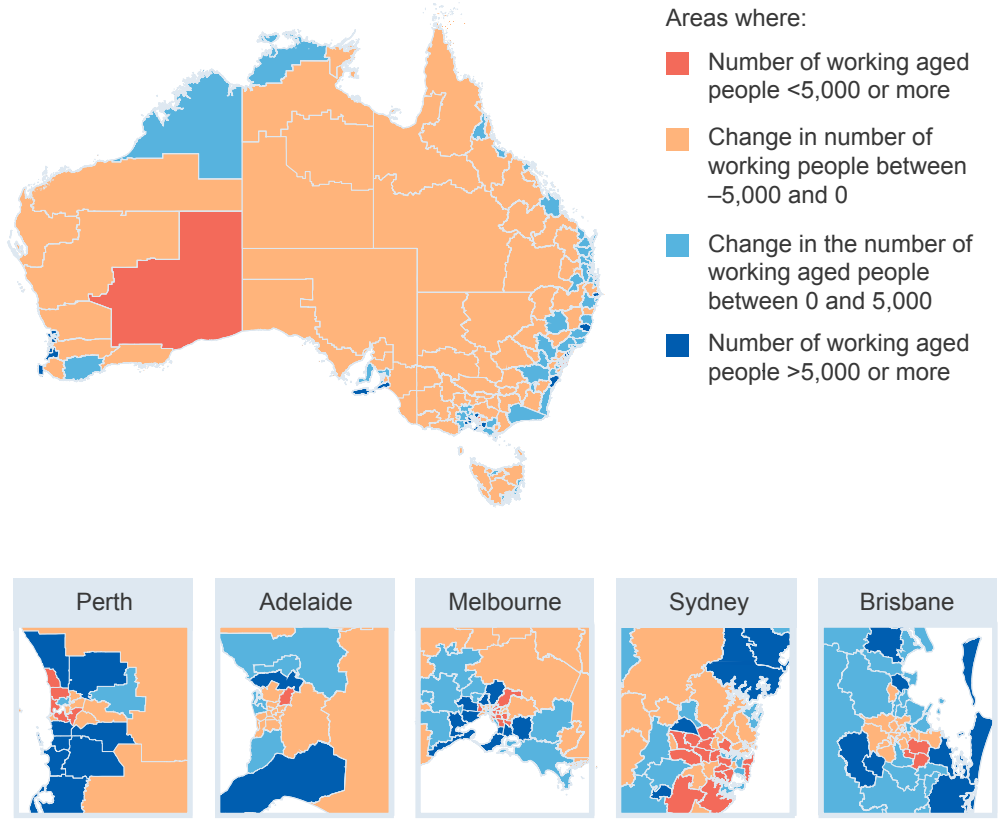
Attracting talent and skills

Figure 3.4 shows total net internal migration for the working age cohort (15–64 years) over the past 10 years. From the map it is evident that the working age cohort is migrating to areas around CBDs or to major regional centres along the east coast. Economic concentration helps to deepen labour markets and provides greater education opportunities — which in turn results in greater migration to these areas.

Remote and regional areas of Australia have experienced a net loss of working age residents. This is because areas with higher concentrations of economic activity are attractive to people. In cities, job-search costs are lower, matches are better and wages typically higher as a result of the greater productivity of firms from the spill overs associated with concentration.[102] Although not shown, immigrants also favour cities due to greater job opportunities and existing cultural networks.

The flows of international migrants exacerbate these trends. The population flows of large capital cities in Australia is like an hour glass. International migrants are poured in the top at a slightly faster rate than older residents leave.[103] The skilled migrant stream is heavily concentrated in the CBDs of Melbourne, Sydney, Brisbane and Perth.

Figure 3.4: Net internal migration, by Statistical Area Level 3 (SA3), number of people aged 15–64 years, 2006–07 to 2015–16



Notes: Boundaries are based on 2011 ASGS — Statistical Area Level 3.

Source: ABS, Migration, Australia, 2015–16, cat. no. 3412.0

102 NSW Department of Industry — Centre for Economic Development 2016, *Regional Economic Growth Enablers*, Sydney, p. 23.

103 Department of Infrastructure Regional Development and Cities 2013, State of Australlain Cities 2013, https://infrastructure.gov.au/infrastructure/pab/soac/2013.aspx

Figure 3.5 shows that regions with higher working age population growth tend to have higher GRP growth, and typically the highest population growth is occurring in greater capital city areas.

Figure 3.5: 15-year annual average working age population (15–64 years) and gross regional product (GRP) growth, 2000–01 to 2015–16

Notes: GRP estimates based on Queensland Treasury and Trade methodology. GRP figures based on 2015–16 prices, $R^2 = 0.372$.

Source: ABS 2001 and 2016 Census of Population and Housing; Department of Industry, Innovation and Science estimates.

Of course, GRP growth in some regions is not associated with higher population growth. These are primarily Mining regions. In these regions, a large value of economic activity is associated with a smaller labour force.

Trade enables growth and job creation

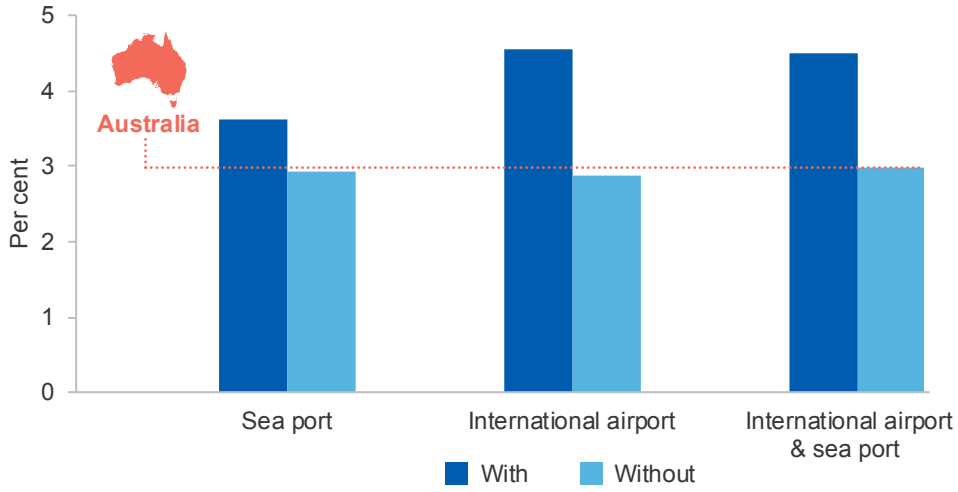
Trade provides new market opportunities for domestic firms, stronger productivity and innovation through competition.[104] In understanding the dynamics and trajectory of Australian regions, it is important not to view them in isolation but to explore the role they play in the national and international trading networks.

To be a gateway to the international economy, a region needs three characteristics: a sea port; an international airport; and most importantly a CBD that hosts a critical mass of advanced producer services like finance, marketing and management consulting to facilitate and contribute to the products being traded. In Australia, there are only two cities that have such critical mass — Sydney and Melbourne. Around 90 per cent of publically traded firms by value are located in Sydney and Melbourne, and around three quarters of international business travel passes through their airports.[105]

Figure 3.6 shows the collective growth rates for areas with or without a sea port or an international airport. It is evident SA4s with either a sea port or international airport tend to grow faster. Trade openness encourages the concentration of economic activity because firms will choose to locate in certain regions in order to gain access to international markets and benefit from trade.

Australia's geographic isolation and its relatively fragmented domestic markets contribute to relatively higher transport and infrastructure costs, and limit Australia's exposure to domestic and international trade.

Figure 3.6: Australian sea ports, international airports and gross regional product (GRP) growth, 2000–01 to 2015–16



Notes: GRP estimates based on Queensland Treasury and Trade methodology. National figures based on chain volume measure. GRP figures based on 2015–16 prices.

Source: Geoscience Australia; Department of Industry, Innovation and Science estimates; ABS, *Australian National Accounts: State Accounts*, 2015–16, cat. no. 5220.0, Table 1.

104 Jackson S 2015, *Growth and development: Why openness to trade is necessary but not sufficient*, Brookings Institution, 23 November 2015, www.brookings.edu/blog/future-development/2015/11/23/growth-and-development-why-openness-to-trade-is-necessary-but-not-sufficient/, accessed 26 September 2017

105 Tonts T and Taylor M 2013, 'The shifting geography of corporate headquarters in Australia: A longitudinal analysis' in Regional Studies, 47(9):1507–1522.

Knowledge-intensive industries

While technologies such as the National Broadband Network and video conferencing enable people to work remotely — away from cities — the more fundamental force of technological change is shifting the Australian economy into knowledge-intensive industries that thrive in the centres of large cities.

The shifting industry structure of the Australian economy is driving the concentration of economic activity to capital cities. The economy has been transitioning away from goods-producing industries to more high-value, knowledge-intensive industries.[106]

Compared to goods-producing industries, which are reliant on immobile factors of production, such as land, knowledge-intensive industries rely on mobile factors of production like human capital. This geographic dimension of production means knowledge-intensive industries, such as finance, are less likely to locate in regional Australia because they typically benefit from knowledge spillovers, deeper labour markets and economies of scale.[107]

Areas outside of capital cities tend to produce relatively low levels of economic activity, despite being home to a significant share of the population. The production that takes place in these areas typically involves population-serving industries.[108] Over the past 15 years these population-serving industries — the non-market services sector — have been the main source of employment growth in non-Mining regional areas. Examples of non-market services are Health Care and Education, where the public sector plays a significant role. These industries accounted for around 53 per cent of total employment growth in non-Mining regional Australia, resulting in an additional 361,000 employed persons.

Knowledge-intensive industries — typically industries in the market services sector — are key drivers of productivity and economic growth.[109] Figure 3.7 shows that SA4s with higher GRP growth tend to be those with greater growth in market services employment — typically in greater capital city areas.

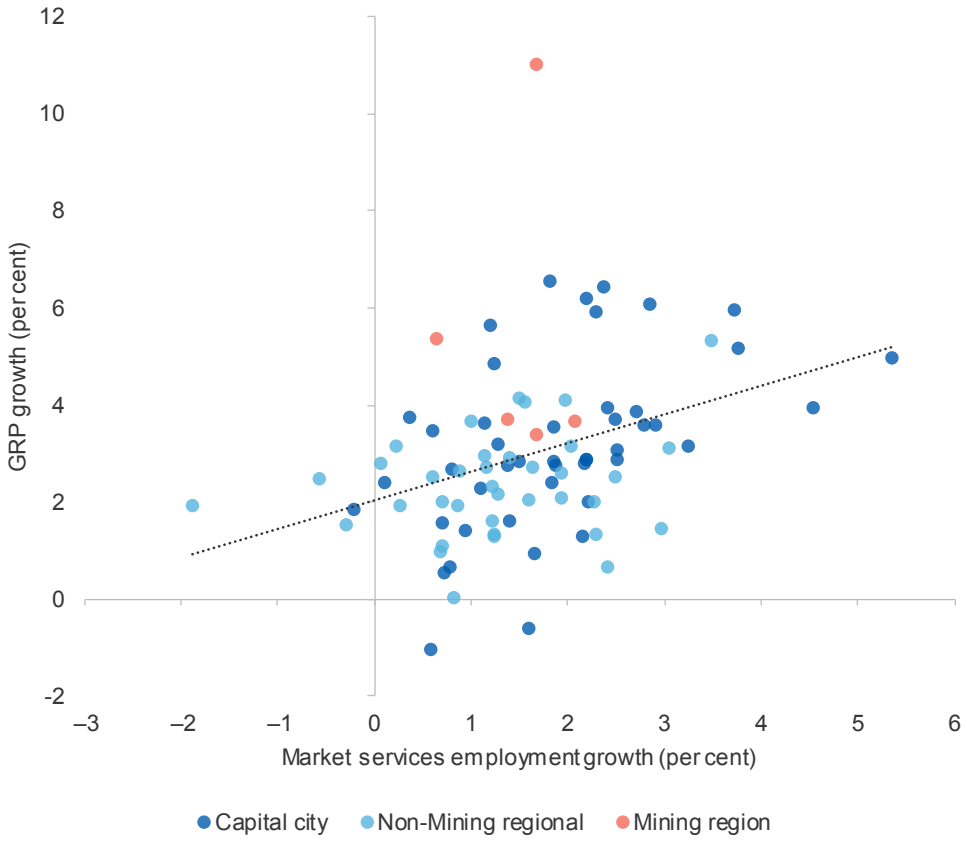
106 Department of Industry, Innovation and Science 2014, *Australian Industry Report*, Canberra. Goods-producing industries are Agriculture, Forestry & Fishing; Mining; Manufacturing; Electricity, Gas, Water & Waste Services; Construction.

107 NSW Department of Industry — Centre for Economic Development 2016, *Regional Economic Growth Enablers*, Sydney, p. 22.

108 Kelly JF and Donegan P 2014, *Mapping Australia's economy: Cities as engines of prosperity,* Grattan Institute, p. 10.

109 Department of Industry, Innovation and Science 2015, *Australian Industry Report*, Canberra, p. 138.

Figure 3.7: 15-year annual average market services employment and gross regional product (GRP) growth, per cent, 2000–01 to 2015–16



Notes: GRP estimates based on Queensland Treasury and Trade methodology. Employment figures based on 4-quarter averages. GRP figures based on 2015–16 prices. $R^2 = 0.1329$.

Source: ABS, *Labour Force*, Australia, Detailed, Quarterly, May 2017, cat. no. 6291.0.55.003, RQ1; Department of Industry, Innovation and Science estimates.

Regions of the future

Since 2000–01, Australia's economic growth has largely been distributed amongst capital cities — Mining regions are the exception to this. Australia is better off as a result of this concentration. Individually, some regions are not as well off as the average and as cities continue to grow, regions are likely to fall further behind as a share of the economy (i.e. inequality between regions and cities is likely to grow).

The concentration of economic activity in cities is occurring from a natural incentive for people and firms to be close to each other — there are big benefits to agglomeration. These benefits take the form of deeper labour and consumer markets, increased access to specialised suppliers (inputs and services), economies of scale, knowledge spill-overs and lower transportation costs.

Technological change is shifting the Australian economy into knowledge-intensive industries that thrive in the centre of large cities. Knowledge-intensive industries rely on human capital as the primary factor of production. This means they are less likely to locate in regional Australia because they typically benefit more from critical mass of human capital and agglomeration. The overall shift of knowledge-intensive industries into the centre of large cities is occurring despite technology improvements that also enable people to work remotely.

Trade provides new market opportunities for domestic firms, stronger productivity and innovation through competition. Trade openness encourages economic activity to concentrate in certain regions to gain access to international markets and benefit from trade.

The concentration of economic activity in capital cities makes it difficult to predict long-term sources of growth in regional areas. However, implications of this concentration may be larger for cities themselves rather than regional areas. Rapidly growing cities put pressure on infrastructure and investment may not keep up. With the economic centre of gravity shifting to CBDs, transporting more people from outer areas to jobs in the centre of cities will be challenging. Long commute times have implications for labour force participation and health. In part, the future economic success of Australia will depend on having cities that function well and can adjust to growing demands.

Pushing water uphill

Danielle Wood

Budget Policy and Institutions Program Director, Grattan Institute

Geography is destiny, or so we are often told. In which case, what do geographic trends in population and economic activity tell us about Australia's future policy challenges?

Australia is highly urbanised, and becoming more so. The most densely populated parts of the country house 80 per cent of the population but occupy less than one per cent of the land mass. And population has grown faster in our cities than elsewhere over the past decade. The Pilbara mining region and the major regional centres, such as Bendigo in Victoria and Wollongong in New South Wales, have also increased their populations, but the populations of much of the rest of regional Australia are either stagnant or declining.

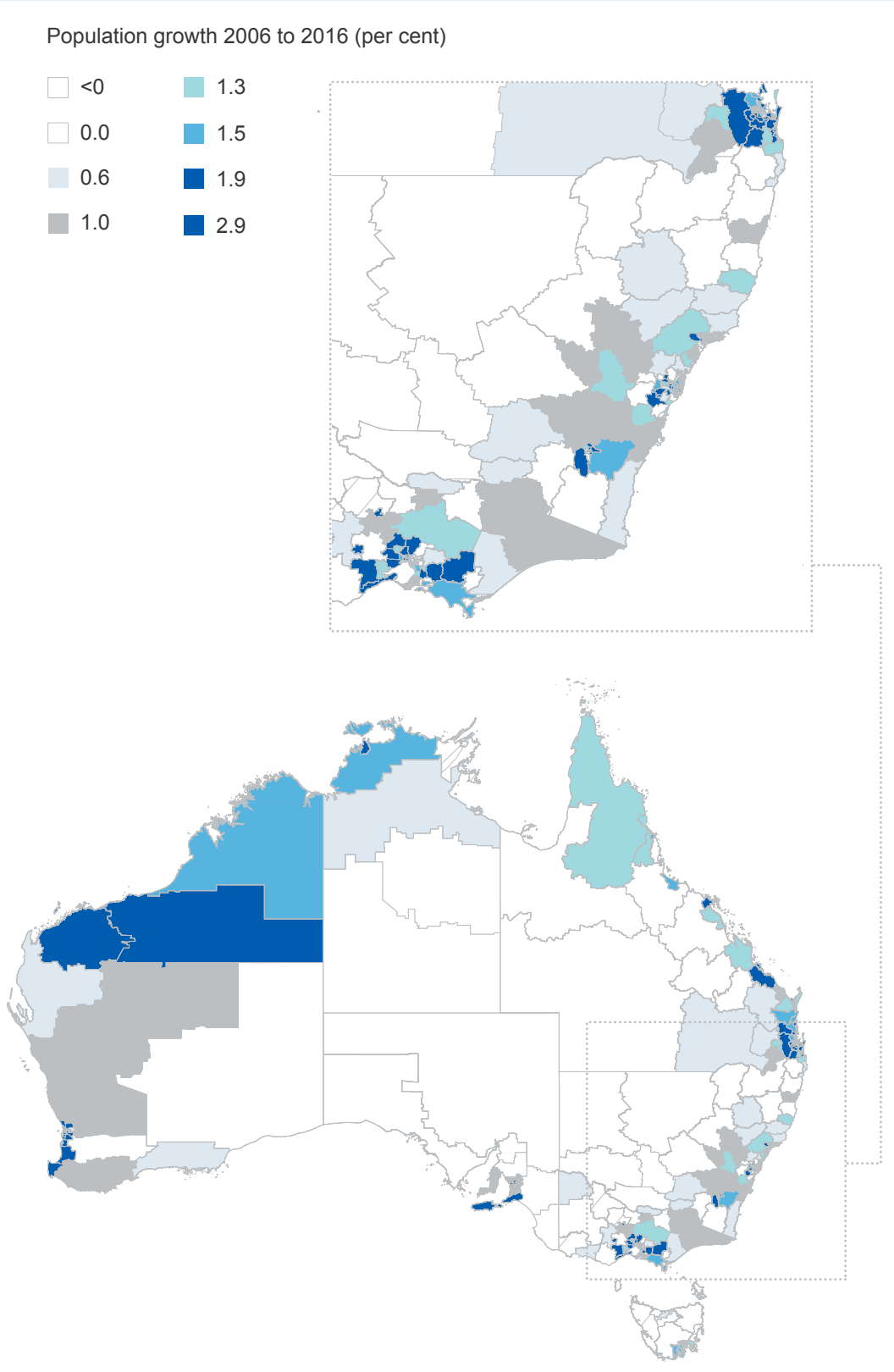
These regional differences in population growth reflect longer-term structural changes in the Australian economy.

As in other developed economies, an increasing proportion of the Australian workforce is employed in service industries. Over 50 years, employment in Services has risen from five in ten workers to eight in ten workers. Service jobs, particularly professional services, tend to cluster in cities and their centres. This is because there are big benefits to 'agglomeration', being close to lots of other service firms.[110] These Services jobs attract people both from overseas and within Australia who are younger and more educated than the general population. So it is not surprising that cities have a higher proportion of young people, immigrants, and people with a tertiary education than regional areas.[111]

110 Romer P (2015) *Urbanization Passes the Pritchett Test*, http://paulromer.net/urbanization-passes-the-pritchett-test/

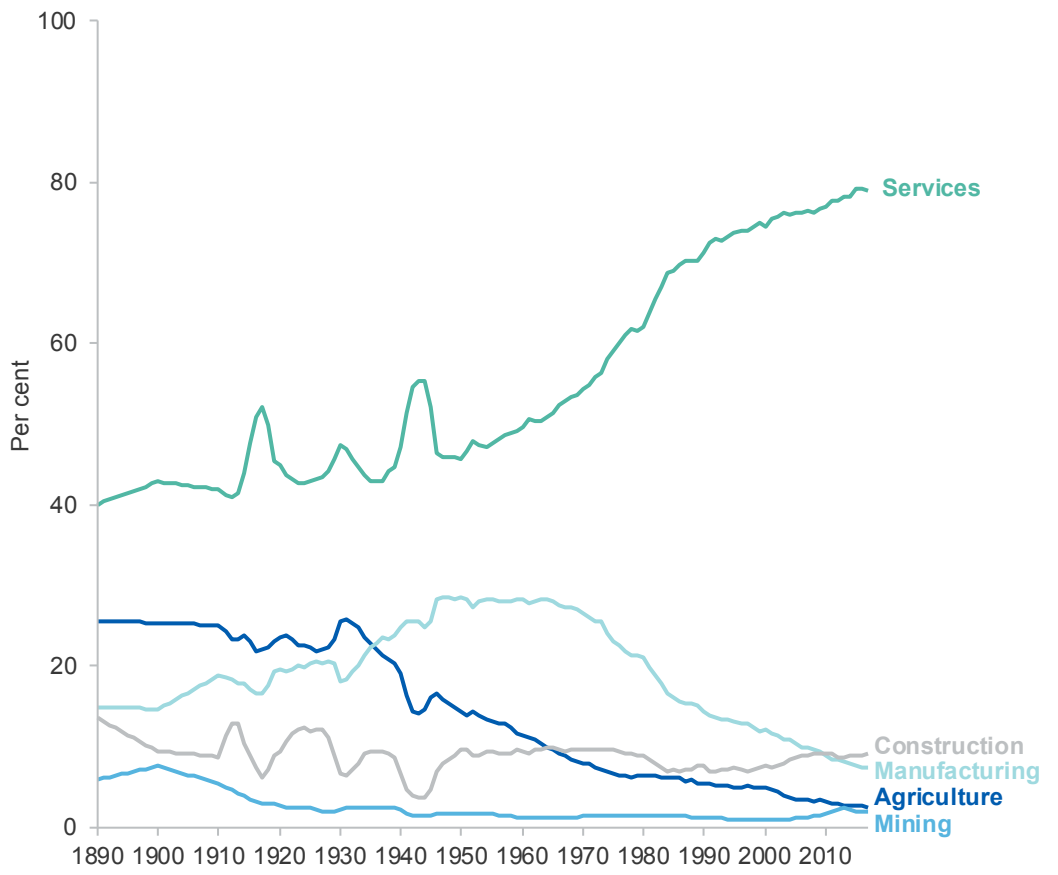
111 Daley J, Wood D and Chivers C 2017, *Regional patterns of Australia's economy and population*, Grattan Institute, pp. 24–29.

Figure 3.8: Population growth is highest in the capitals, some regional centres and mining regions



Source: ABS (2016) *Census of Population and Housing*, Time Series profiles 2006–2016

Figure 3.9: More and more Australians work in services, share of workforce by sector, 1890 to 2010, per cent



Notes: Data for 1981–83 are interpolated using 1980 and 1984 data.

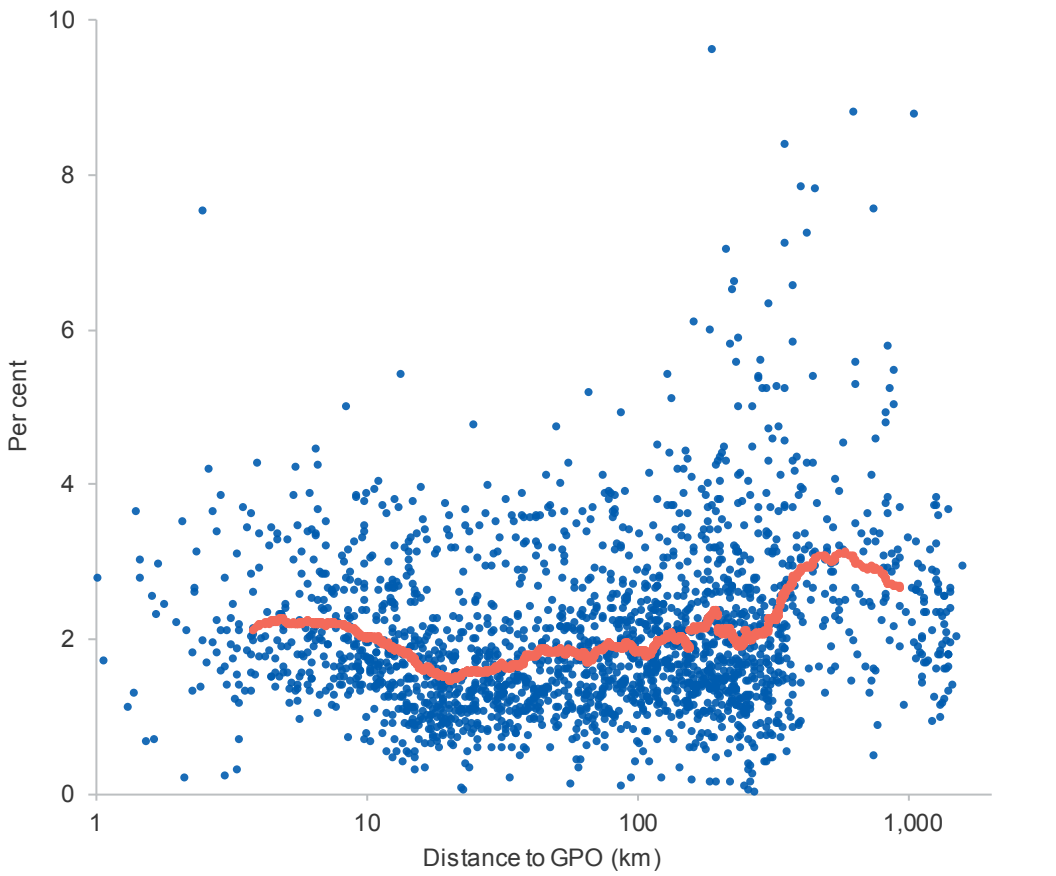
Source: Withers G, Endres T and Perry L (1985) *Australian historical statistics: Labour statistics*, Source Papers in Economic History, Source Paper No. 7; ABS (2017) *Labour force, Australia, detailed*, Quarterly, May 2017, Cat. 6291.0.55.003.

In contrast, the loss of agricultural and manufacturing work is felt most keenly in regional and outer-suburban areas. Populations in these areas tend to be older and have a higher proportion of the population born in Australia.

But it's not all bad news for the regions. Analysis of tax return data by postcode shows that while incomes are on average higher in the cities, income growth per person has been similar in the regions and the cities over the past decade. And nor is unemployment notably worse in the regions.[112]

112 Daley J, Wood D and Chivers C 2017, *Regional patterns of Australia's economy and population*, Grattan, pp. 16–19.

Figure 3.10: Annual growth in real taxable income per tax filer by postcode, 2003–04 to 2014–15



Notes: The growth rate is calculated as the compound average growth rate (CAGR) in income per tax filer 2003–04 to 2014–15. A small number of outliers have been excluded from the chart to make it more readable.

Source: ATO (2017) *Taxation statistics 2014–15*, Australian Taxation Office.

Governments should not fight the 'gravitational' pull of the cities and major regional centres. Past attempts at intervention have been expensive and did little to increase regional growth and productivity.[113] Governments are better off focusing on building and maintaining transport infrastructure links (but only where the benefits outweigh the costs) and improving the quality of services in regional areas.

Governments should also do more to ensure our cities remain resilient and productive.

The disconnect in Australia's major cities between where the people are and where the jobs are is a major policy problem. Most city jobs have been added within 10 km of the central business districts (CBDs). But, other than high-rise apartments in the centre, almost all the population growth has been added 20 km or more from the city centres, with housing estates being built on what was farmland.[114] There has been some medium-density development in middle-ring suburbs but not enough to keep up with population growth.[115] Australia's large cities remain particularly sparsely populated compared with cities of similar size.

113 Daley J and Lancey A 2011, *Investing in regions: making a difference*, Grattan Institute.

114 Kelly J-F and Donegan P 2015, *City limits: why Australia's cities are broken and how we can fix them,* Melbourne University Press, pp. 33.

115 Daley J, Coates B and Wiltshire T (forthcoming), *Housing affordability*, Grattan Institute.

The lack of new homes being built in desirable areas near high-paying jobs has contributed to strong increases in house prices in our cities. And limiting housing near high-paying productive jobs reduces economic growth.[116]

Governments should reform planning and zoning regulations to increase density in the middle-ring suburbs of our cities. The focus should be medium-density development: townhouses and terrace houses, which is what people say they want.[117]

Governments should also act to limit growing road congestion in our major cities. In Sydney and Melbourne, some car trips into the CBD take twice as long during the morning and afternoon peaks as in the middle of the night. And the problem is getting worse as the population grows.[118] Congestion charges in the most congested areas of each city during peak periods would help improve travel times and spread traffic across the day.

Ultimately, policymakers must work with, not against, the forces shifting Australia's economic geography. Governments can't push economic water uphill, but they can smooth the transition by ensuring that regional areas have access to good-quality services and that our cities are flexible enough to cope with growing numbers of people and activity.

116 Daley J, Coates B and Wiltshire T (forthcoming), *Housing affordability*, Grattan Institute.

117 Kelly J-F, Weidmann B and Walsh M 2011, *The housing we'd choose*, Grattan Institute.

118 Terrill M, Batrouney H, Etherington S and Parsonage H 2017, *Stuck in traffic? Road congestion in Sydney and Melbourne*, Grattan Institute.

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