

# **An analysis of Victoria's labour productivity performance**

**Presentation to a forum hosted by  
Victorian Department of Innovation, Industry  
and Regional Development**

**Melbourne  
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**Saul Eslake  
Program Director – Productivity Growth  
The Grattan Institute**

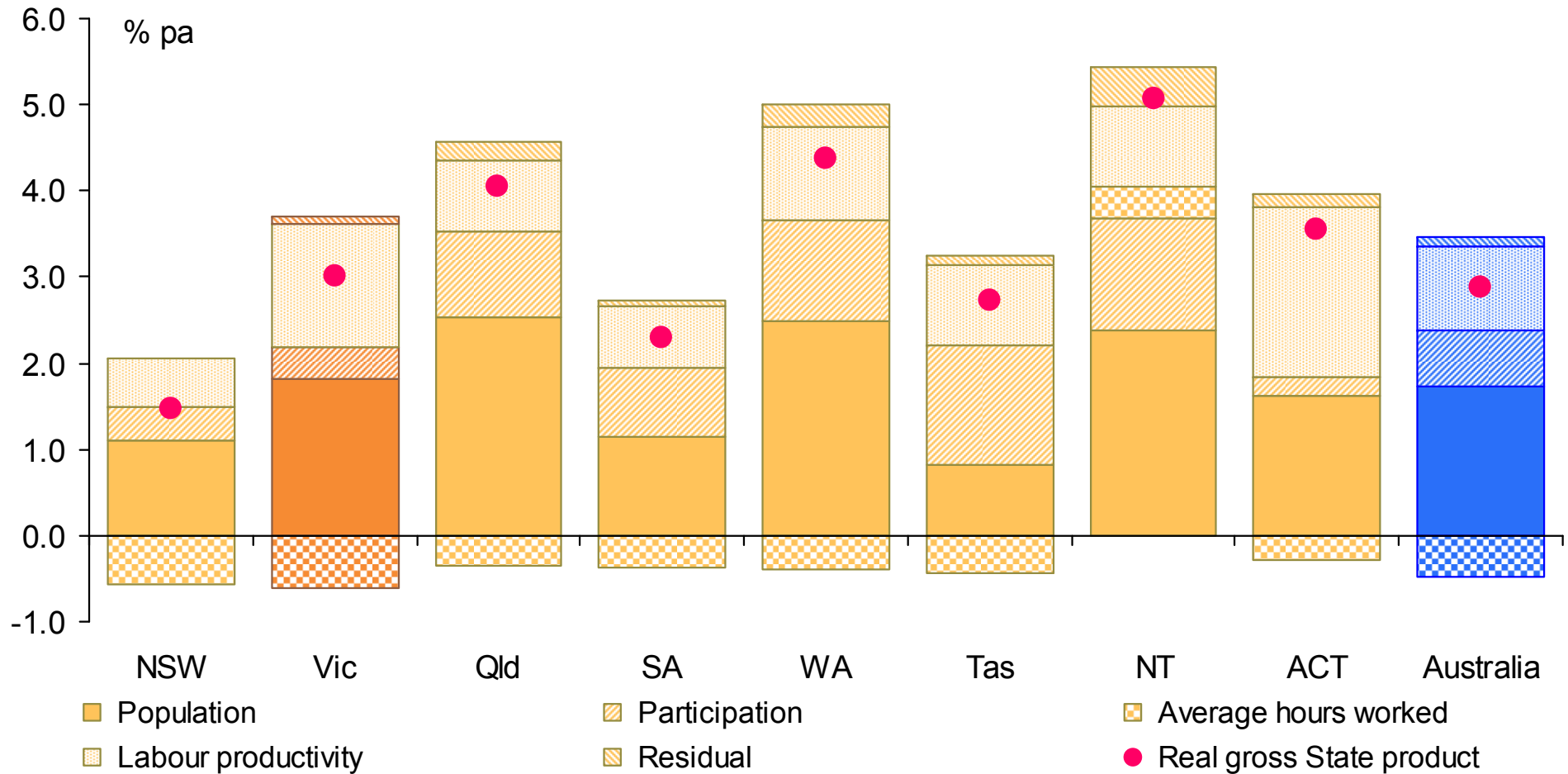
# The three P's of economic performance

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$$\begin{aligned} \text{GDP} &= \text{Population} \\ &\times \frac{\text{Labour force}}{\text{Population}} && \text{( labour force participation rate )} \\ &\times \frac{\text{Employment}}{\text{Labour force}} && \text{( 1 - unemployment rate )} \\ &\times \frac{\text{Hours worked}}{\text{Employment}} && \text{( average hours worked )} \\ &\times \frac{\text{GDP}}{\text{Hours worked}} && \text{( labour productivity )} \end{aligned}$$

# Victoria's economic growth over the past five years has been largely due to population and productivity growth

Contributors to growth in real gross State product, 2003-04 through 2008-09



Source: ABS State Accounts (5220.0) 2008-09,

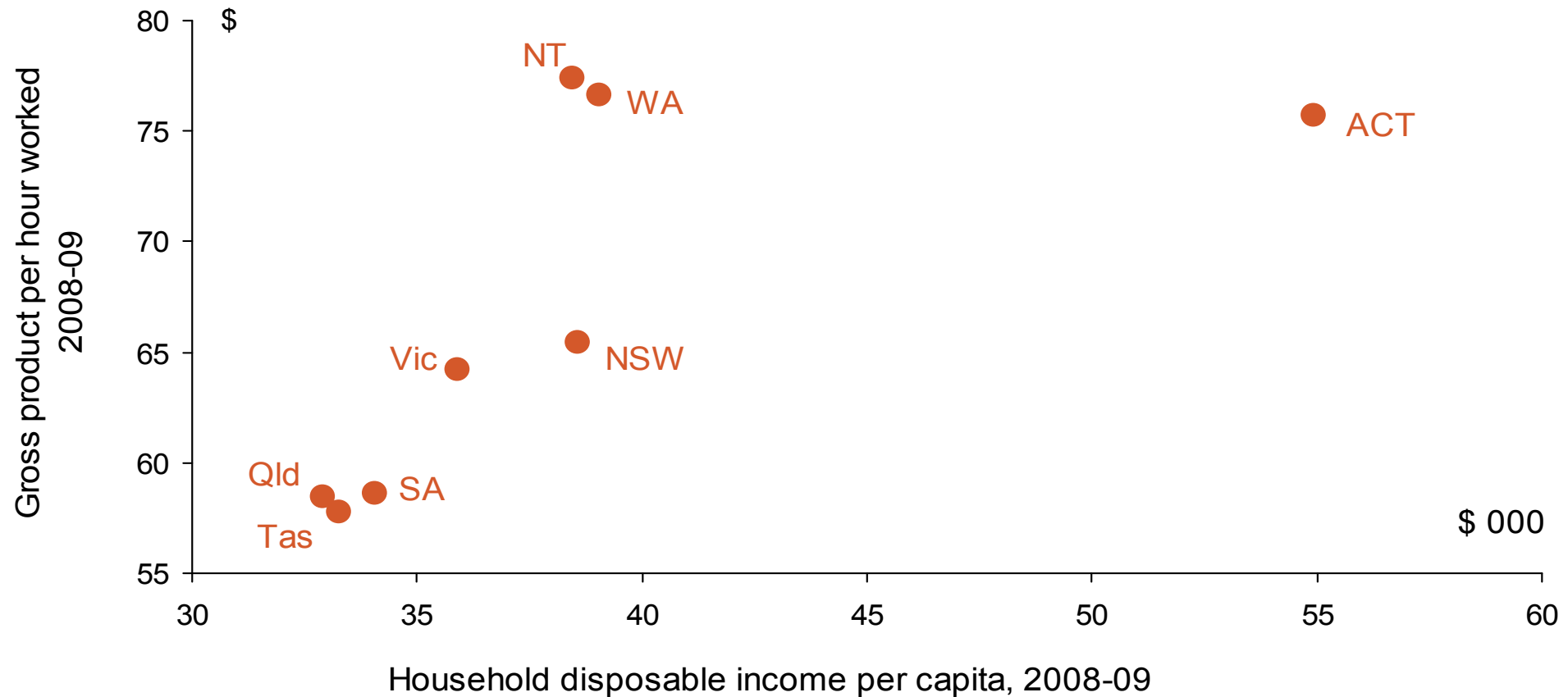
# This framework can also be used to explain differences in gross product per head of population

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$$\begin{aligned} \text{GDP/head} = & \frac{\text{Labour force}}{\text{Population}} && \text{( labour force participation rate )} \\ & \times \frac{\text{Employment}}{\text{Labour force}} && \text{( 1 - unemployment rate )} \\ & \times \frac{\text{Hours worked}}{\text{Employment}} && \text{( average hours worked )} \\ & \times \frac{\text{GDP}}{\text{Hours worked}} && \text{( labour productivity )} \end{aligned}$$

# There's a strong correlation between productivity and per capita incomes

## Labour productivity and per capita income, 2008-09



Source: ABS State Accounts (5220.0) 2008-09; and *The Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003).

# Victoria's per capita gross State product was 4.2% below the national average in 2008-09

## Gross State product (GSP) per capita, 2008-09



# Victoria's below-average per capita GSP is the result of slightly below-average employment participation, hours worked and labour productivity

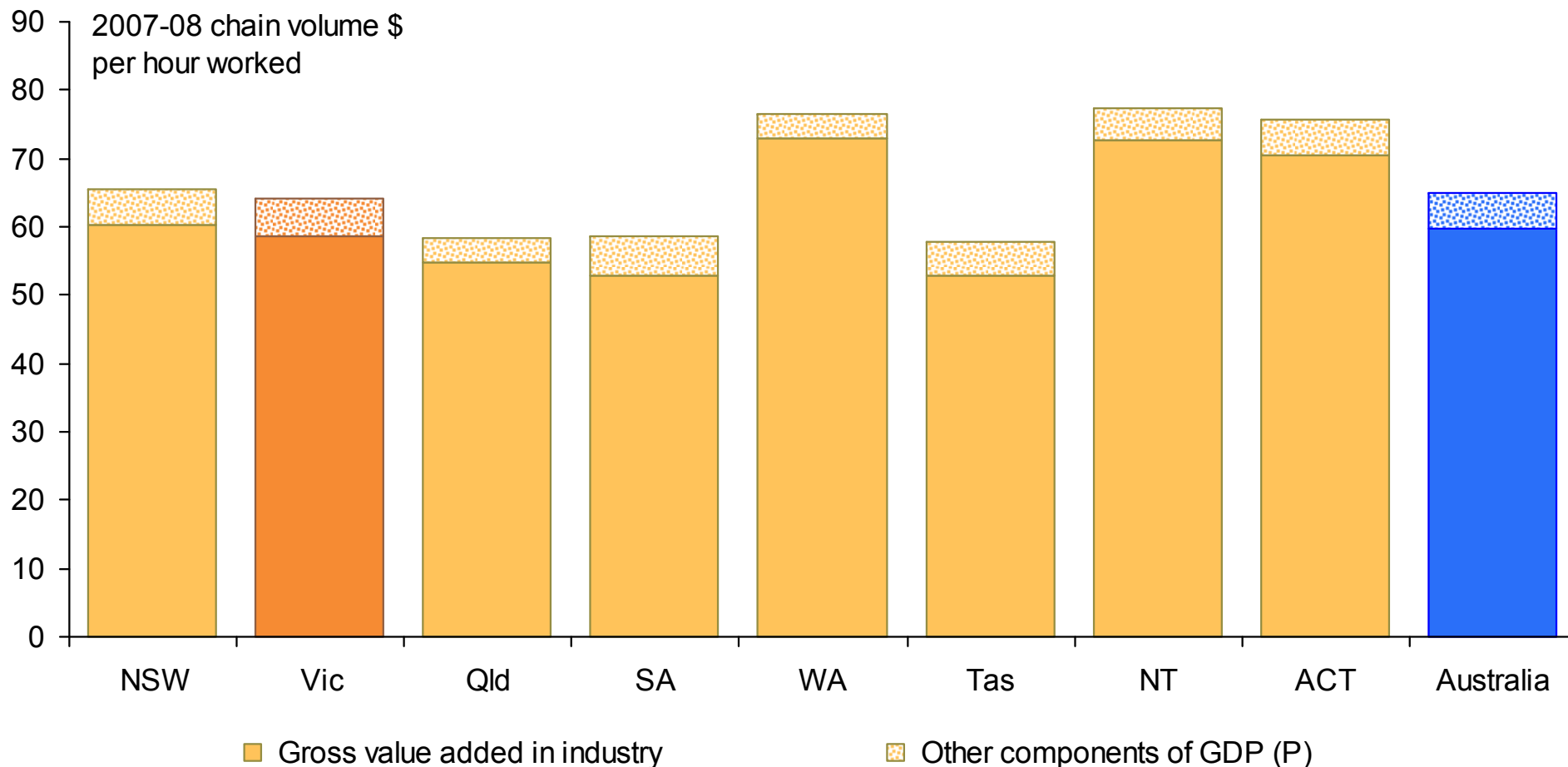
## Sources of difference between per State or Territory GSP per capita and the national average, 2008-09



Source: ABS State Accounts (5220.0) 2008-09, and Grattan Institute calculations.

# Victoria's labour productivity was about 1% below the national average in 2008-09

## Gross State product (GSP) per hour worked, 2008-09

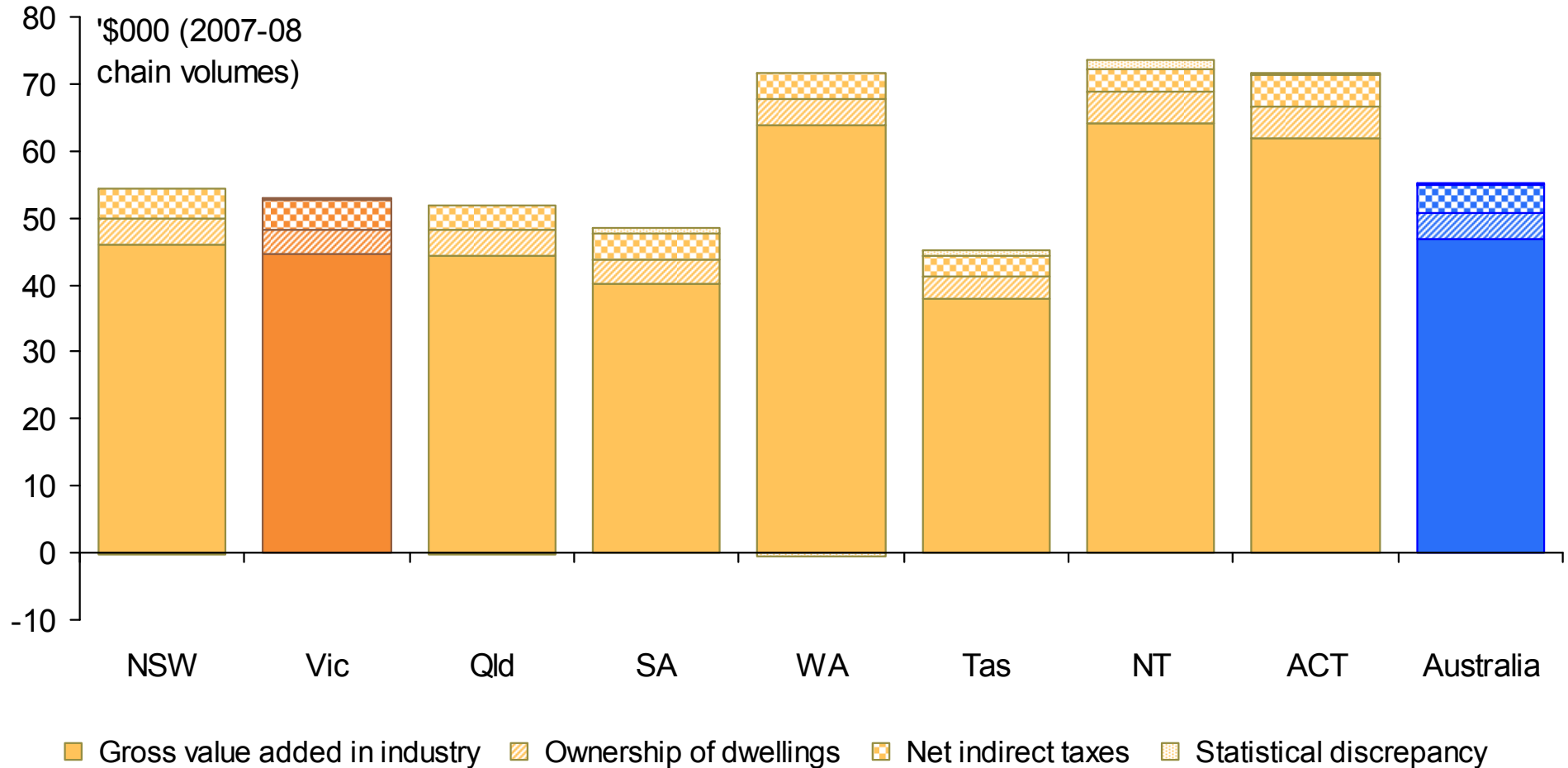


Note: 'Gross value added in industry' is the sum of GVA in each of the 19 industries in the Australia & New Zealand Standard Industrial Classification 2006. 'Other components of GDP (P)' are ownership of dwellings, indirect taxes less subsidies and the statistical discrepancy.

Source: ABS *State Accounts* (5220.0) 2008-09 and Grattan Institute calculations.

# Victoria's per capita gross value added in industry was 4.9% below the national average in 2008-09

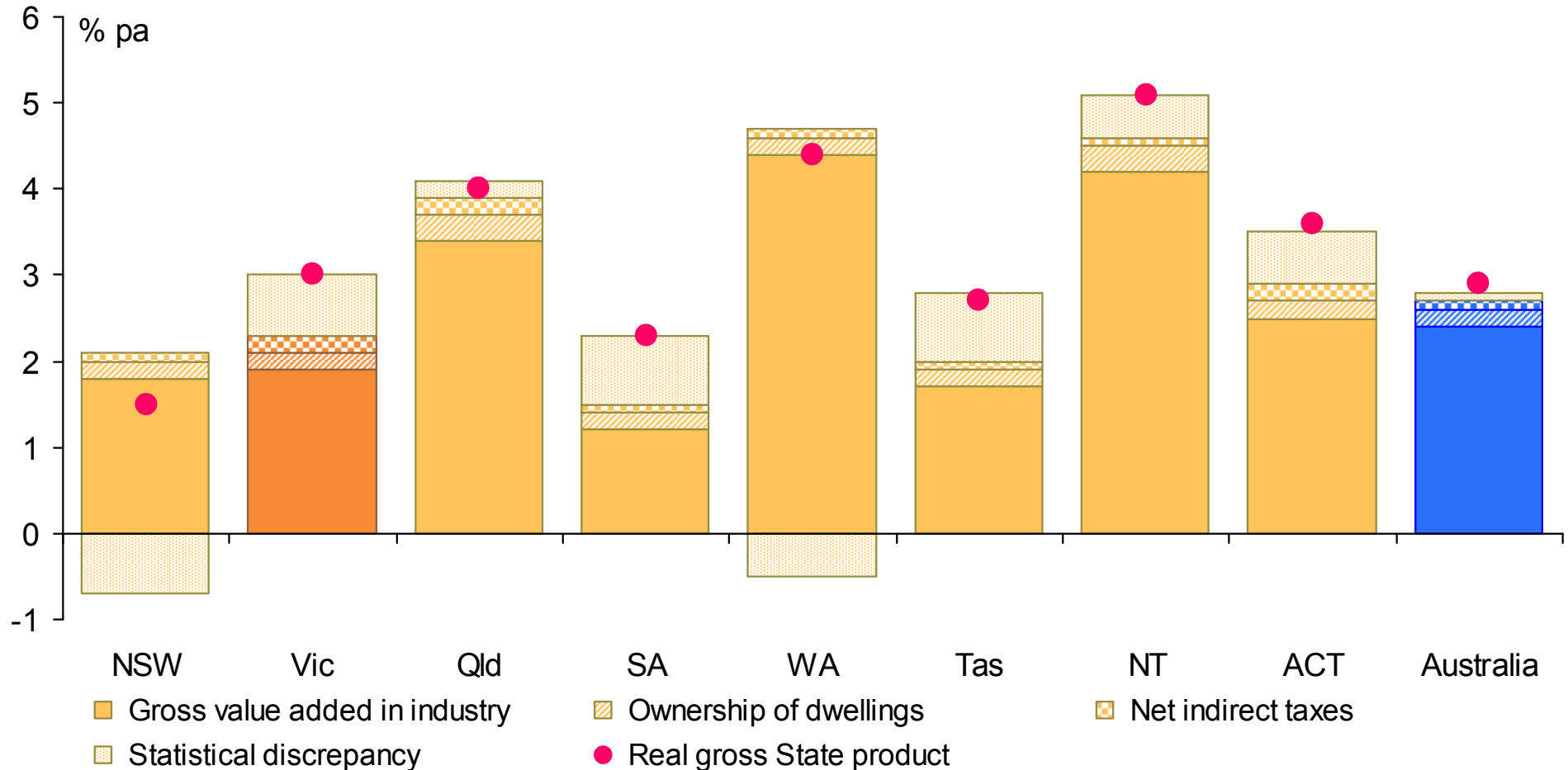
## Components of the production-based measure of gross State product



Source: ABS State Accounts (5220.0) 2008-09,

# Components other than gross value added in industry have contributed a relatively large share of Victoria's GSP growth over the past five years

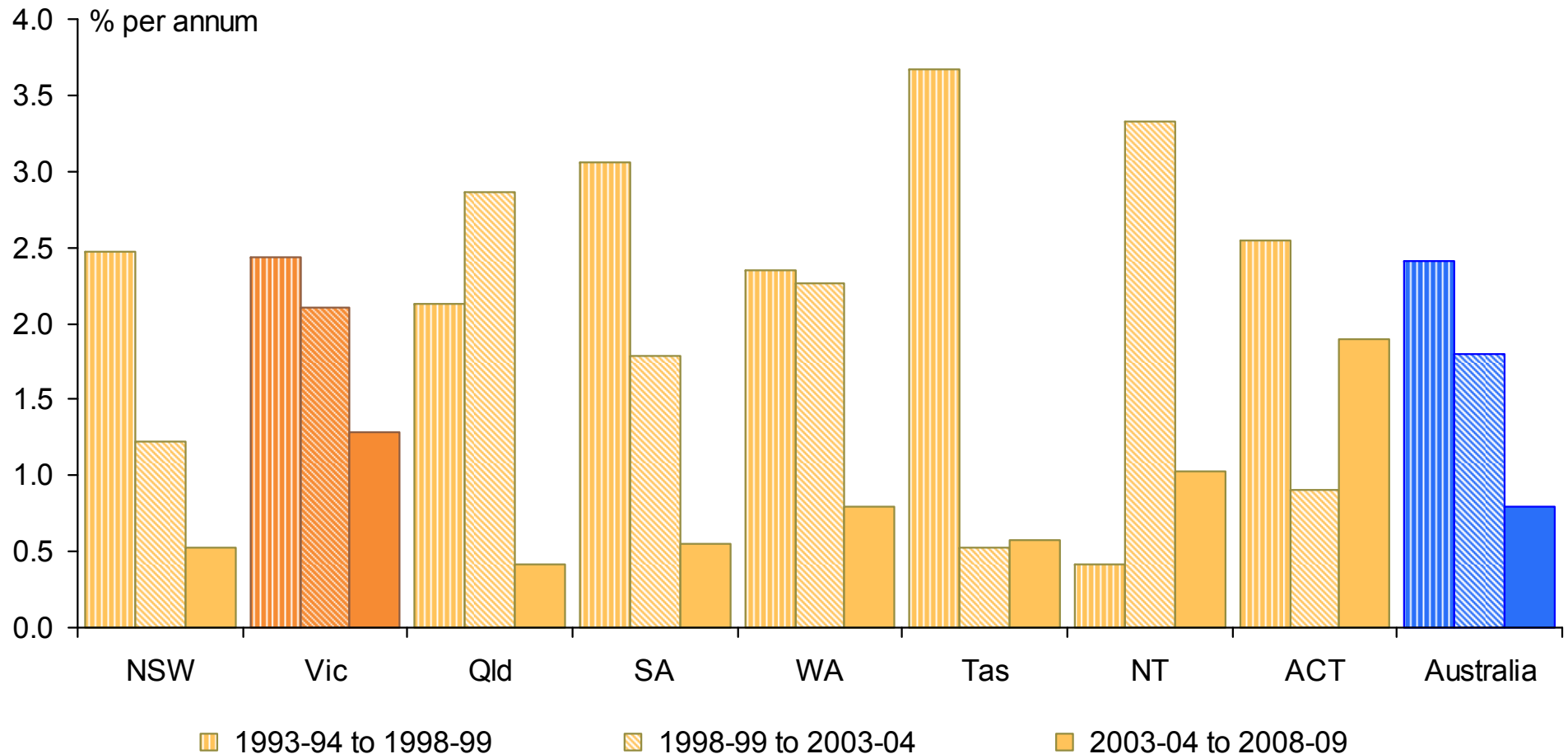
Contributors to growth in production-based measure of gross State product 2003-04 through 2008-09



Source: ABS State Accounts (5220.0) 2008-09,

# Victoria's labour productivity growth rate has slowed over the past decade, but by less than in other States and less than the national average

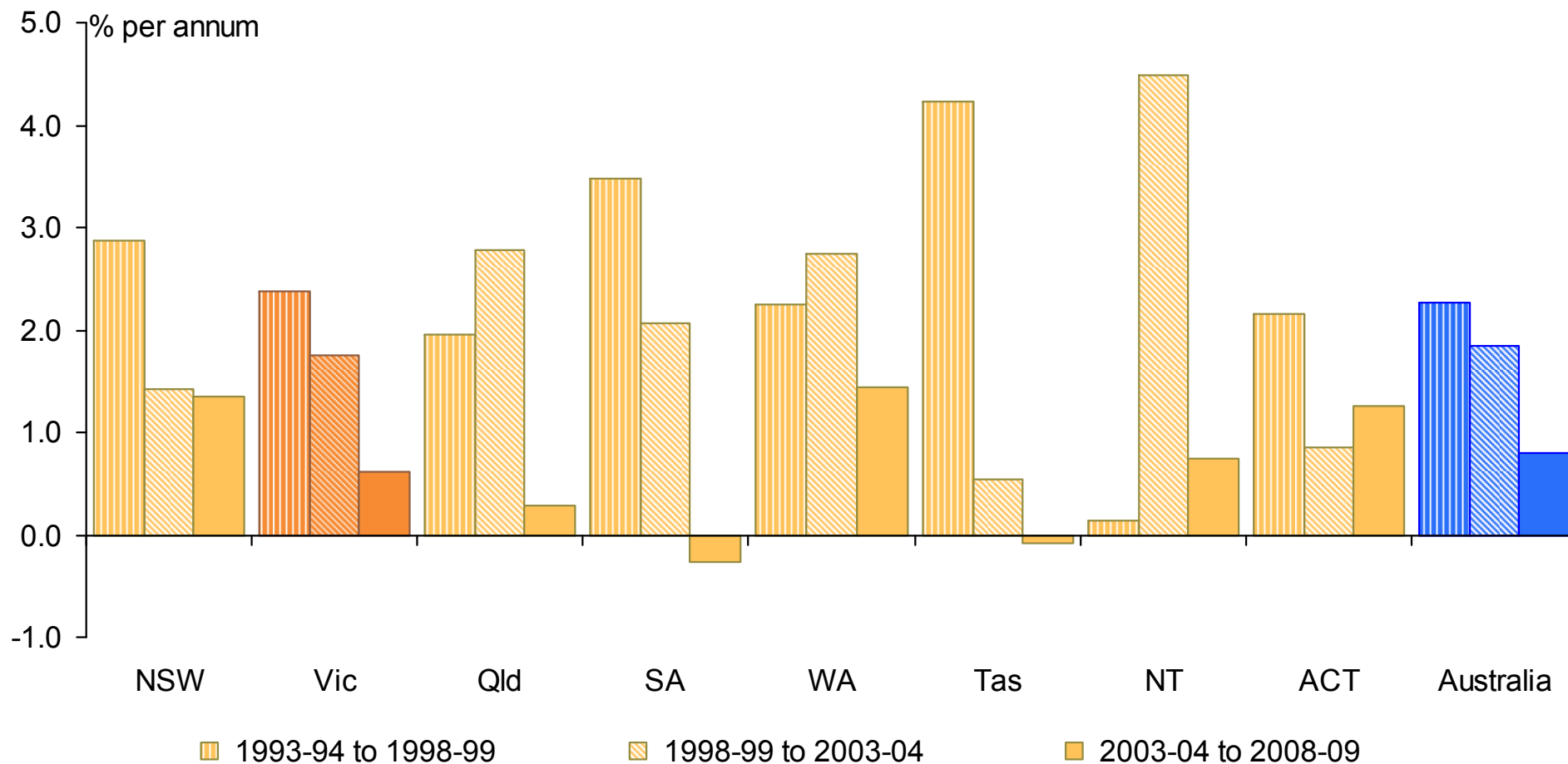
## Labour productivity (GSP per hour worked) growth, 1993-94 to 2008-09



Source: ABS State Accounts (5220.0) 2008-09 and Grattan Institute calculations.

## But Victoria's productivity performance looks a little less impressive when expressed in terms of industry GVA (rather than GSP) per hour worked

### Labour productivity (GVA in industry per hour worked) growth, 1993-94 to 2008-09

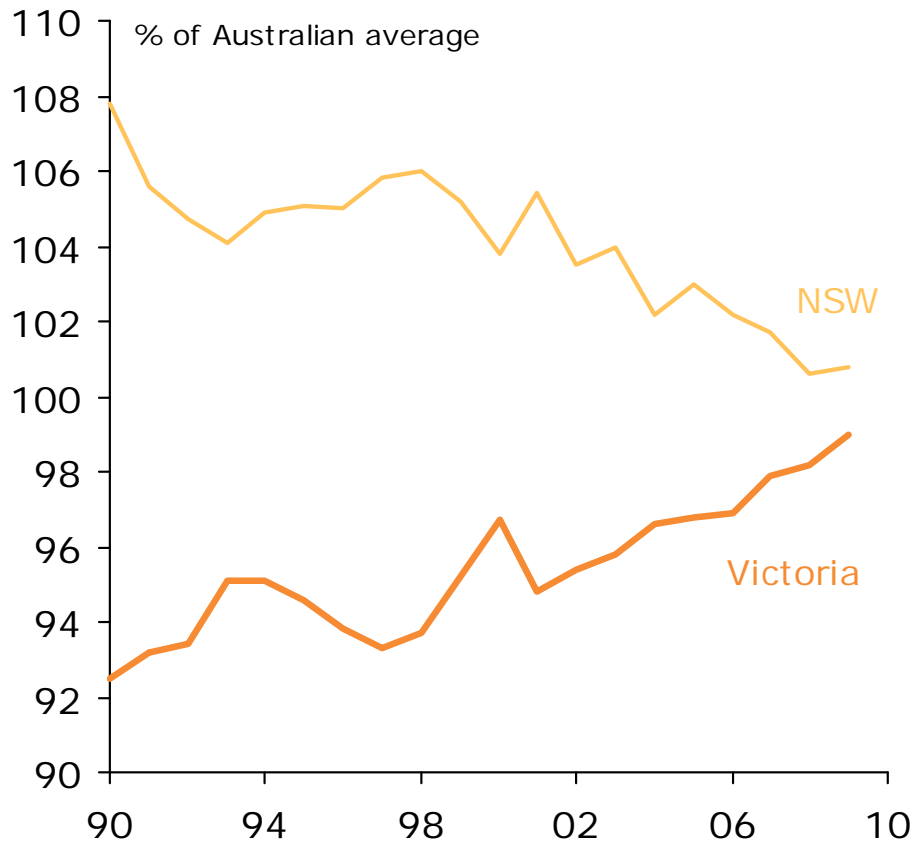


Source: ABS State Accounts (5220.0) 2008-09 and Grattan Institute calculations.

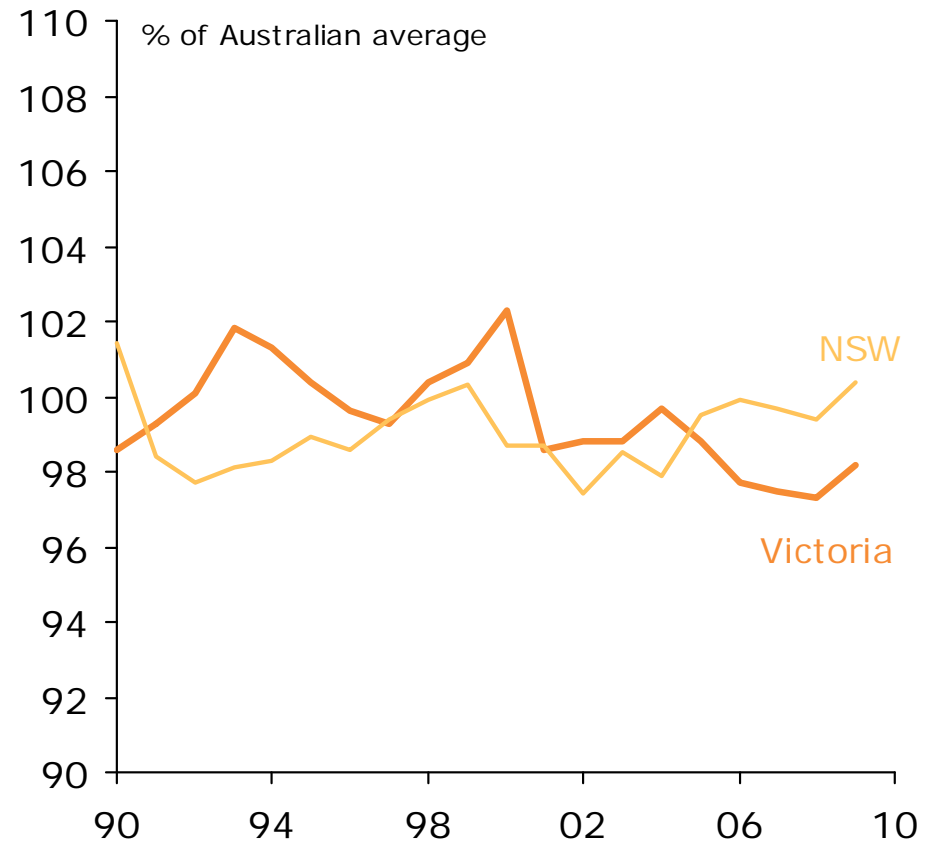
# Victorian GSP per hour worked has converged towards NSW although this seems largely due to changes in the 'wedge' between GVA and GSP

## Victorian and New South Wales labour productivity as a p.c. of national average

Gross State product per hour worked



Gross value added in industry per hour worked



Note: 'Gross value added in industry' is here the sum of GVA in each of the sectors shown above; it excludes GVA in ownership of dwellings as well as net indirect taxes and the statistical discrepancy, Source: ABS State Accounts (5220.0) 2008-09

# Victoria has a slightly-below average share of ‘high-productivity’ sectors and a slightly above-average share of ‘low-productivity’ sectors

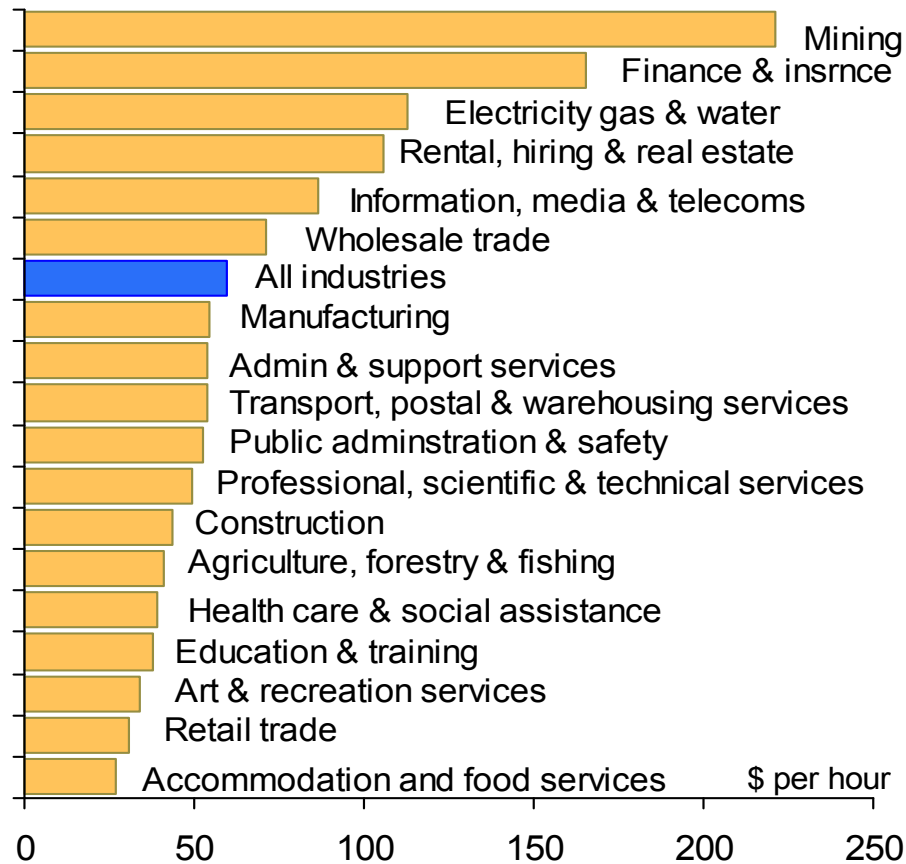
## Shares of gross value added in industry, ranked by Australia-wide labour productivity

Industry sector	Gross value added per hour worked, Australia 2008-09 (\$)	Share of gross value added in industry, 2008-09 (%)			Change in share of gross value added in industry, 2003-04 to 2008-09 (pc pts)		
		Australia	Victoria	NSW	Australia	Victoria	NSW
Mining	221.0	8.0	2.1	3.1	0.40	-0.35	0.08
Financial & insurance services	165.3	11.7	13.8	16.4	0.86	0.65	1.55
Electricity, gas, water & waste services	112.9	2.7	3.3	2.3	-0.16	-0.21	-0.17
Rental, hiring & real estate services	105.9	3.6	3.5	3.6	-0.30	-0.27	-0.40
Information, media & telecommunications	86.4	3.4	4.4	4.2	0.09	0.20	-0.27
Wholesale trade	71.3	5.3	6.8	5.3	-0.02	-0.25	-0.20
<i>All industries</i>	<i>55.1</i>						
Manufacturing	54.2	10.2	12.3	9.9	-1.77	-1.39	-1.89
Administration & support services	54.0	2.8	3.2	3.3	-0.06	0.12	-0.19
Transport, postal & warehousing services	53.8	5.9	5.1	6.0	0.26	0.44	0.27
Public administration & safety	52.8	6.0	4.2	5.4	0.13	-0.10	0.40
Professional, scientific & technical services	49.6	7.0	7.8	8.2	0.00	0.18	-0.27
Construction	43.5	8.0	6.9	7.7	0.62	0.29	-0.10
Agriculture, forestry & fishing	41.2	3.1	3.3	2.2	-0.08	-0.27	0.27
Health care & social assistance	38.8	6.6	6.7	6.7	-0.26	-0.15	-0.19
Education & training	37.5	4.8	5.7	4.6	0.36	0.90	0.72
Art & recreation services	33.9	1.0	1.1	1.1	0.08	0.08	0.13
Retail trade	30.7	5.3	5.4	5.1	0.26	0.36	0.04
Other services	28.1	2.2	2.1	2.2	-0.26	-0.20	-0.28
Accommodation & food services	27.0	2.6	2.3	2.8	-0.15	-0.05	-0.05

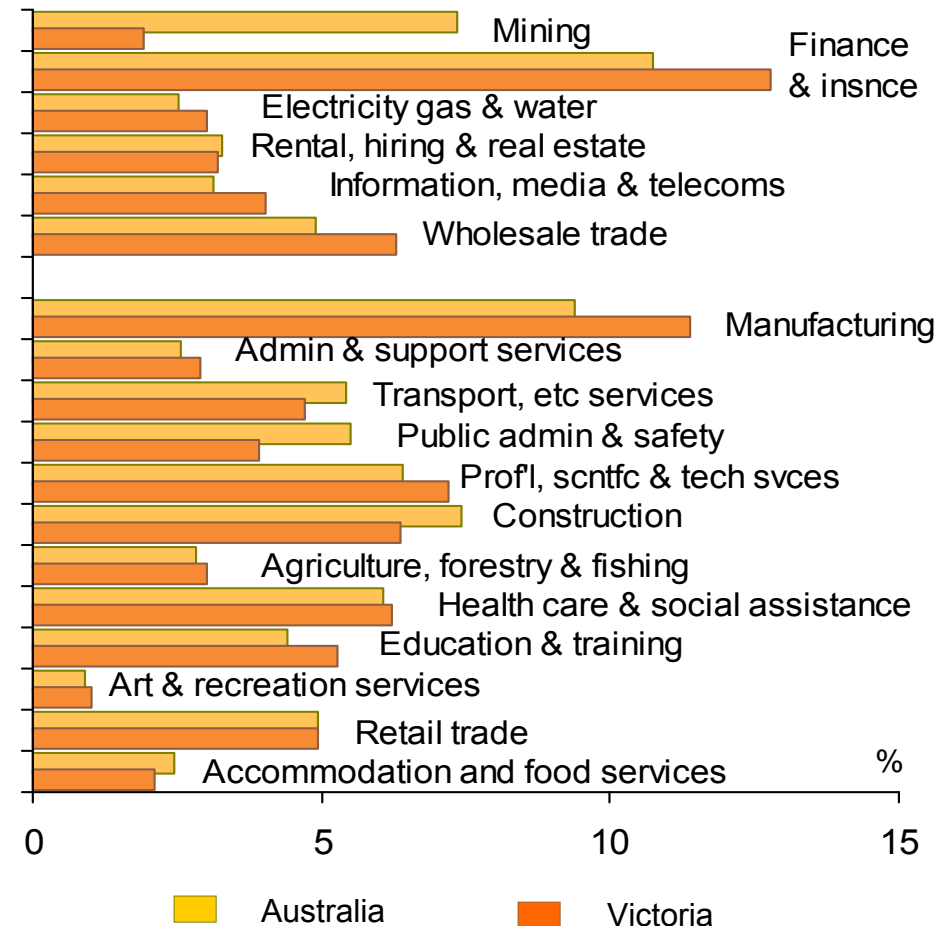
Sources: ABS, *Australian System of National Accounts* (5204.0), *State Accounts* (5220.0), and *The Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003; Grattan Institute calculations)

# Victoria has a slightly-below average share of 'high-productivity' sectors and a slightly above-average share of 'low-productivity' sectors

Labour productivity by industry  
- Australia, 2008-09



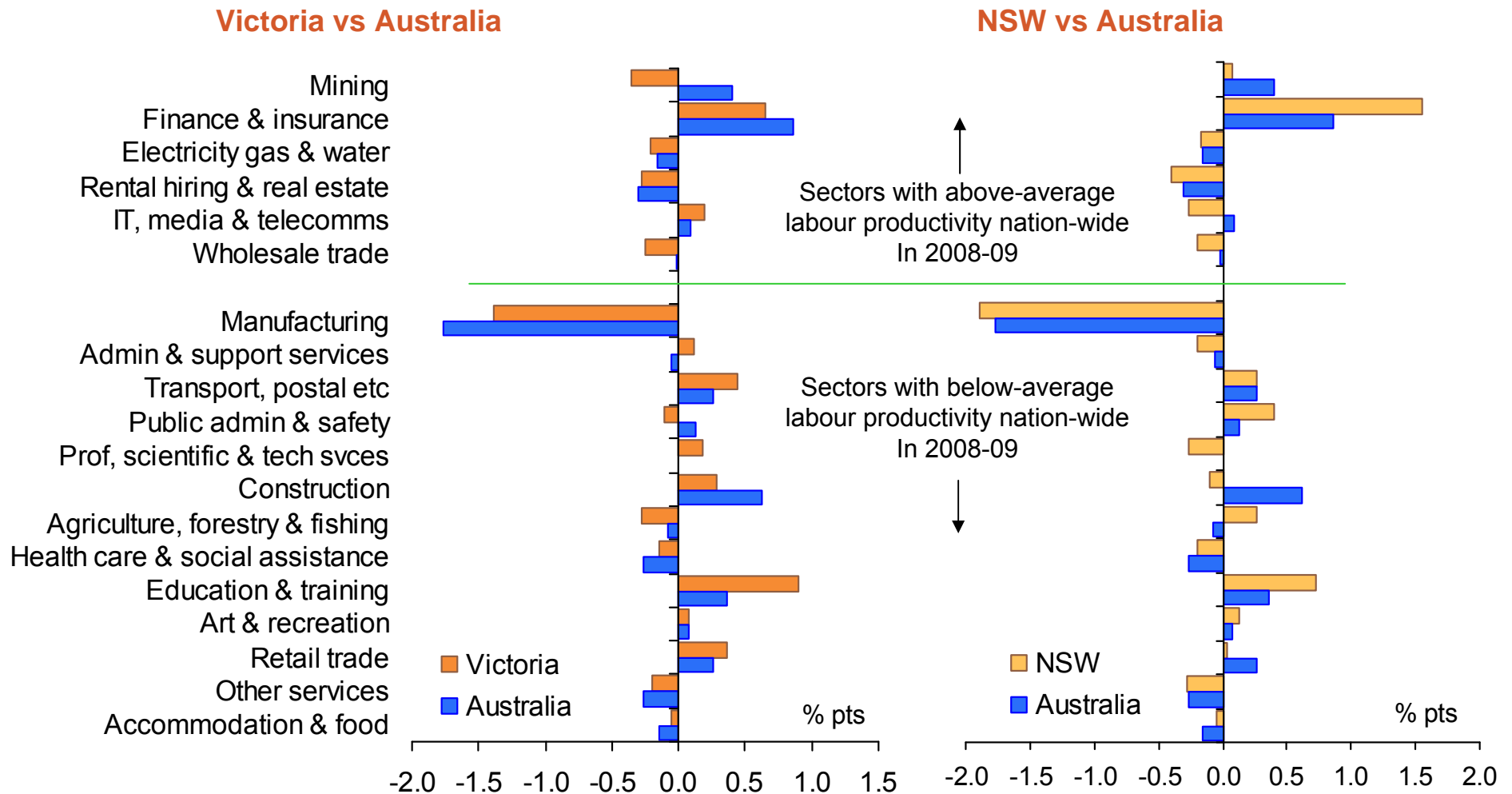
Share of gross value added by industry, 2008-09



Sources: ABS : Australian System of National Accounts (5204.0) and State Accounts (5220.0), and Grattan Institute calculations..

# Changes in the structure of the Victorian economy over the past five years have marginally detracted from overall productivity growth

## Change in shares of gross value added in industry, 2003-04 through 2008-09



Note: 'Gross value added in industry' is here the sum of GVA in each of the sectors shown above; it excludes GVA in ownership of dwellings as well as net indirect taxes and the statistical discrepancy

Sources: ABS : Australian System of National Accounts (5204.0) and State Accounts (5220.0), and Grattan Institute calculations..

# Labour productivity is above the national average in 12 of 19 Victorian industry sectors accounting for 61% of Victorian gross value added

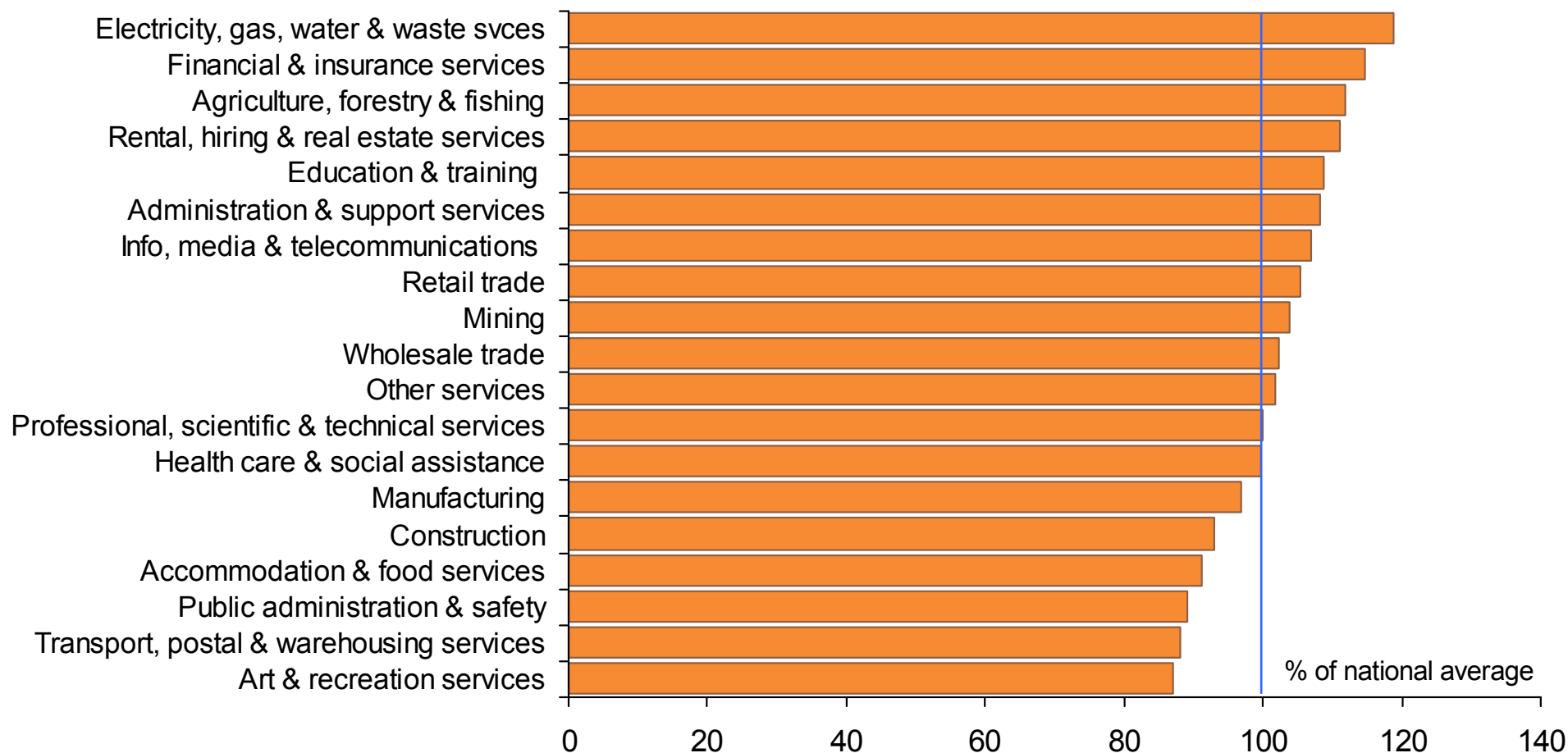
## Labour productivity in individual industry sectors

Industry sector	Gross value added (GVA) per hour worked, 2008-09 (\$)			GVA per hour worked as a p.c. of Australian average, 2008-09		Average annual growth rate of (chain volume) GVA per hour worked, 2003-04 to 2008-09 (% pa)		
	Australia	Victoria	NSW	Victoria	NSW	Australia	Victoria	NSW
Mining	221.0	229.5	148.2	103.8	67.1	-6.5	-7.9	-8.2
Financial & insurance services	165.3	189.6	166.1	114.7	100.5	2.0	1.3	2.4
Electricity, gas, water & waste services	112.9	134.1	107.1	118.7	94.9	-5.2	-6.9	-1.2
Rental, hiring & real estate services	105.9	117.6	117.0	111.0	110.5	0.4	-0.4	3.1
Information, media & telecommunications	86.4	92.4	87.0	107.0	100.7	3.1	2.6	3.9
Wholesale trade	71.3	72.9	69.9	102.3	98.0	2.1	-2.4	2.5
Manufacturing	54.2	52.5	56.0	96.9	103.4	0.5	1.7	0.1
Administration & support services	54.0	58.4	61.4	108.1	113.7	3.5	4.1	2.8
Transport, postal & warehousing services	53.8	47.3	52.9	88.0	98.2	0.4	-0.1	1.1
Public administration & safety	52.8	47.0	49.9	89.0	94.4	0.3	-1.1	0.6
Professional, scientific & technical services	49.6	49.6	53.1	100.0	107.1	-1.1	-1.4	-0.6
Construction	43.5	40.5	43.9	93.1	100.8	0.0	-0.2	0.2
Agriculture, forestry & fishing	41.2	46.1	38.8	111.9	94.2	2.5	-0.5	5.5
Health care & social assistance	38.8	38.7	39.5	99.8	101.7	0.1	1.8	1.4
Education & training	37.5	40.8	39.0	108.8	103.9	0.2	0.1	1.8
Art & recreation services	33.9	29.5	39.2	87.1	115.6	-1.1	-1.2	-4.2
Retail trade	30.7	32.3	29.3	105.3	95.4	2.3	2.9	1.4
Other services	28.1	28.6	27.6	101.7	98.4	0.0	0.5	0.1
Accommodation & food services	27.0	24.6	27.0	91.1	99.9	1.6	2.5	2.9
<i>All industries</i>	<i>55.1</i>	<i>54.1</i>	<i>55.3</i>	<i>98.2</i>	<i>100.4</i>	<i>0.8</i>	<i>0.5</i>	<i>1.3</i>

Sources: ABS, *Australian System of National Accounts* (5204.0), *State Accounts* (5220.0), and *The Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003; Grattan Institute calculations)

# Labour productivity is above the national average in 12 of 19 Victorian industry sectors accounting for 61% of Victorian gross value added

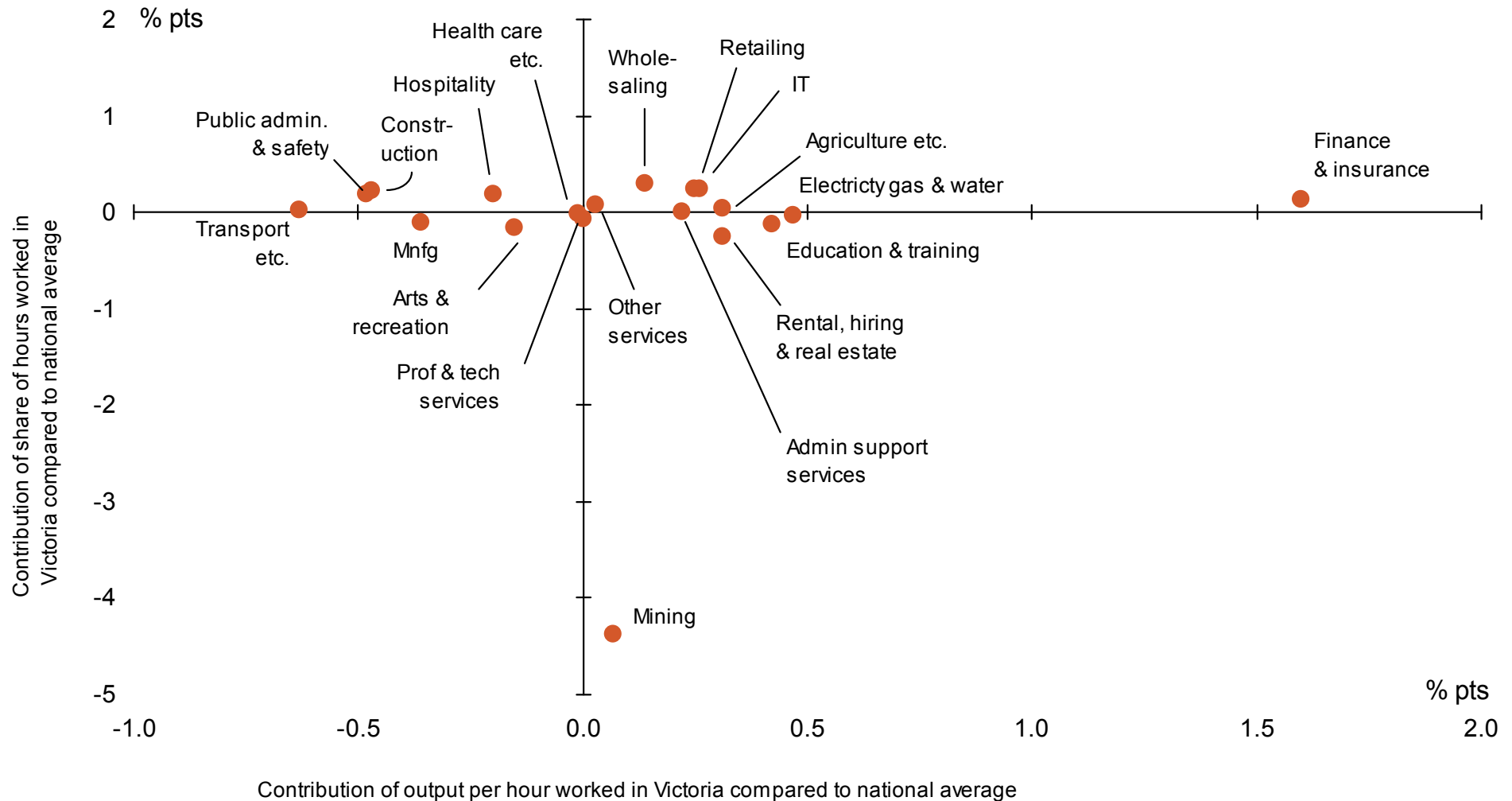
## Victorian labour productivity by industry as a proportion of national industry average, 2008-09



Sources: ABS : Australian System of National Accounts (5204.0) and State Accounts (5220.0), and Grattan Institute calculations.

# Better-than-average productivity in specific Victorian industries roughly offsets the effect of unfavourable 'industry mix'

## Contributions of industry-mix and industry-specific productivity performance to difference between overall Victorian and Australian labour productivity

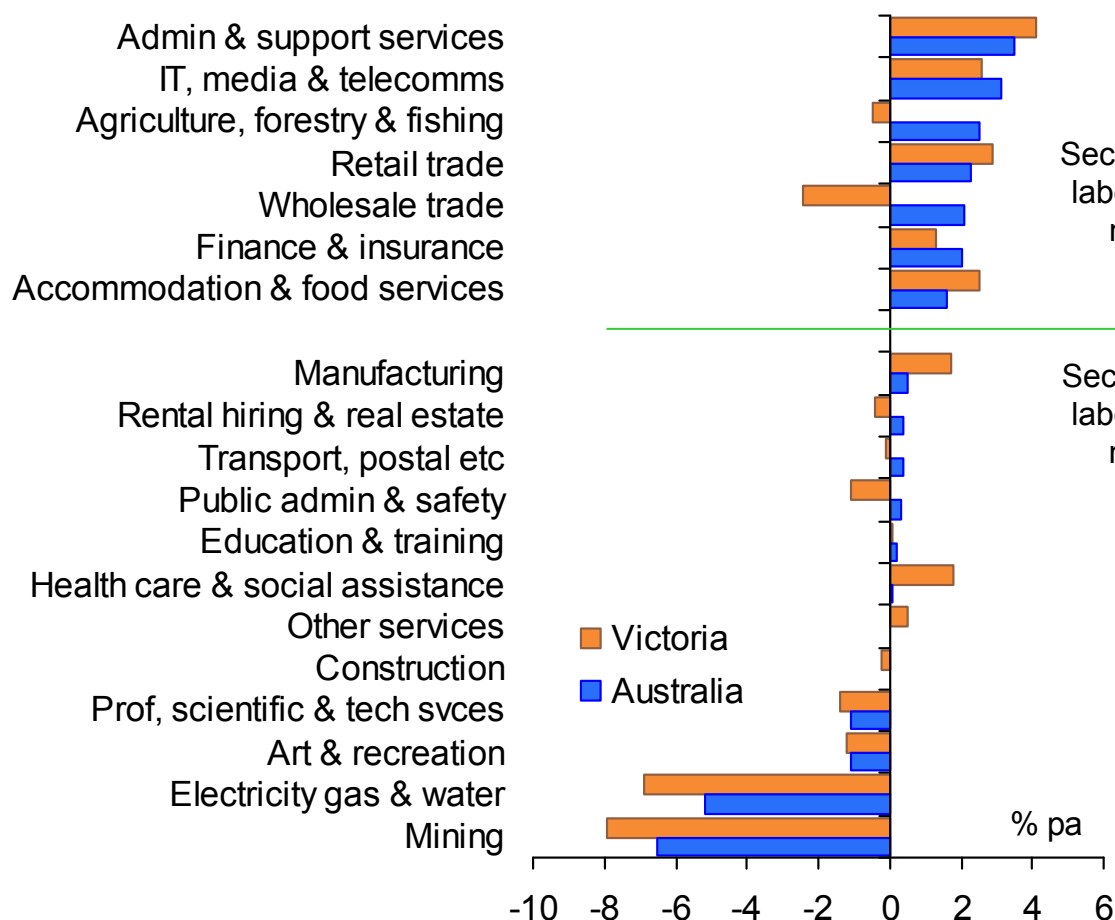


Sources: ABS : Australian System of National Accounts (5204.0) and State Accounts (5220.0), and Grattan Institute calculations.

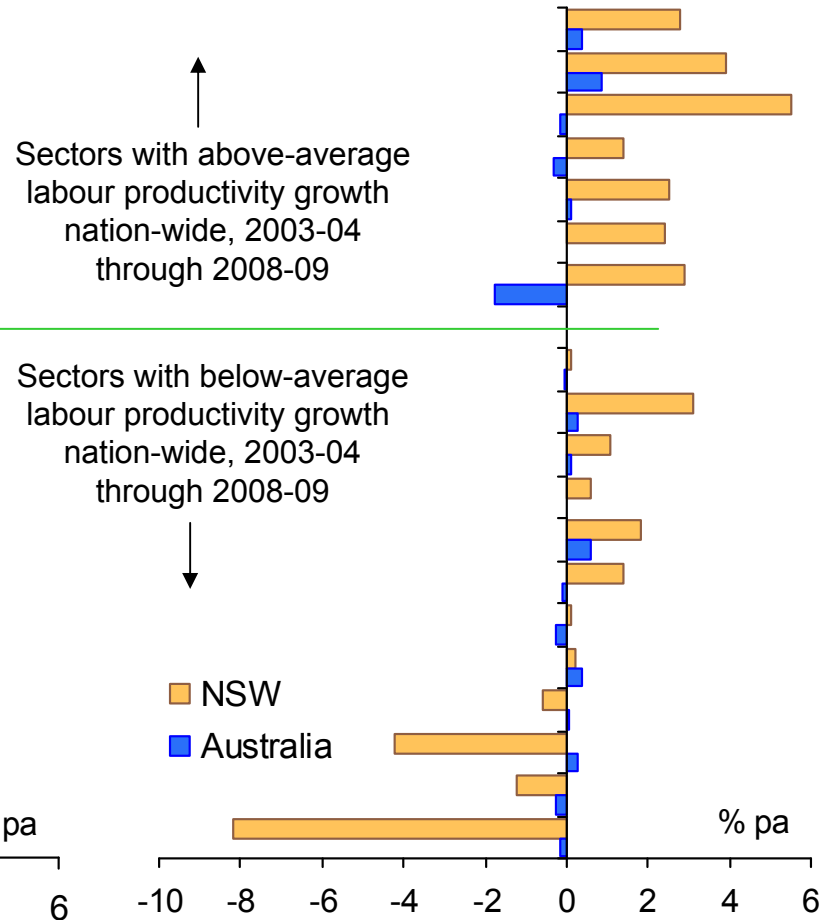
# Victoria has had relatively few sectors in which labour productivity growth exceeded the corresponding national average over the past five years

## Labour productivity growth by industry, 2003-04 through 2008-09

### Victoria vs Australia



### NSW vs Australia

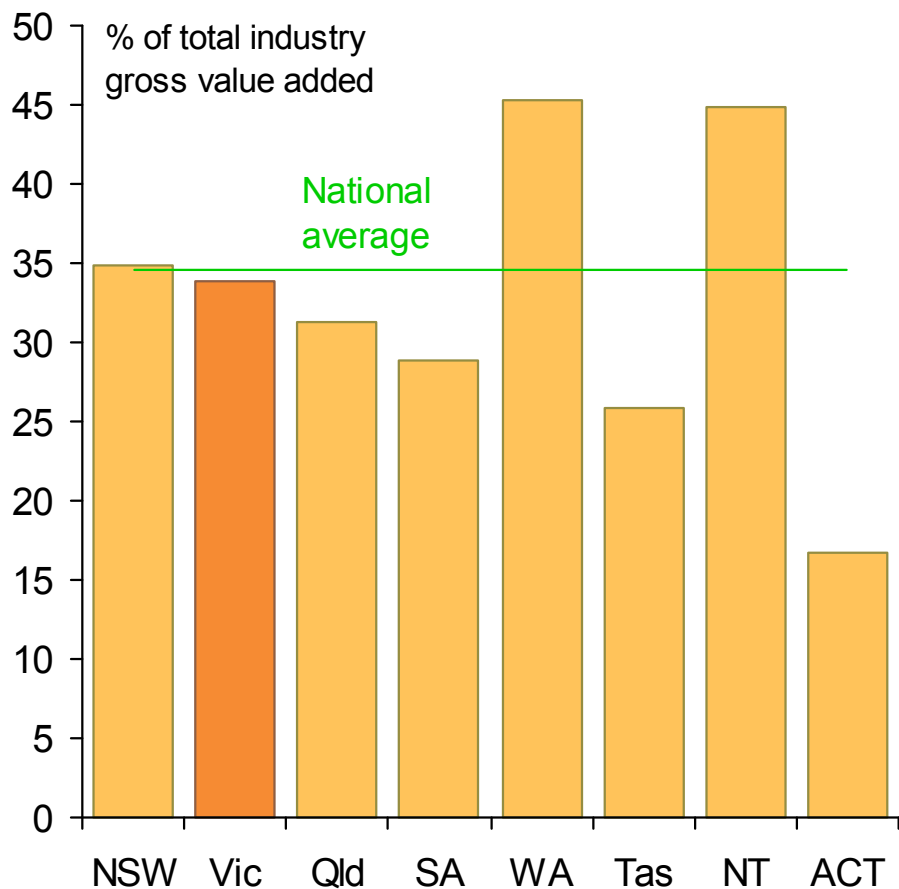


Note: 'Gross value added in industry' is here the sum of GVA in each of the sectors shown above; it excludes GVA in ownership of dwellings as well as net indirect taxes and the statistical discrepancy

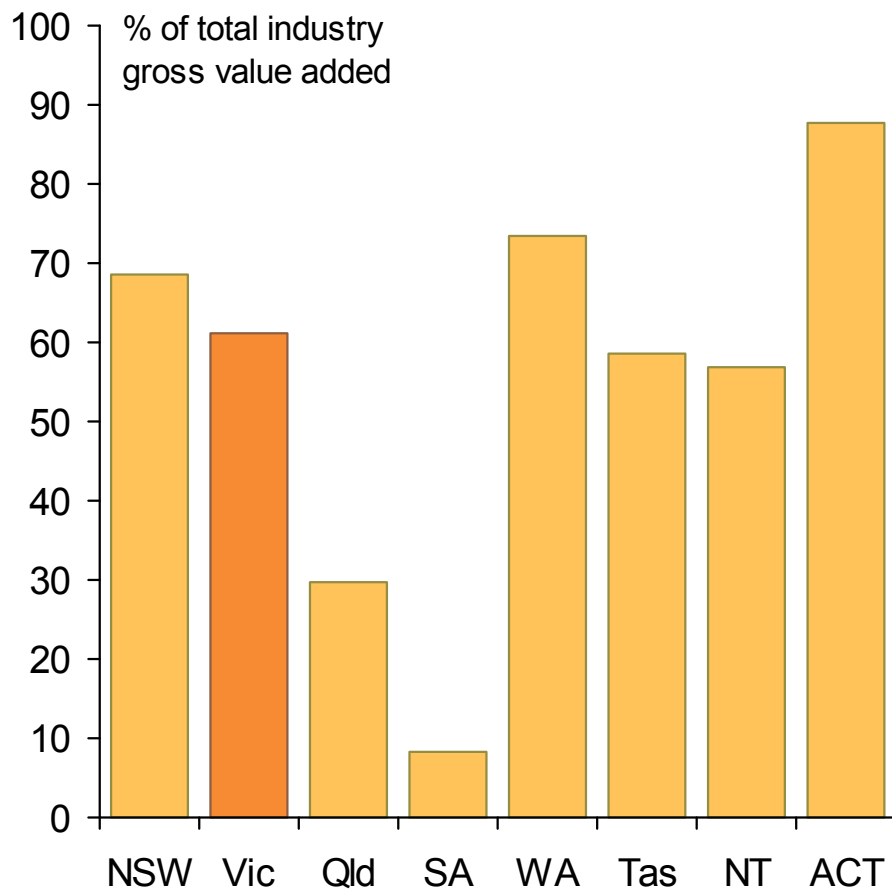
Sources: ABS : Australian System of National Accounts (5204.0) and State Accounts (5220.0), and Grattan Institute calculations..

# Industry mix and industry-specific productivity performance affect relative overall productivity of States & Territories in different ways

Proportion of total gross value added derived from 'high productivity' industries



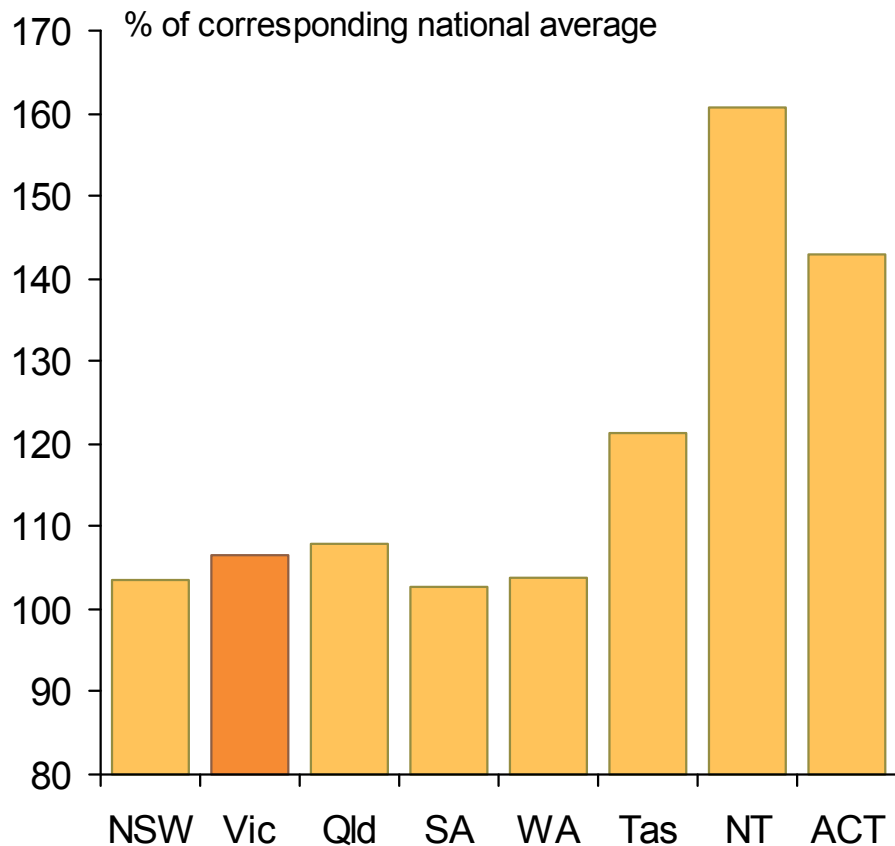
Proportion of total gross value added derived from industries where productivity exceeds the national average for that industry



Sources: ABS State Accounts (5220.0) 2008-09; and *The Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003); and Grattan Institute calculations. 'High productivity' industries are mining, finance & insurance, electricity gas & water, rental hiring & real estate services, information media & telecommunications services, and wholesale trade.

# Victoria's above- and below-average productivity sectors aren't too far away from the national averages

Labour productivity of sectors in which productivity was above the corresponding national average in 2008-09



Labour productivity of sectors in which productivity was below the corresponding national average in 2008-09



Sources: ABS State Accounts (5220.0) 2008-09; and *The Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003); and Grattan Institute calculations. 'High productivity' industries are mining, finance & insurance, electricity gas & water, rental hiring & real estate services, information media & telecommunications services, and wholesale trade.

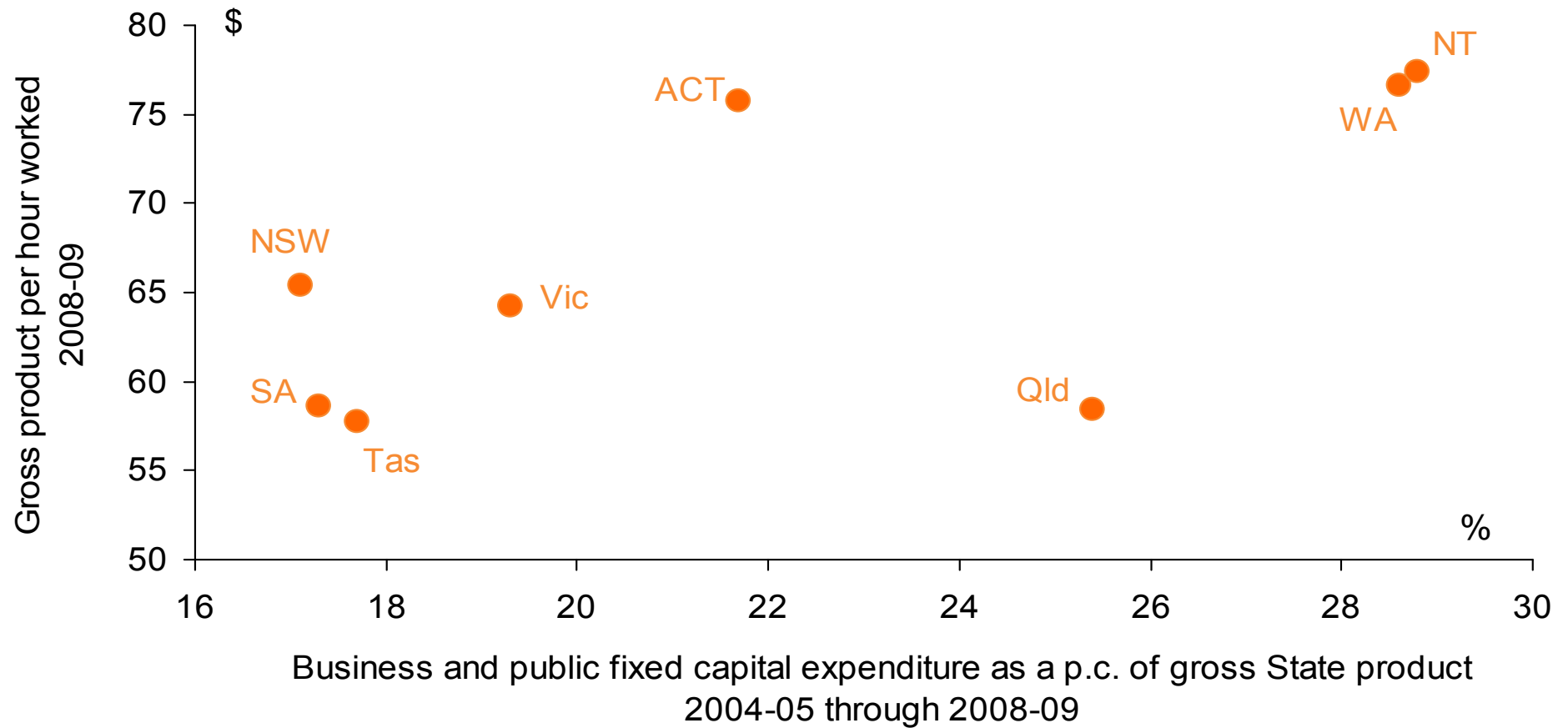
# Productivity growth comes from three major sources

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- **Investment in physical and ‘intangible’ capital**
  - plant and equipment, buildings and structures
  - software, intellectual property
- **Investment in ‘human’ capital**
  - skills and education of the workforce
  - formal (institution-based) and on-the-job learning
- **Innovation**
  - new products
  - new ways of producing existing products
  - new ways of organizing and managing existing processes

# Relatively high levels of fixed capital investment tend to be associated, over time, with high levels of labour productivity

## Non-residential investment and labour productivity by State and Territory



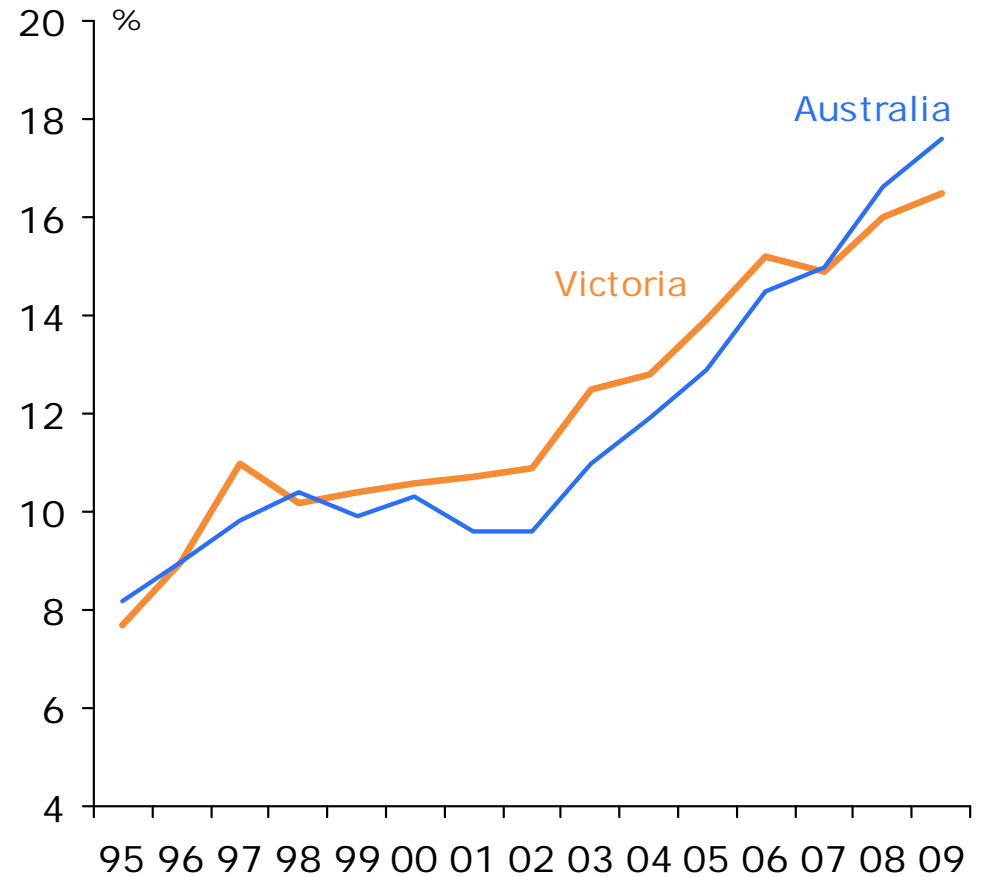
Source: ABS State Accounts (5220.0) 2008-09; and Grattan Institute calculations.

# Victoria invests a relatively large share of its income considering that its mining sector is so small

**Fixed capital investment as a pc of gross product, 2008-09**



**Business investment as a pc of gross product, 1994-95 to 2008-09**



Source: ABS State Accounts (5220.0) 2008-09

# There's a strong correlation between levels of educational attainment in the work force and labour productivity

## Labour productivity and educational attainment, 2008-09

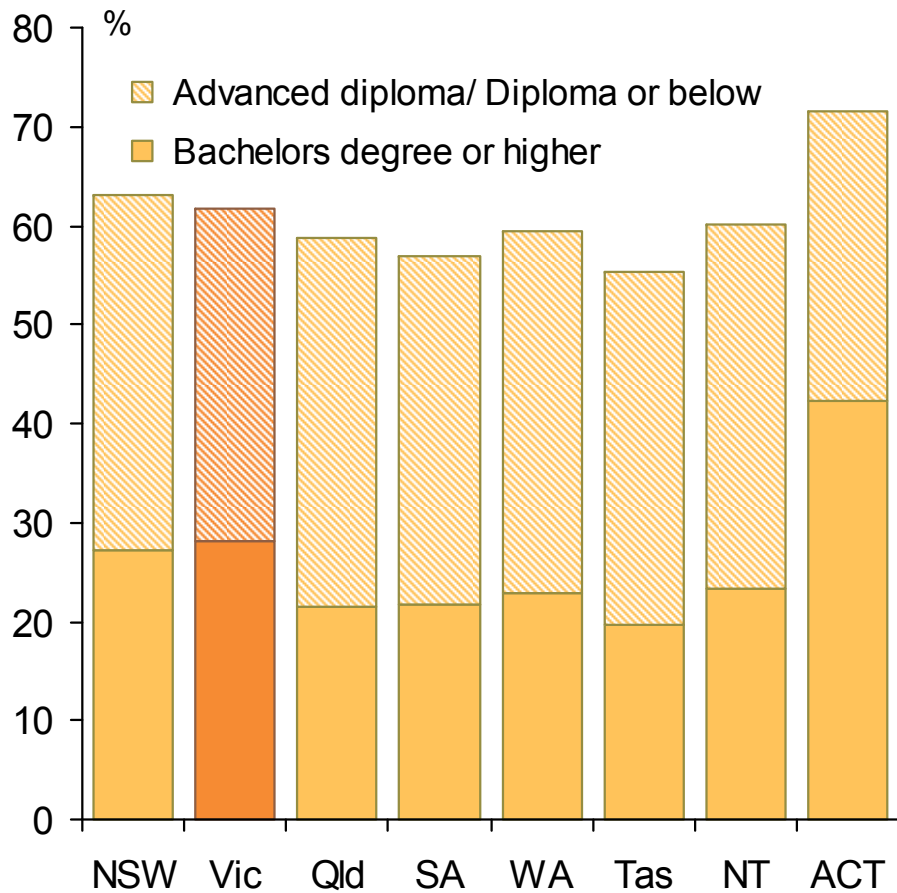


Source: ABS State Accounts (5220.0) 2008-09; Survey of Education and Work (6227.0) May 2009.

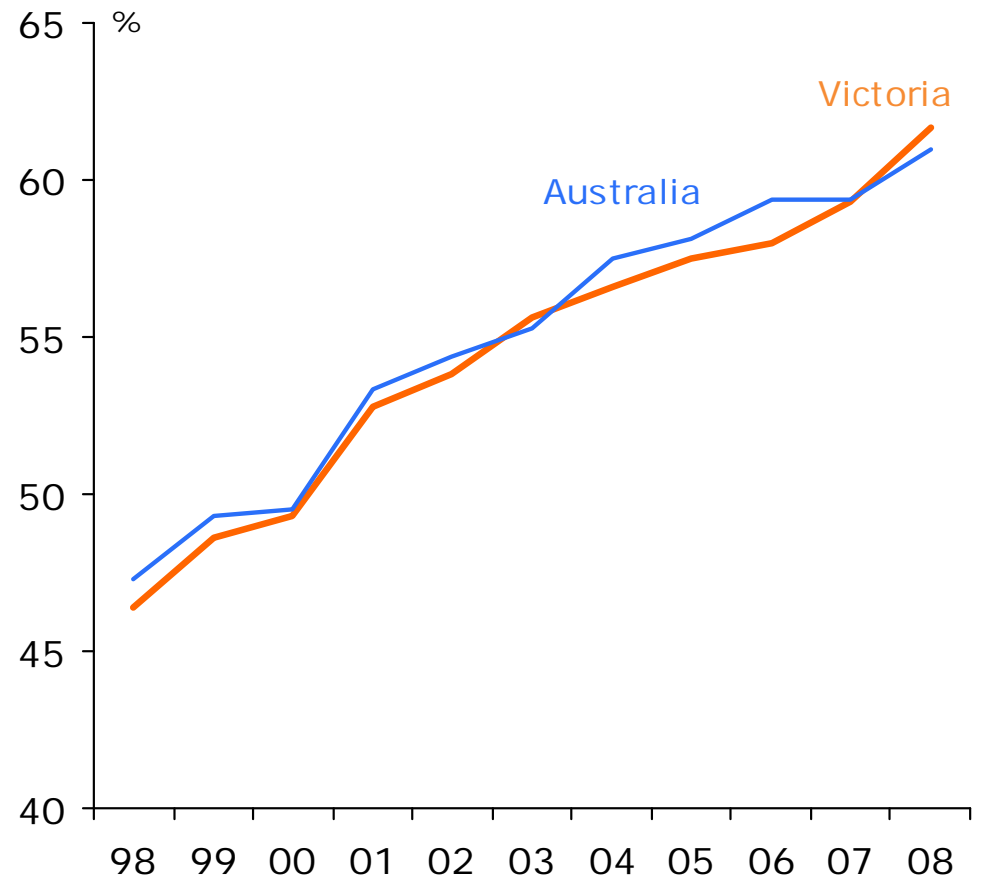
# A relatively high proportion of Victorians (though fewer than in NSW) have a post-secondary qualification

## Proportion of persons aged 25-64 with post-school qualifications

### By State and Territory, 2008



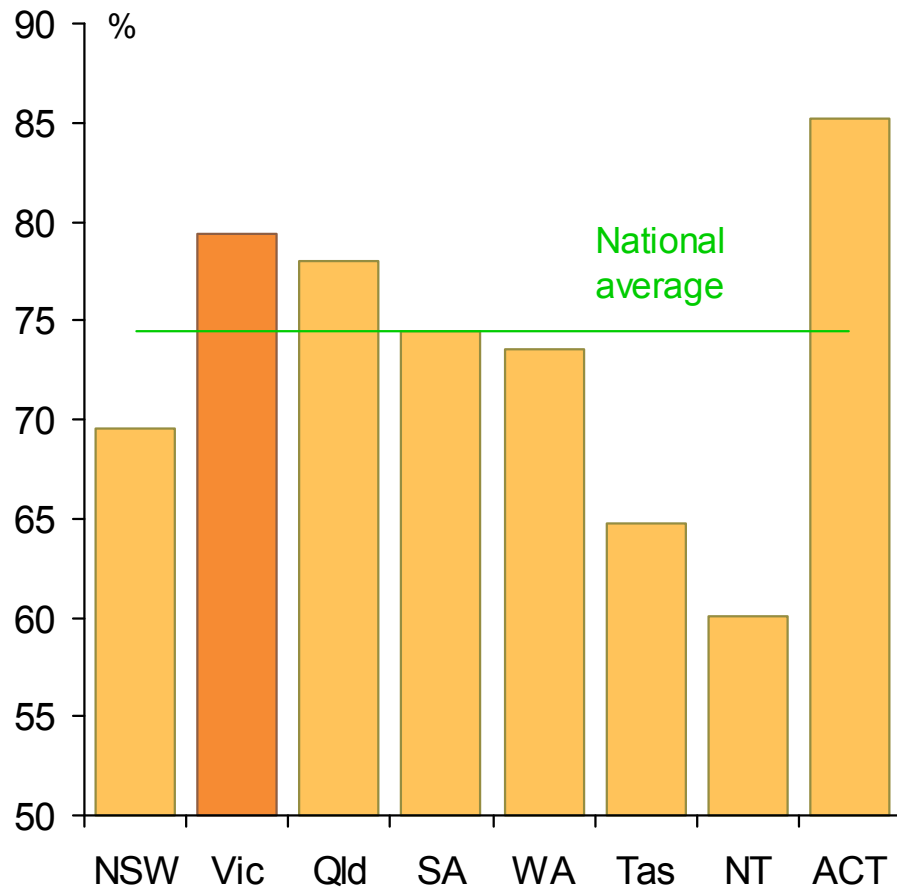
### Victoria and Australia, 1998-2008



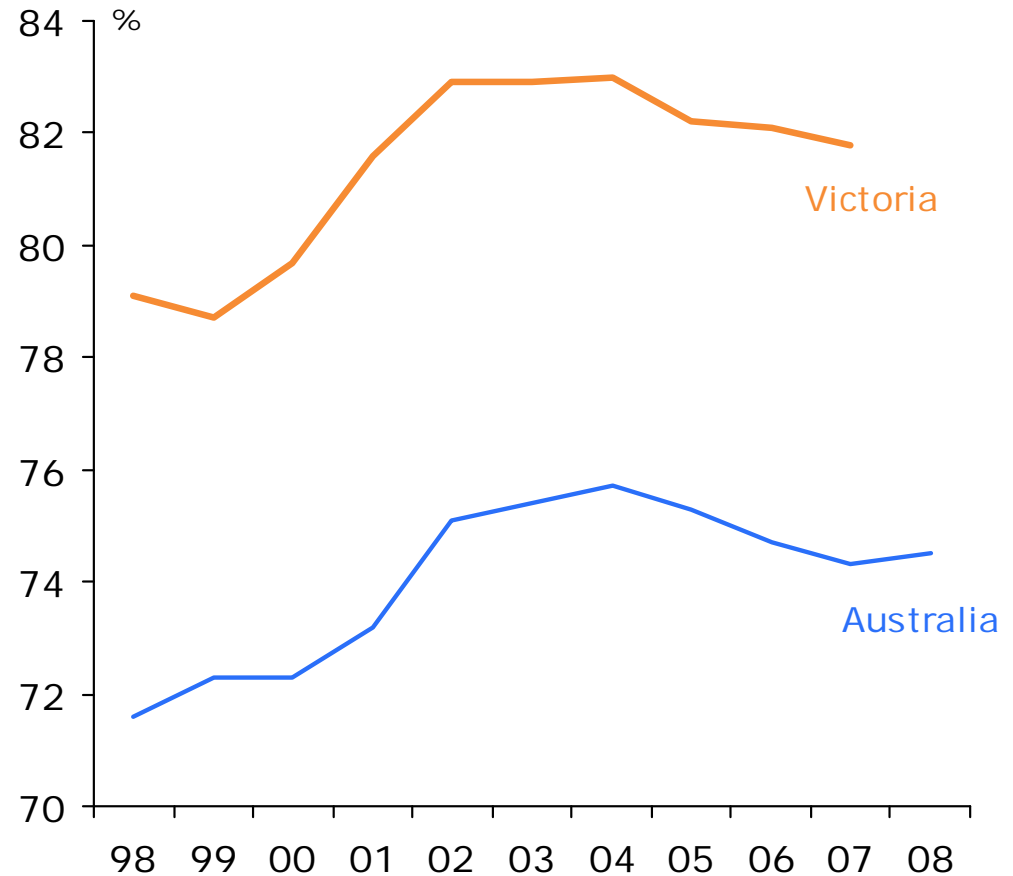
# More Victorians complete secondary education up to Year 12 than anywhere else except the ACT

## Apparent school retention rates, Years 7/8 to Year 12

### By State and Territory, 2008



### Victoria and Australia, 1998-2008

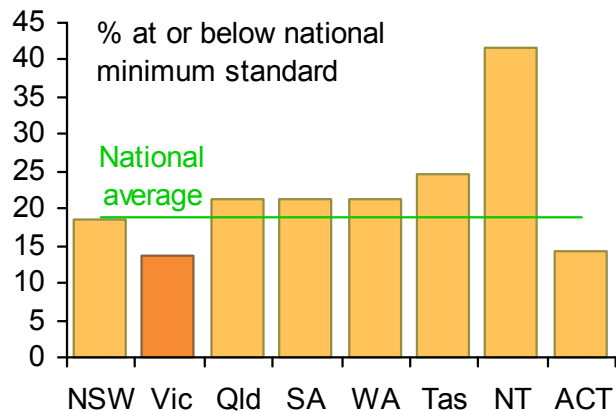


Source: ABS Social Trends (4102.0).

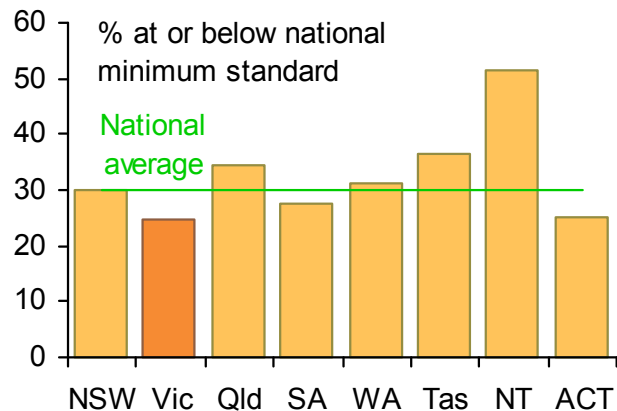
# Victorian schools do better than schools in most other States in achieving or exceeding minimum standards

## % of Year 9 students at or below minimum NAPLAN standards, 2009

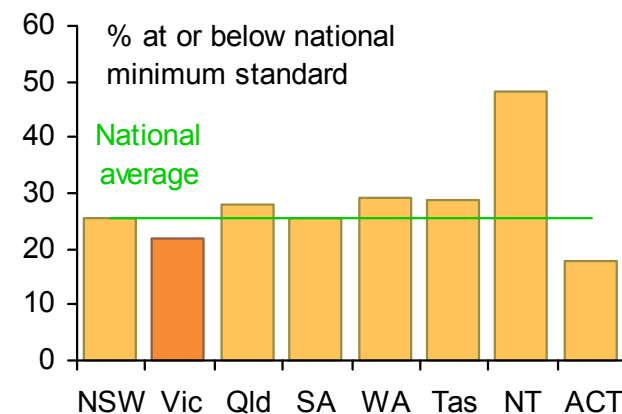
### Numeracy



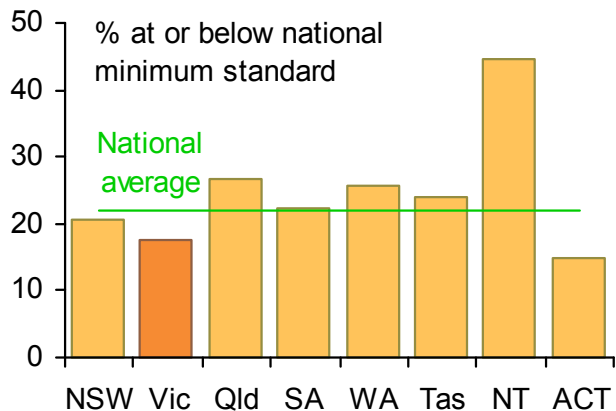
### Writing



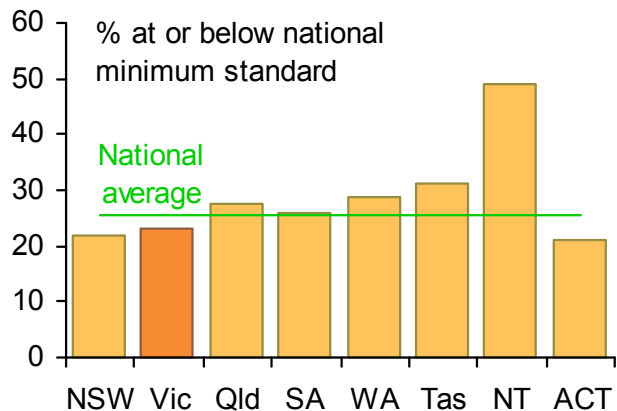
### Grammar & punctuation



### Reading



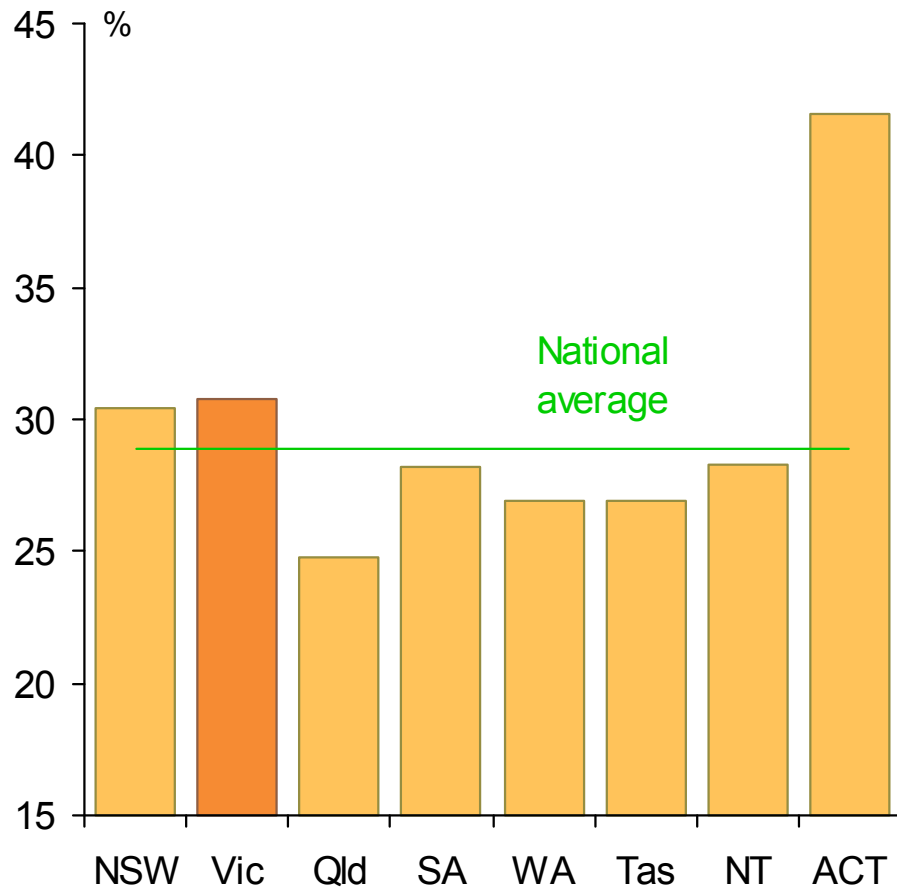
### Spelling



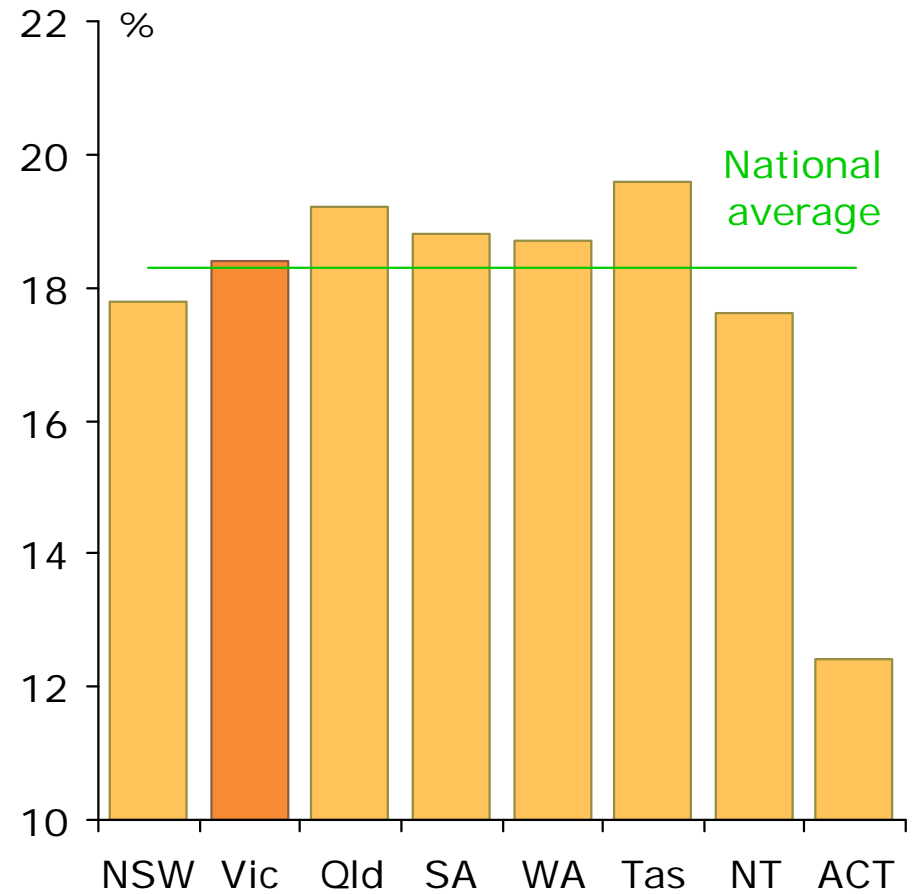
*Note:* These charts show the proportion of school children achieving at or below the national minimum benchmark for each 'domain'; hence, crudely, 'the lower the figure the better'.

# An above-average proportion of Victorians are employed in high-skill occupations, and a roughly average proportion in low-skill ones

Pc of workforce employed in highest-skill occupations, 2008-09



Pc of workforce employed in lowest-skill occupations, 2008-09

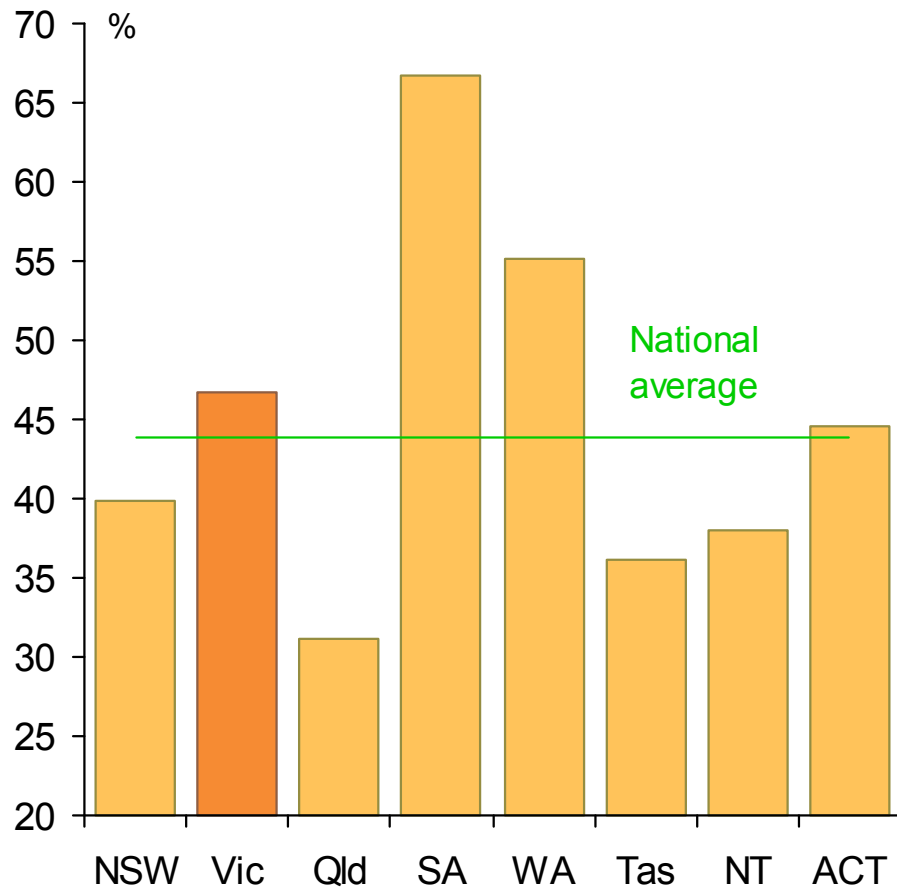


Source: ABS, Labour Force, Australia, Detailed, Quarterly (6291.0.55.003)

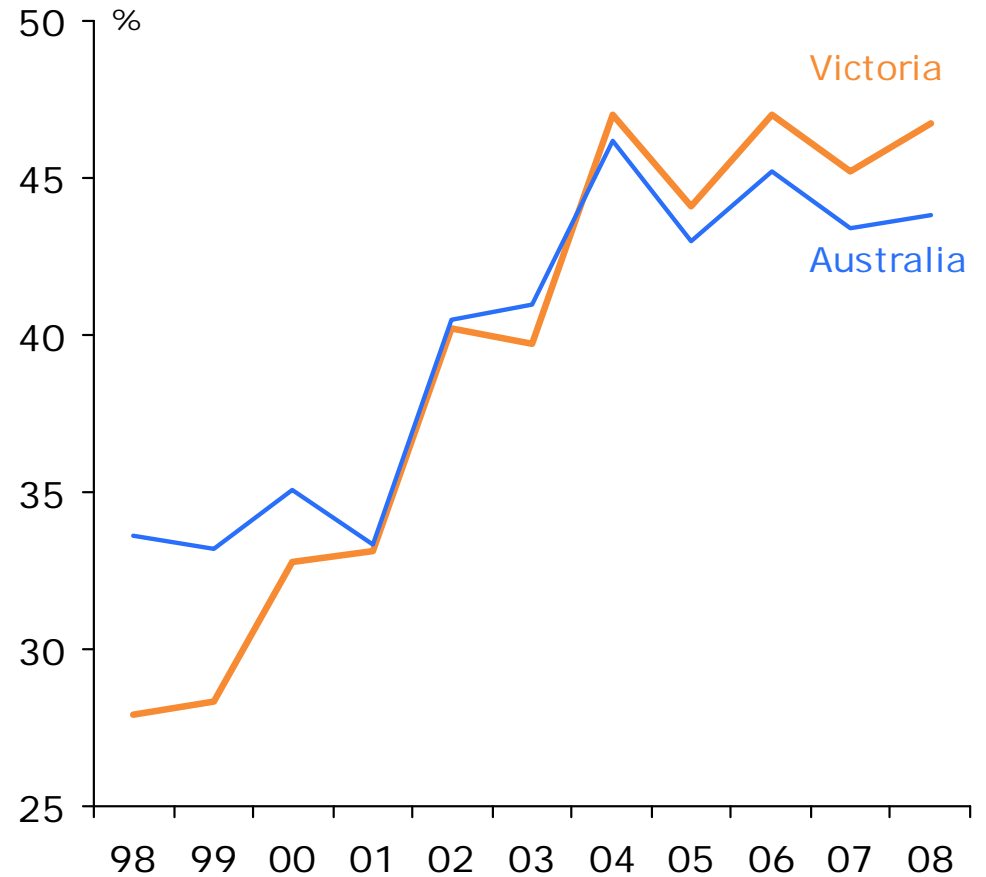
# Immigration is boosting Victoria's skill base

## Skilled immigrants as a p.c. of total settler arrivals

By State and Territory, 2008



Victoria and Australia, 1998-2008

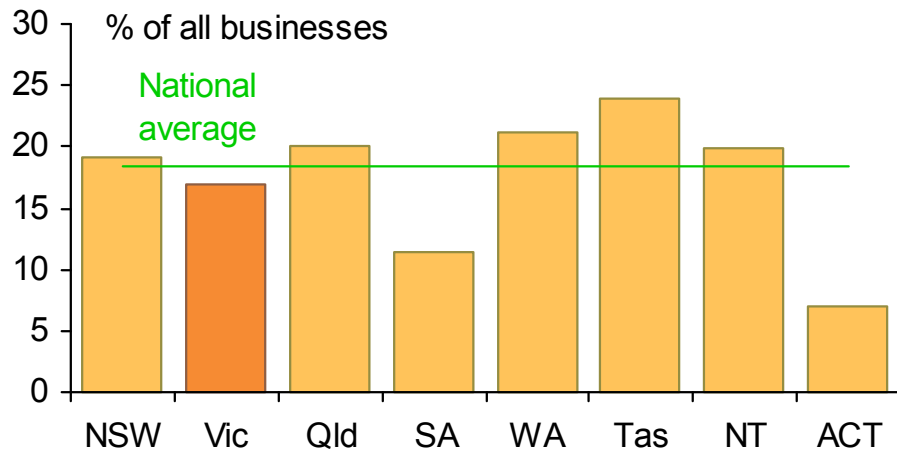


Source: Department of Immigration and Multicultural Affairs, *Settler Arrivals*.

# Victorian businesses appear to have been a little less likely to engage in innovation than businesses in most other States and Territories

## Business innovation, by State and Territory – 2006-07

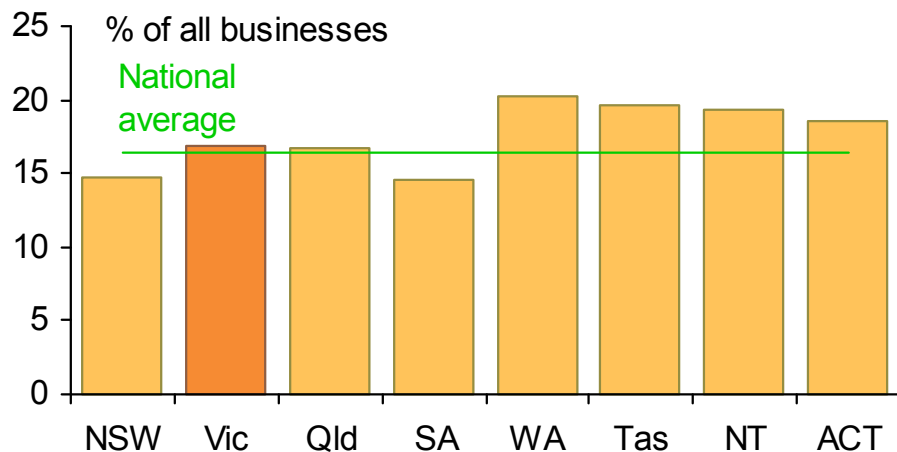
### New goods or services



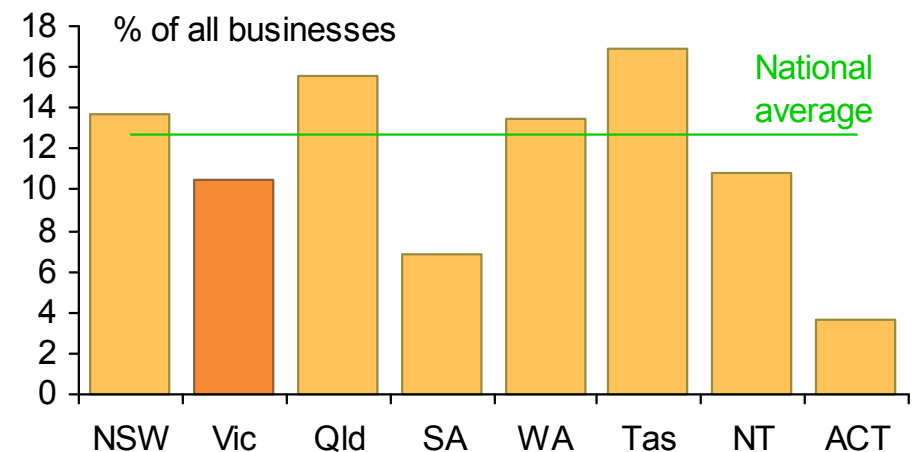
### New operational processes



### New organizational or managerial processes



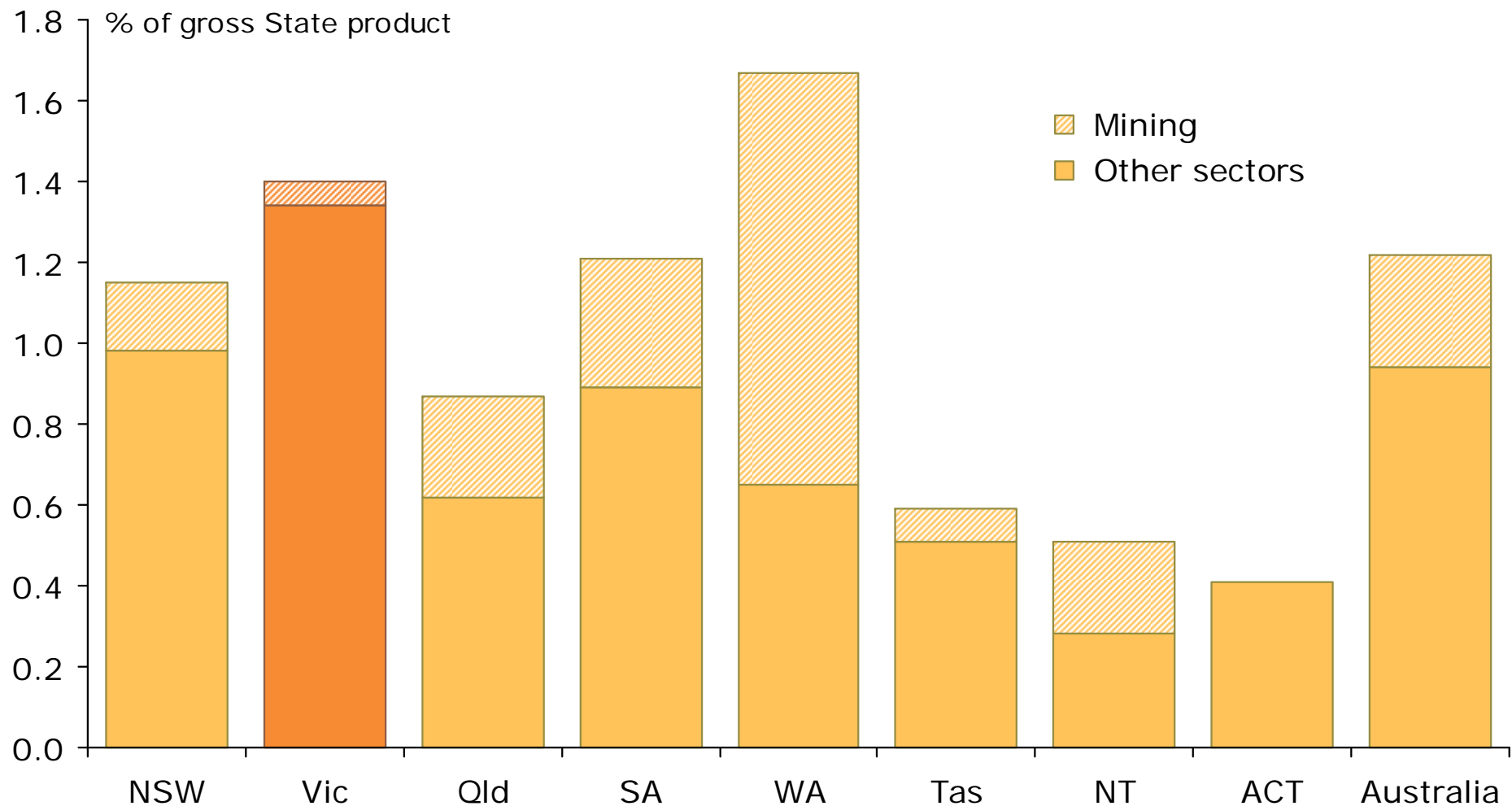
### New marketing methods



Source: ABS, *Innovation in Australian Business* (8158.0) 2006-07.

## ... although Victorian business spending on R&D is well above the national average

### Business spending on R&D, by State and Territory – 2007-08



Sources: ABS, *Research and Experimental Development* (catalogue no. 8104.0), 2007-08, Grattan Institute.

# Four insights from a recent McKinsey study

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- **Productivity of individual sectors matters more than ‘sector mix’**
  - the strongest-performing sectors vary from region to region
  - what above regions have in common is that their largest sectors (whatever they are) maintain strong growth
- **Services sector productivity and competitiveness is critical**
  - services sectors have accounted for almost all net jobs growth in high-income countries over the past two decades
- **Government policies can strongly influence productivity and competitiveness in sectors not directly exposed to international trade or global competition**
  - regulation that facilitates business entry tends to increase competition and productivity
  - flexible hiring laws and part-time employment arrangements correlate with higher employment and more rapid adjustment to change
- **Competitiveness in ‘new innovative sectors’ is not enough to boost economy-wide employment and growth**
  - these sectors are too small to make a difference to economy-wide growth
  - access to talent and favourable demand conditions are more important than tax incentives or direct government involvement

# Conclusions

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- **Victorian labour productivity is slightly below the national average, and (in particular) lower than in New South Wales**
- **This ‘productivity gap’ is largely due to Victoria’s economic structure**
  - **Victoria has a below-average share of a number of ‘high-productivity’ sectors (especially mining) and an above-average share of ‘low-productivity’ sectors**
- **However this ‘structural’ effect is partly offset by higher sector-specific labour productivity in sectors accounting for a majority of Victoria’s economy**
- **The ‘productivity gap’ between Victoria and the national average (and NSW) has narrowed over the past decade**
  - **although the reasons for this narrowing are (unfortunately) difficult to identify from industry-level data, and instead reflect differences in the contributions of dwelling ownership, net indirect taxes and the ‘statistical discrepancy’ to GSP growth**
- **There’s not a lot that Victoria can pro-actively do about its industry structure**
- **Rather, policy should strive to enhance the productivity performance of the sectors which it has ...**
  - **which will almost certainly require different approaches in different sectors**
- **... and to improve further the economy-wide ‘enablers’ of productivity growth**
  - **education and training, the investment climate, the scope for competition, and the regulatory environment**