



Innovation and productivity: new evidence from businesses

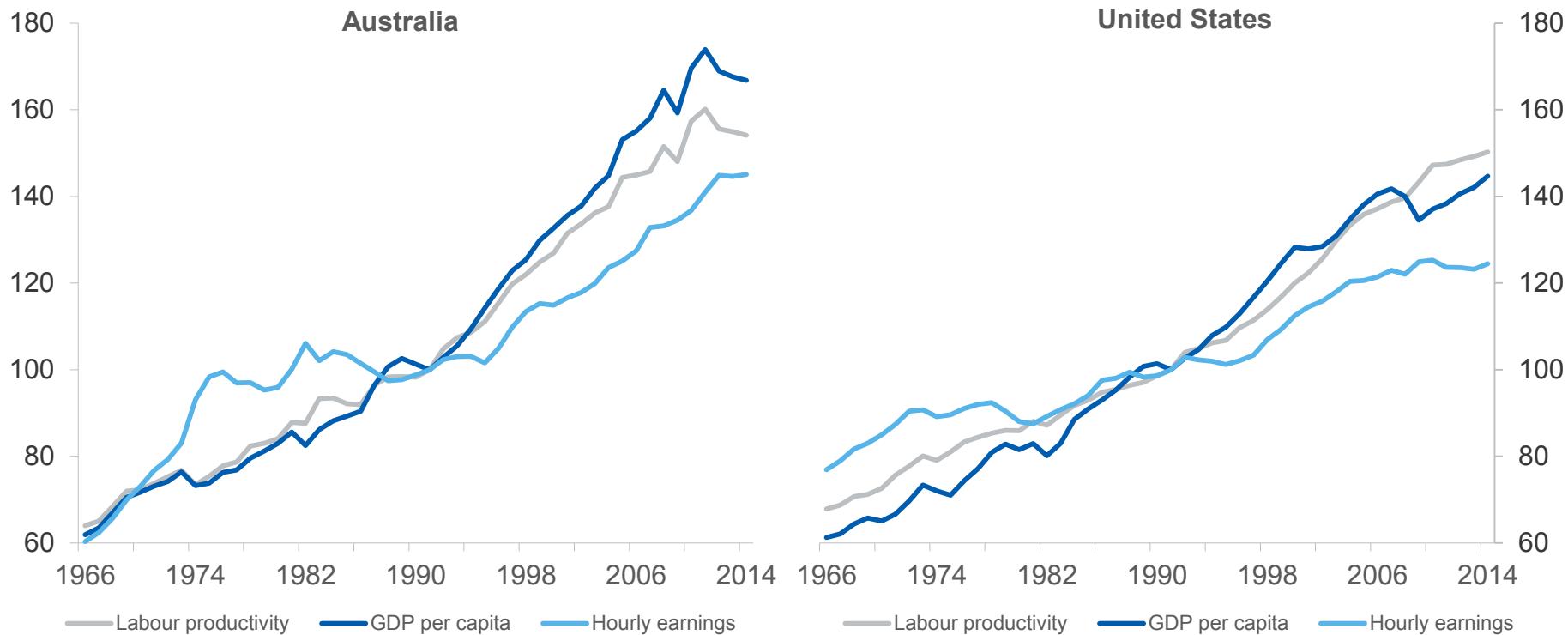
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Office of the Chief Economist
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Unbroken economic growth delivers dividends

Australia has outpaced US in living standards growth over last 25 years, but not productivity

Growth in productivity, GDP per capita and hourly earnings, Australia and US, 1966–2014 (1991=100)

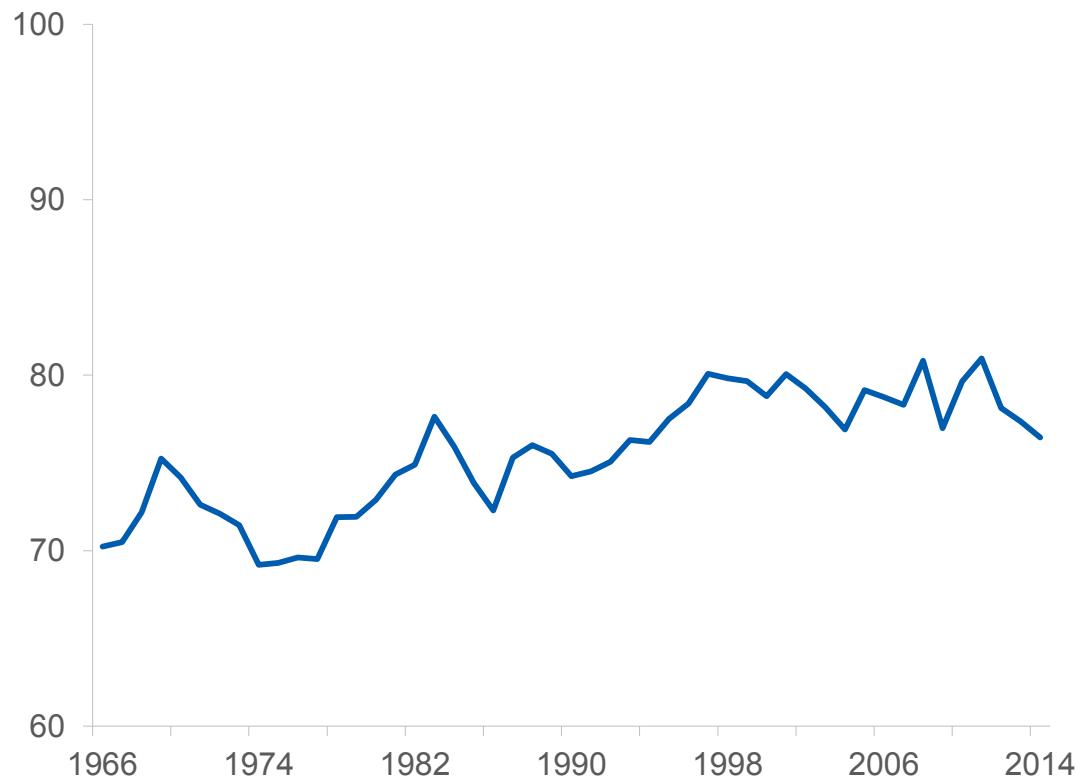


Source: Penn World Table 9.0 for labour productivity and GDP per capita. For hourly earnings, derived from national accounts and price indices. See Cully (forthcoming) for details.

Notes: Hourly earnings is compensation of employees per hour worked, deflated by CPI.

Australia still a long way from the global frontier

Australian productivity as a proportion of the United States, 1966–2014 (per cent)



After edging up in the 1990s, Australia's productivity performance relative to the United States has plateaued

The current gap is equal to 15 years, i.e. in 2014, Australia's labour productivity level was the same as that of the United States in 1999.

Source: Penn World Table 9.0

Notes: Productivity is GDP per hour worked in constant 2011 \$US

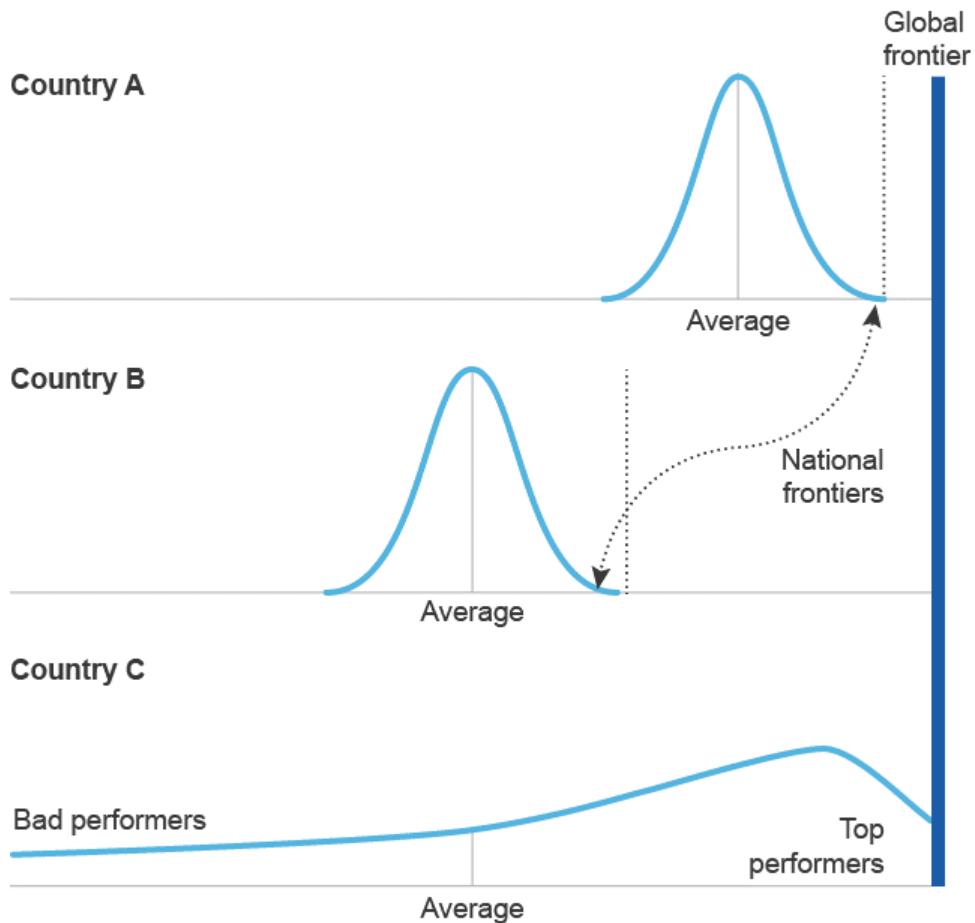
Thinking about productivity and the frontier

There are large and persistent productivity differences between businesses

Different means to raise the national average:

- target growth of firms at the frontier
- raise across the board by promoting innovation
- assist under-performers to lift their performance
- enhance competition to drive out bad performers

Stylised depiction of productivity dispersion

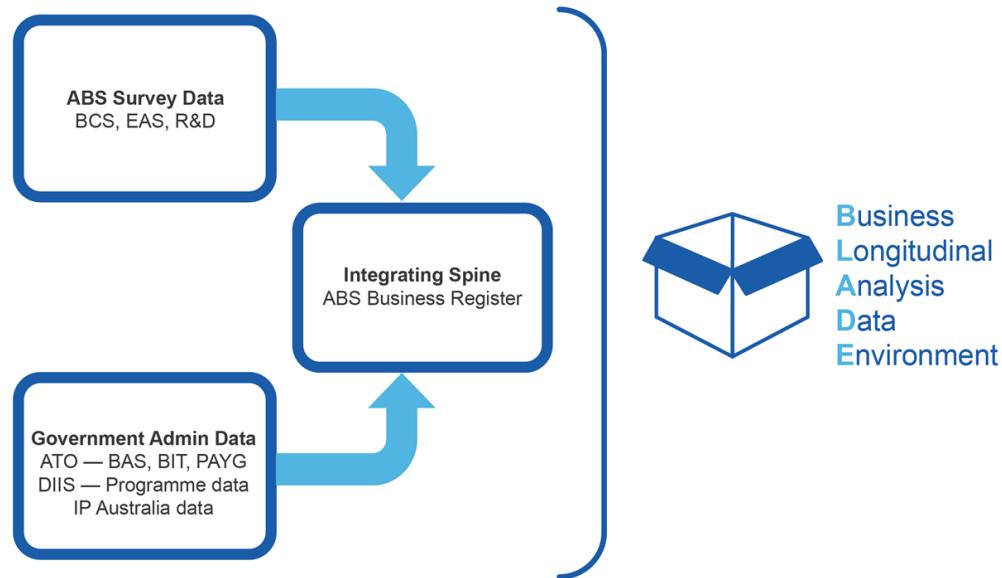


Source: OECD, Future of Productivity, 2015

What evidence do we have on what works?

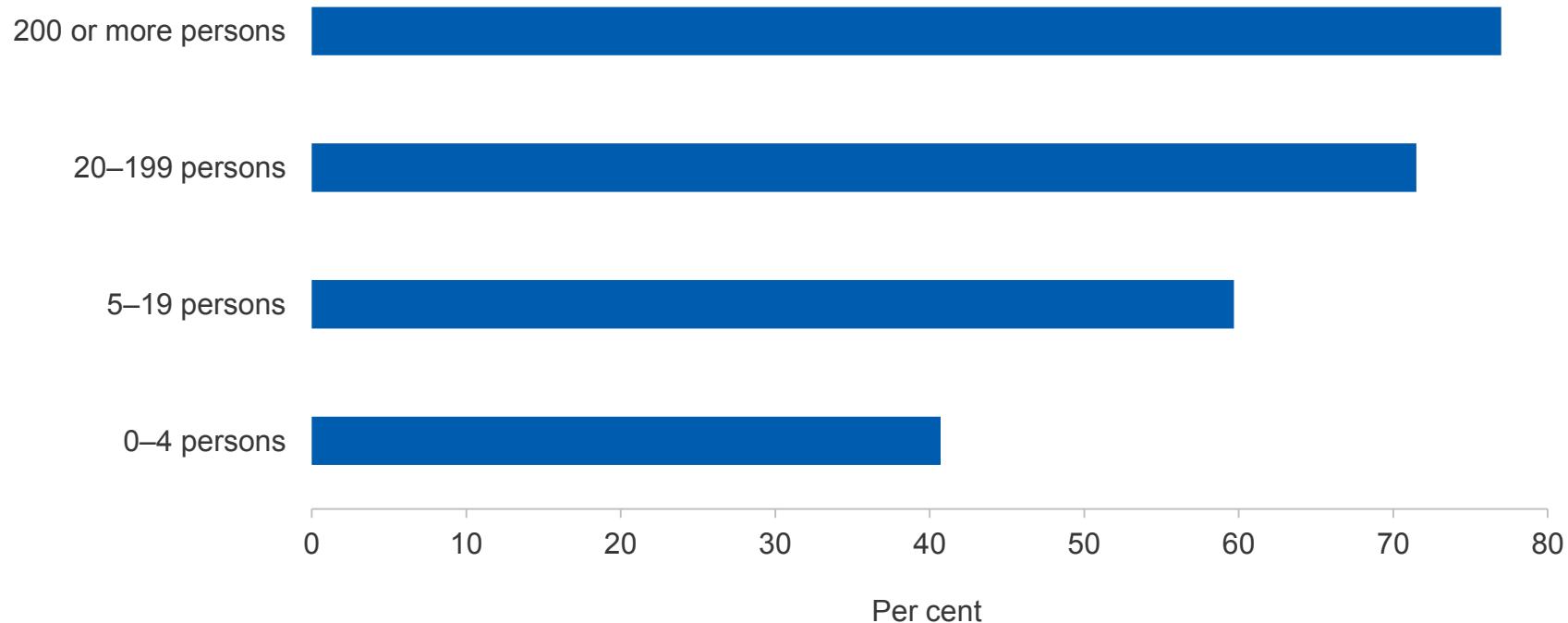
5 examples of new Australian evidence on business performance

1. Who innovates and what is the pay-off?
2. Who creates the most new jobs?
And who destroys jobs?
3. Is investing in R&D good for you?
4. Is exporting good for you?
5. How important are 'gazelles'?



Large businesses are more innovative

Percentage of innovation active firms by firm size, 2015–16



Source: ABS cat. no. 8166.0 — Summary of IT Use and Innovation in Australian Business, 2015–16

A quick aside: replicate via the Industry Monitor

Published today: interactive data on industry, innovation, science, resources & business

Industry Report | Innovation System Report | Resources and Energy Quarterly | Office of the Chief Economist

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Innovation-active Businesses | Expenditure on R&D | Industry R&D | Collaboration

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Innovation Innovation-active Businesses

An **innovation-active business** is one that has undertaken any innovative activity irrespective of whether the innovation was introduced, still in development or abandoned.

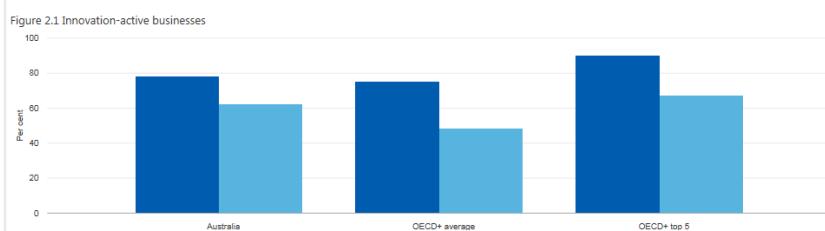
Firms that collaborate on innovation are significantly more likely to report productivity and profitability growth, especially if it is with research organisation partners. They are also significantly more likely to introduce more novel innovations. See the latest [Australian Innovation System Report](#) for further details.

Australian data on innovation-active businesses is captured by the ABS through the Business Characteristics Survey (BCS). Innovation-active businesses are asked: "During the [reference] year, from where did this business source ideas and information for the development or introduction of new goods, services, processes or methods?" Businesses are then asked to tick a range of market (e.g., customers and suppliers) and institution sources (e.g., universities).

OECD country data is sourced via the Community Innovation Survey (CIS). Businesses are asked to rate the importance of a variety of sources to their business' innovation activities. Because the CIS ratings are qualitative and subjective, the two international comparison figures may be subject to risks of bias and misinterpretation. OECD+ includes all countries in the OECD, as well as China, Taiwan and Singapore.

[Download CSV Data \(78kb\)](#)

Figure 2.1 Innovation-active businesses

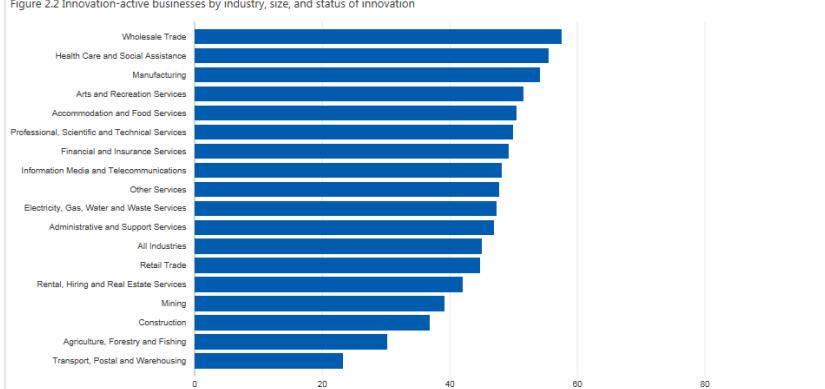


Region	Large Firms (%)	Small and medium-sized enterprises (%)
Australia	~75	~65
OECD+ average	~70	~50
OECD+ top 5	~85	~65

Fig 2.2 select type of innovation Fig 2.2 select firm size

Innovation-active businesses Total

Figure 2.2 Innovation-active businesses by industry, size, and status of innovation



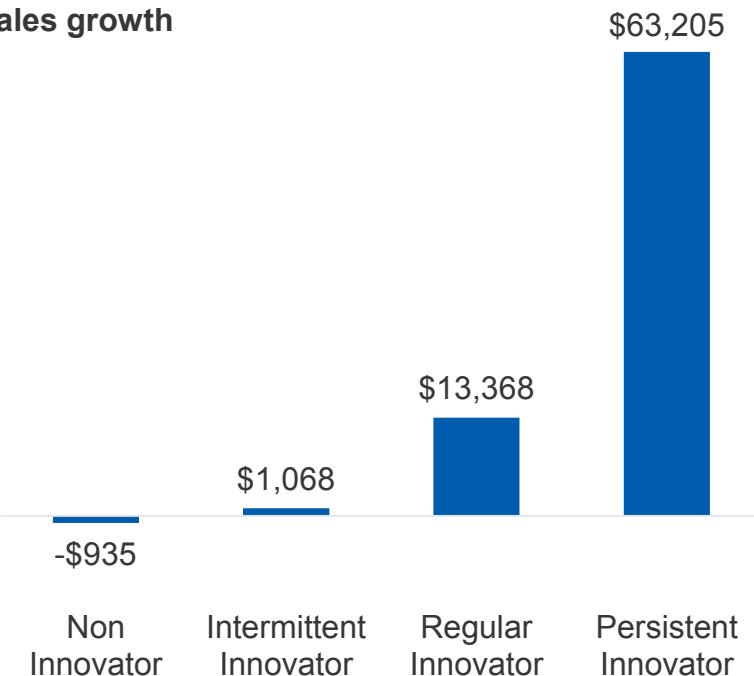
Industry	Percent (%)
Wholesale Trade	~58
Health Care and Social Assistance	~55
Manufacturing	~53
Arts and Recreation Services	~50
Accommodation and Food Services	~48
Professional, Scientific and Technical Services	~48
Financial and Insurance Services	~48
Information Media and Telecommunications	~45
Other Services	~45
Electricity, Gas, Water and Waste Services	~45
Administrative and Support Services	~45
All Industries	~45
Retail Trade	~45
Rental, Hiring and Real Estate Services	~42
Mining	~40
Construction	~38
Agriculture, Forestry and Fishing	~32
Transport, Postal and Warehousing	~25

Innovation improves business performance

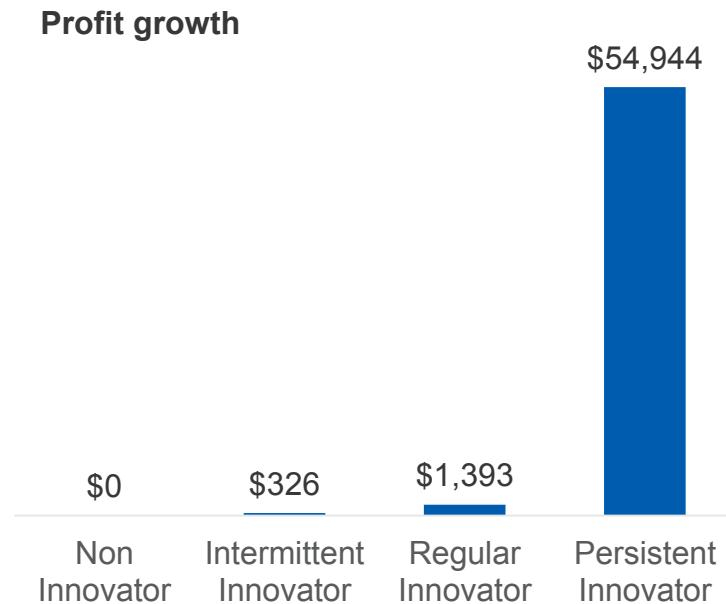
Innovative firms perform better on sales, profit, employment and value-added. Those that innovate more frequently show markedly higher results.

Sales growth and profit growth by frequency of innovation

Sales growth



Profit growth



Source: Australian Innovation System Report 2016

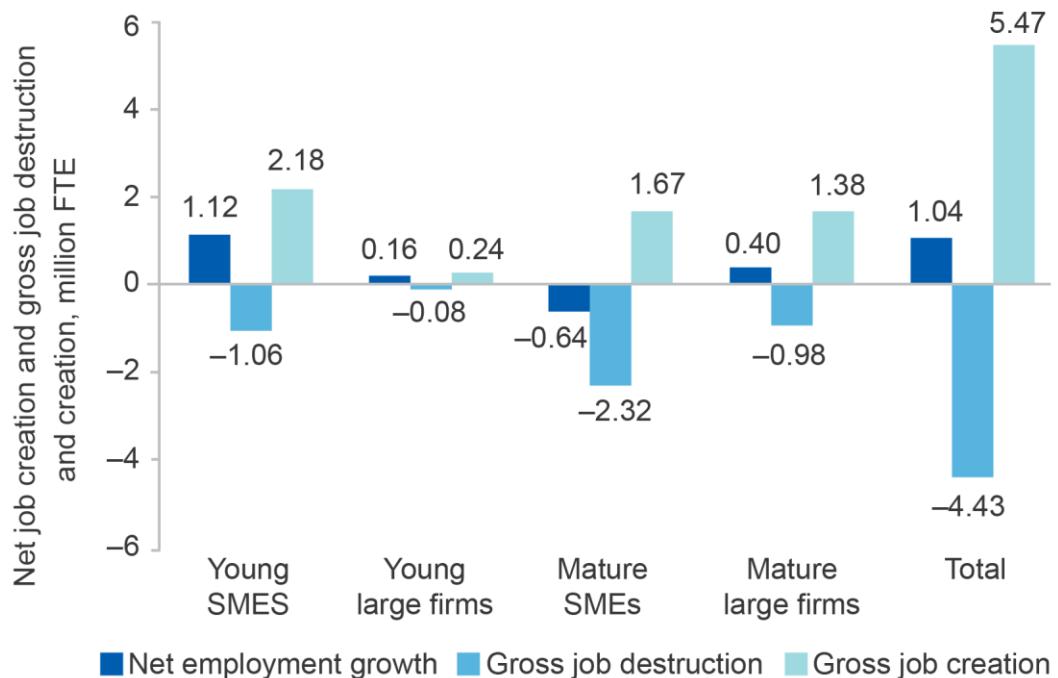
Young SMEs drive job growth

From 2006 to 2011:

- 1.04 million full time equivalent (FTE) jobs were added to the economy
- Young SMEs (aged 0–5 years) added 1.12 million jobs to the economy

This period coincides with the Global Financial Crisis. Magnitudes would differ in other periods. OECD analysis confirms though that young SMEs are consistently the main contributors to job creation.

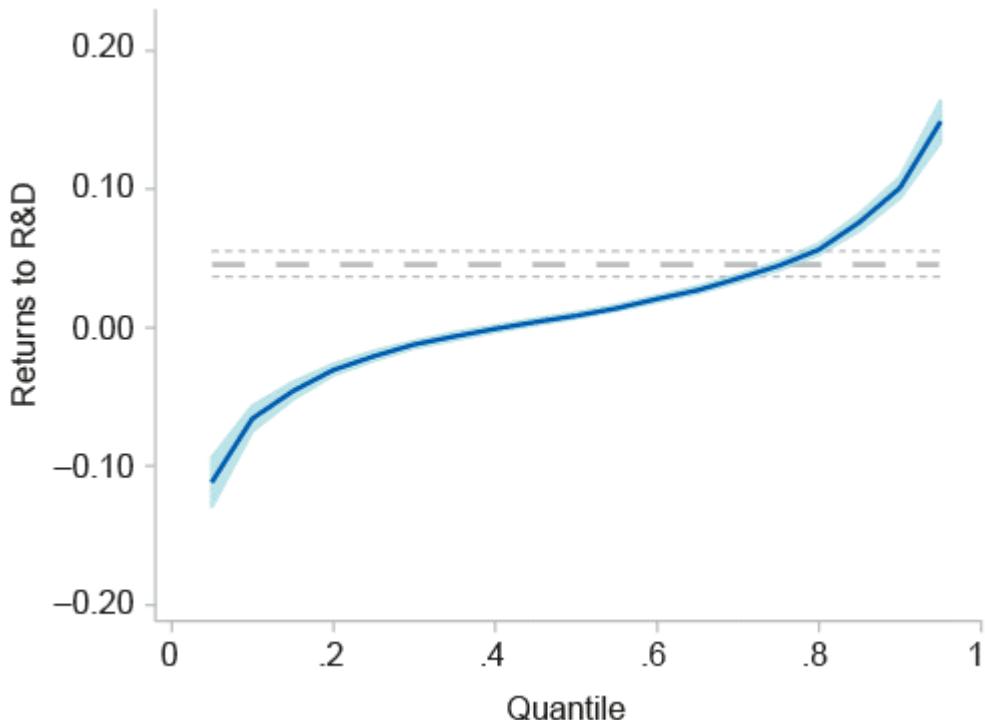
Levels of employment, job creation and job destruction by firm age and size, 2006–2011



Source: The employment dynamics of Australian entrepreneurship,
Office of the Chief Economist Research Paper No. 4/2015

Increasing R&D intensity boosts turnover

Impact of R&D intensity on turnover growth



Source: forthcoming in Australian Innovation System Report 2017

On average, increasing R&D intensity has a positive impact on turnover growth.

- Firms at the 90th percentile of the growth distribution benefit about 11 times more from increasing R&D intensity than the median firm.
- The analysis does not take into account spillover effects.
- Firms are likely to underinvest in R&D due to market failure – incomplete information and spillover effects. Due to this, there is a role for government intervention.

Exporters out-perform non-exporters

Exporters



On average, exporters **employ 24 per cent more** workers and **produce 40 per cent more** relative to non-exporters

Non-exporters



Full-time workers in exporting businesses are **over 13 per cent more productive**, and **receive 11.5 per cent more** in wages



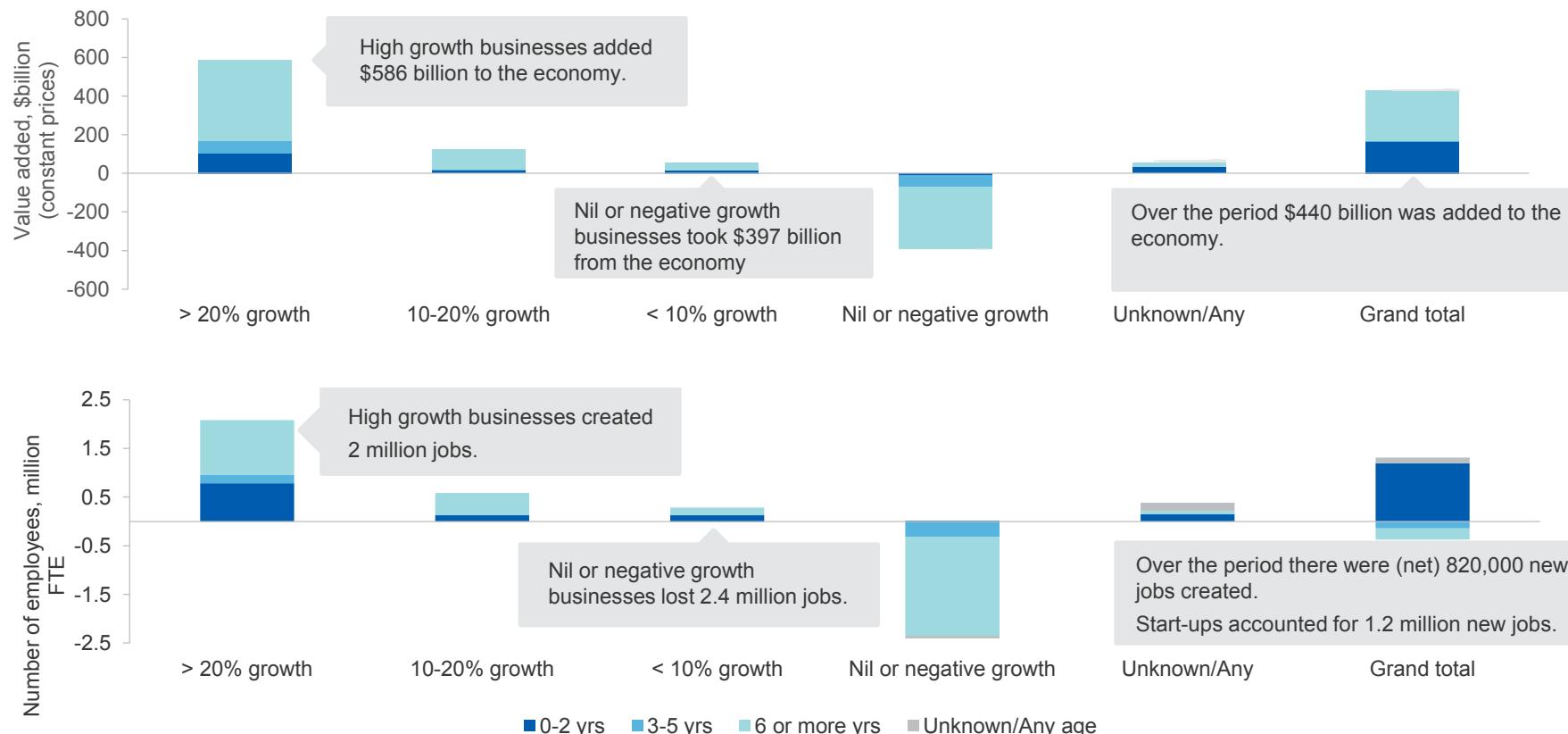
Exporters **commit 7.6 per cent more in capital expenditure** than non-exporters

Source: Australian Industry Report 2016

High growth firms are the engine room of growth

High growth firms account for all new jobs and all growth in economic activity

The net contribution of businesses to economic and employment growth, by business age and average annualised growth class, 2004-05 to 2010-11



Source: Australian Innovation System Report 2016

In summary



Australia's productivity performance has plateaued relative to the frontier



There are large growth pay-offs to:

- Persistent innovators
- Increasing R&D intensity
- Competing in international markets



High growth firms account for over 100 per cent of all job creation and growth in economic activity. They account for around 12 per cent of employing businesses in Australia.



Policy settings should facilitate the entry and scale-up of high growth firms through:

- Effective financial markets that provide ready access to capital
- Innovation networks that promote collaboration with researchers
- A high quality skilled workforce, strong on STEM, design and interactive skills
- Competition law and regulation that does not favour incumbents over new entrants

Further information



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