



RESERVE BANK OF AUSTRALIA

Technology and the Australian Labour Market

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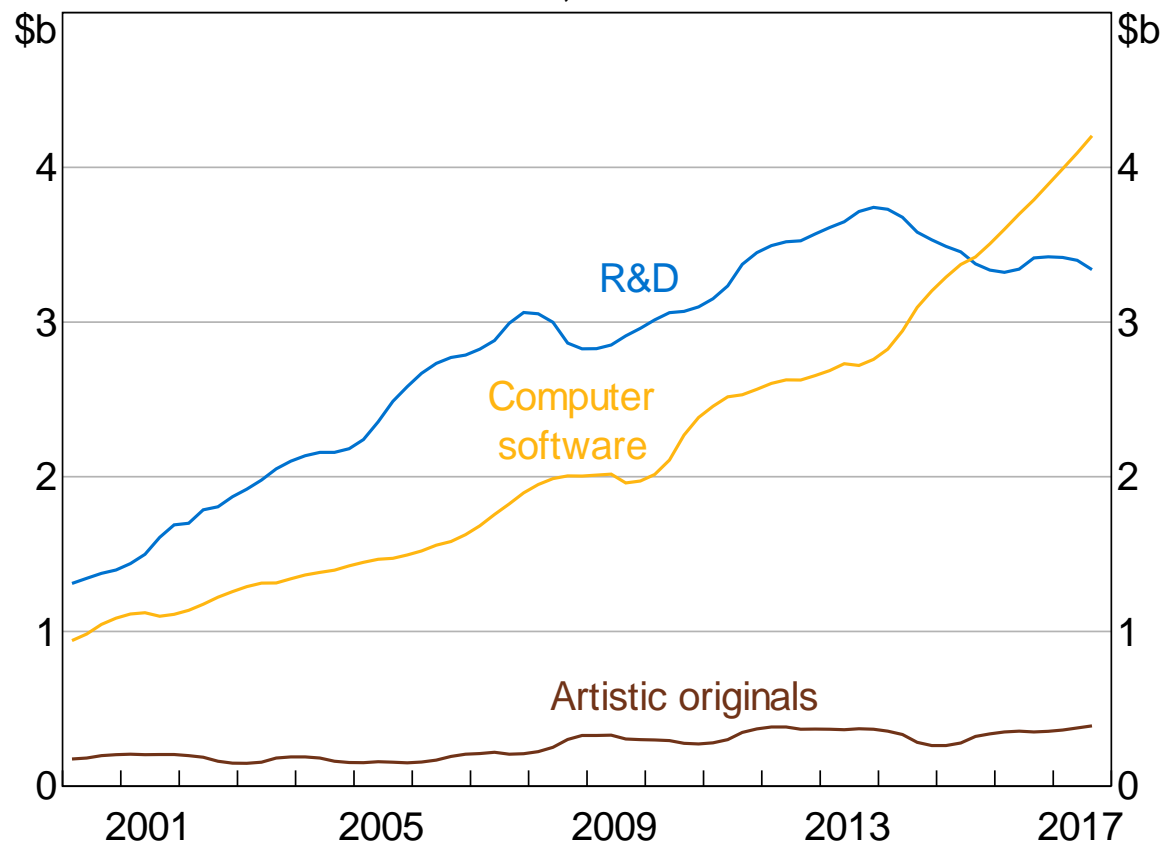
May 2018
Bank of England Chief Economists' Workshop

Investment, production and use of technology has grown rapidly

- Since early 1990s in Australia, industries with strongest output growth:
 - Information, media & telecommunications
 - Professional, scientific & technical services(Both stronger than mining!)
- Investment in intellectual property now accounts for 20% of total (non-mining) business investment
 - Up from 3% in early 1980s

Non-mining Intellectual Property Investment

Chain volume, RBA estimates

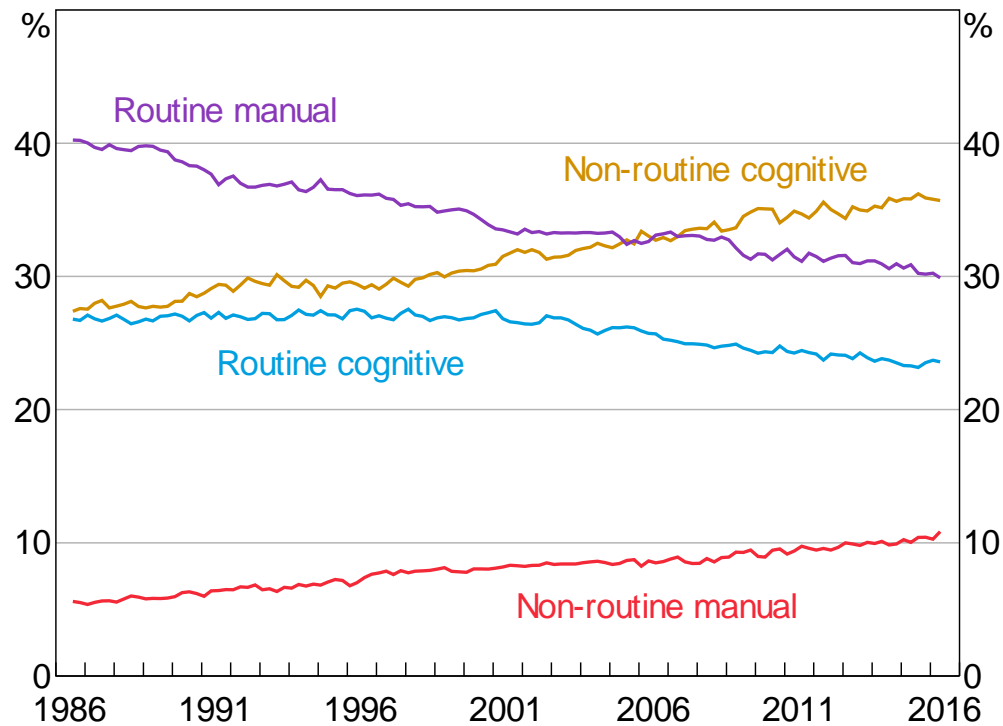


Sources: ABS; RBA

Structure of the workforce has changed...

Employment by Skill Type*

Per cent of total



* Non-seasonally adjusted

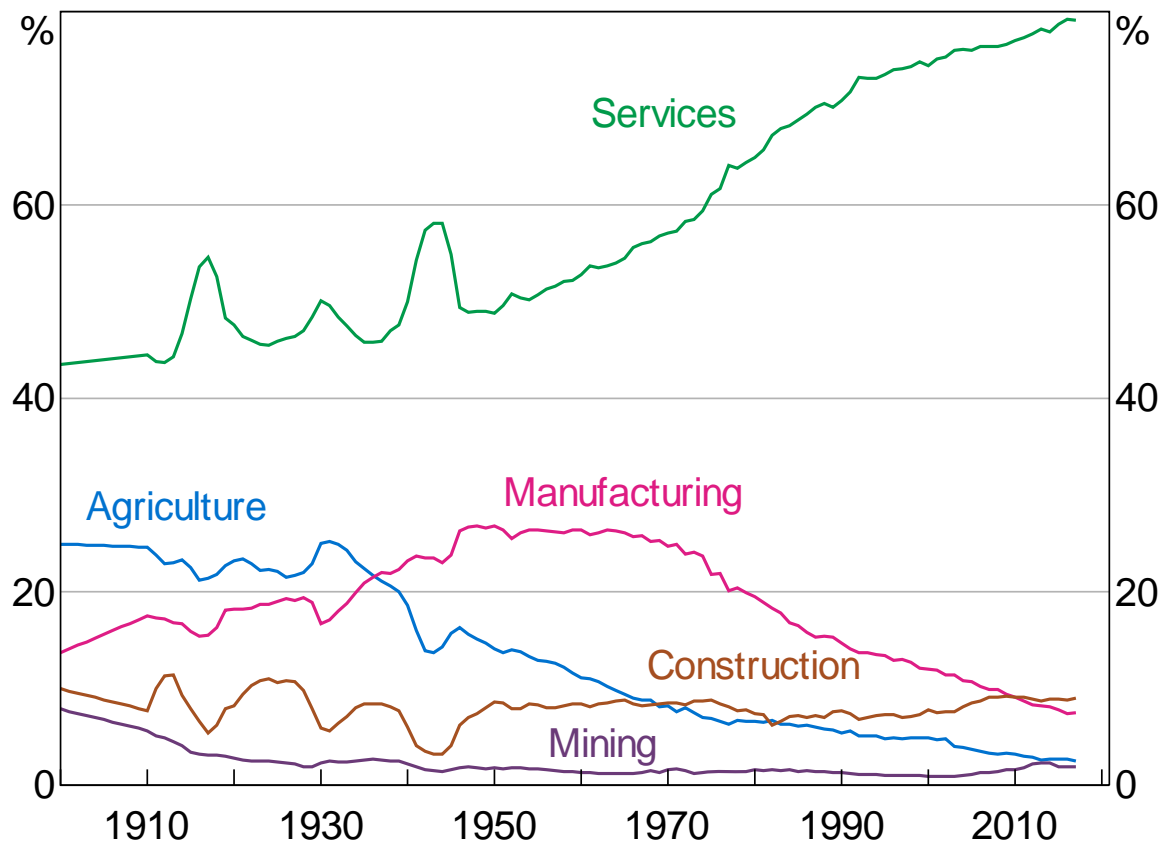
Sources: ABS; RBA

Why? Partly technology

- Long-run decline in share of 'routine manual' employment
 - *Partly* reflects technology/automation. eg. manufacturing and agriculture
- Further technological advances have contributed to recent decline in share of 'routine cognitive' employment
 - New set of occupations exposed to automation
 - More feasible to offshore jobs (call centres, back office) where labour costs are lower
- Stronger growth in 'non-routine' employment
 - Tend to be harder to automate. eg. Require creativity, human presence
 - Partly reflect general equilibrium effects of technology (eg. rising productivity and real income)

Employment by Industry

Share of total



Sources: ABS; RBA; Withers, Endres and Perry (1985)

Why? Other factors...

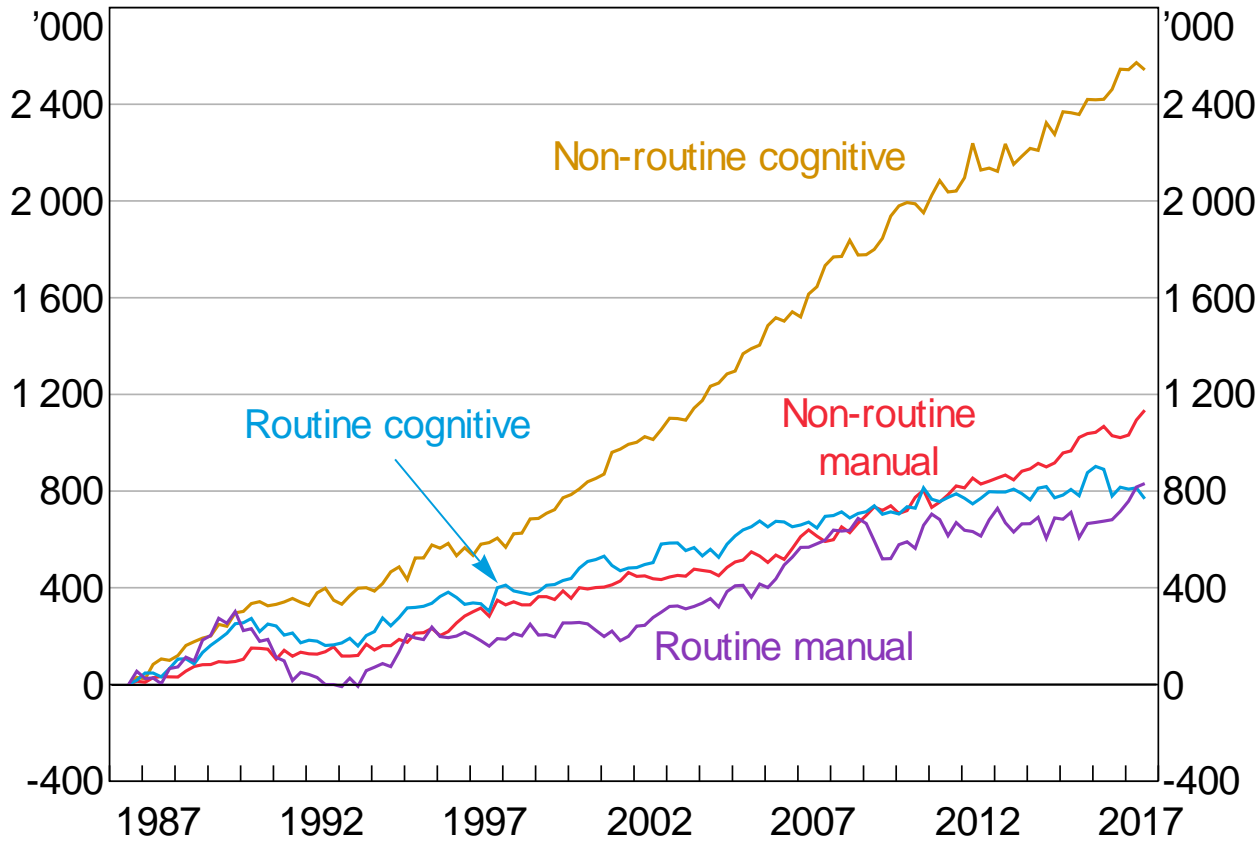
For example

- Rising health care employment, partly related to population ageing
- Rising child care employment, partly related to increased female participation
- Increase in education attainment

Some of these can be linked back to technological advancement, but also reflect broader social trends and policies.

Employment by Skill Type

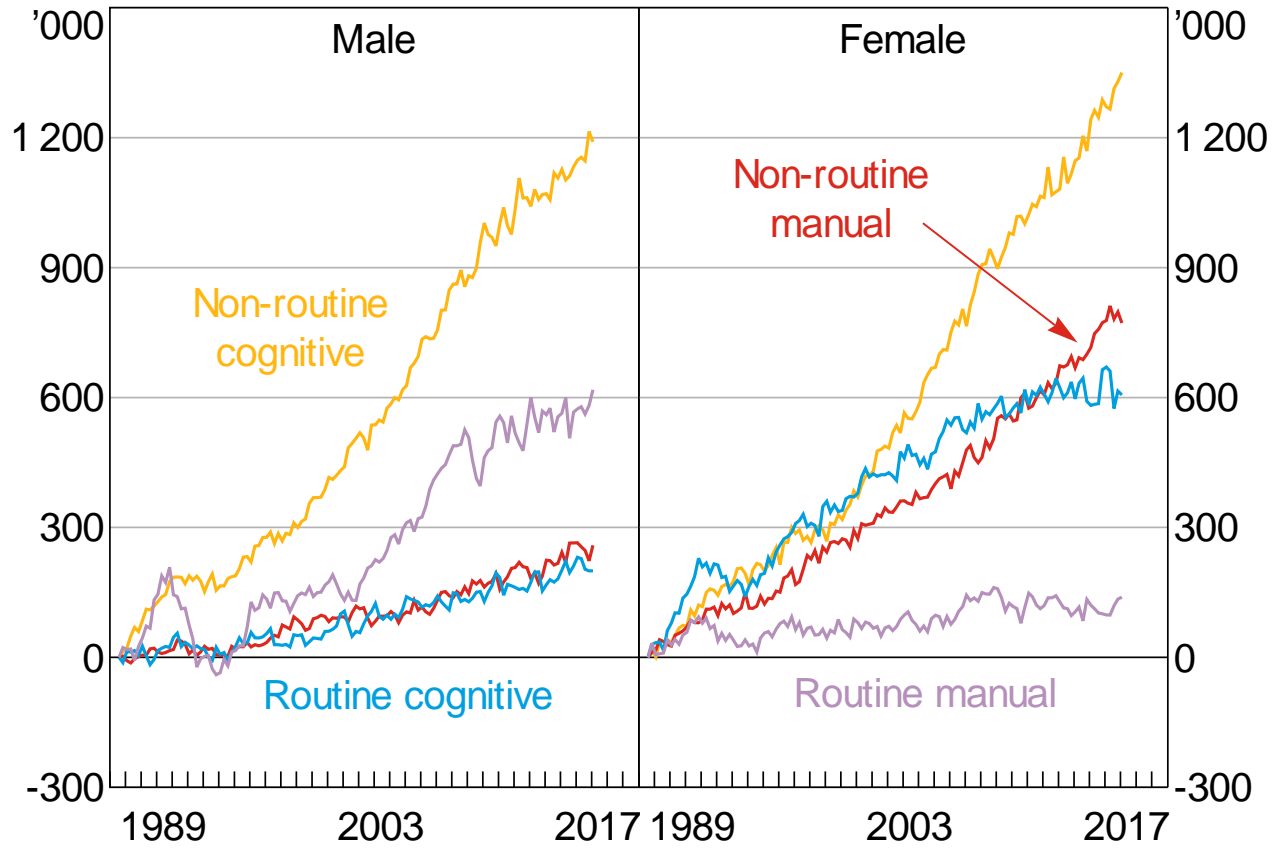
Cumulative change since 1986



Sources: ABS; RBA

Cumulative Employment Growth

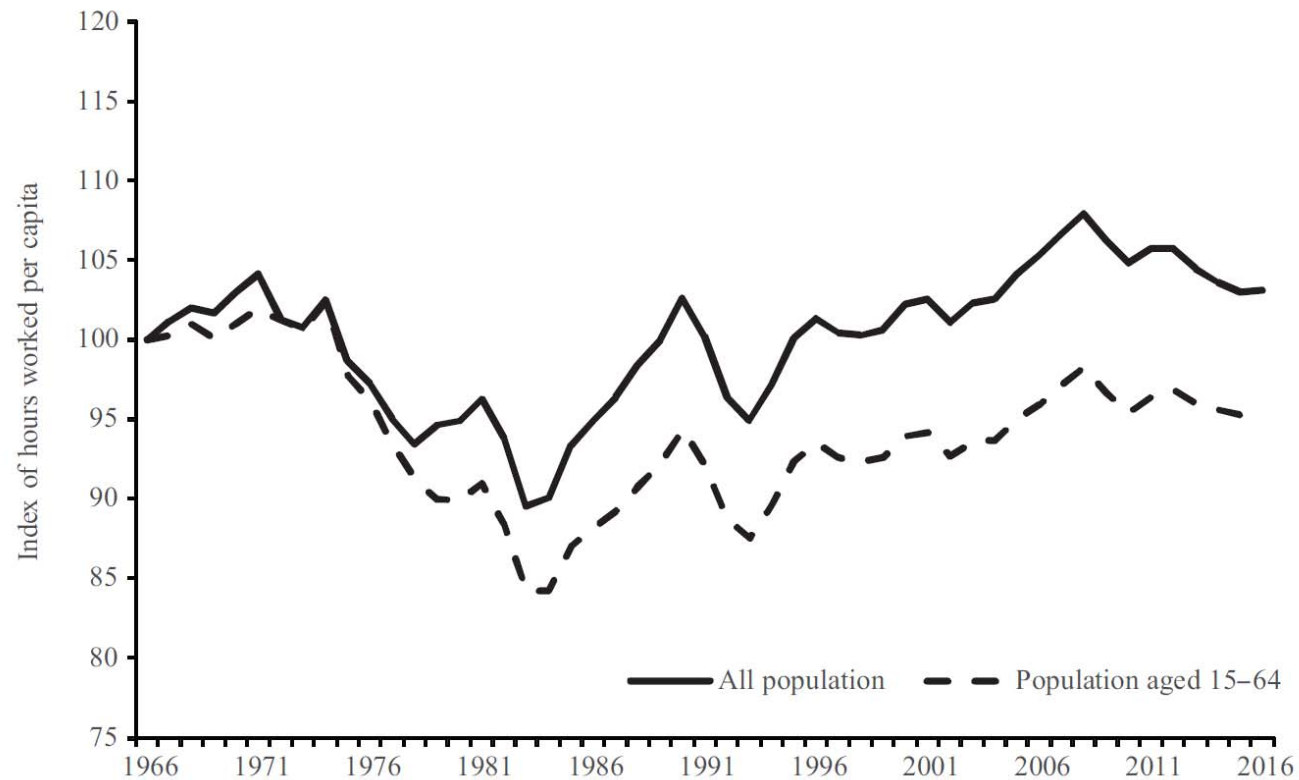
By skill type



Sources: ABS; RBA

Have robots taken our jobs? (Borland and Coelli, 2017)

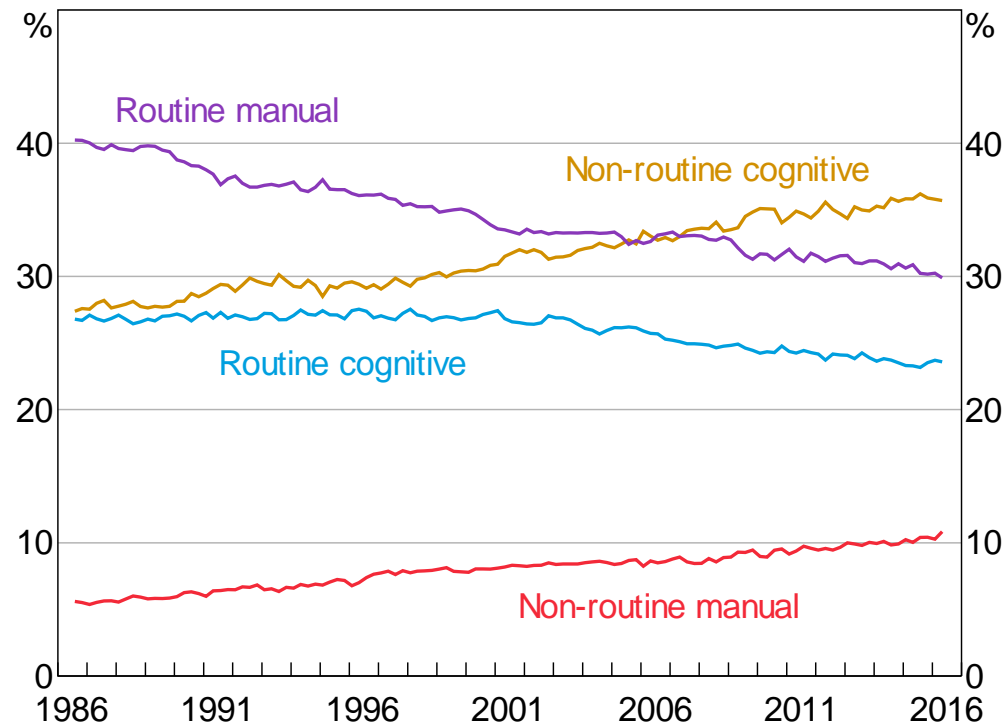
**Figure 3 Hours of Work Per Capita, Australia, 1965–66 to 2015–16,
Actual Hours Worked Series (equals 100 in 1965–66)**



Has the rate of structural change increased?

Employment by Skill Type*

Per cent of total

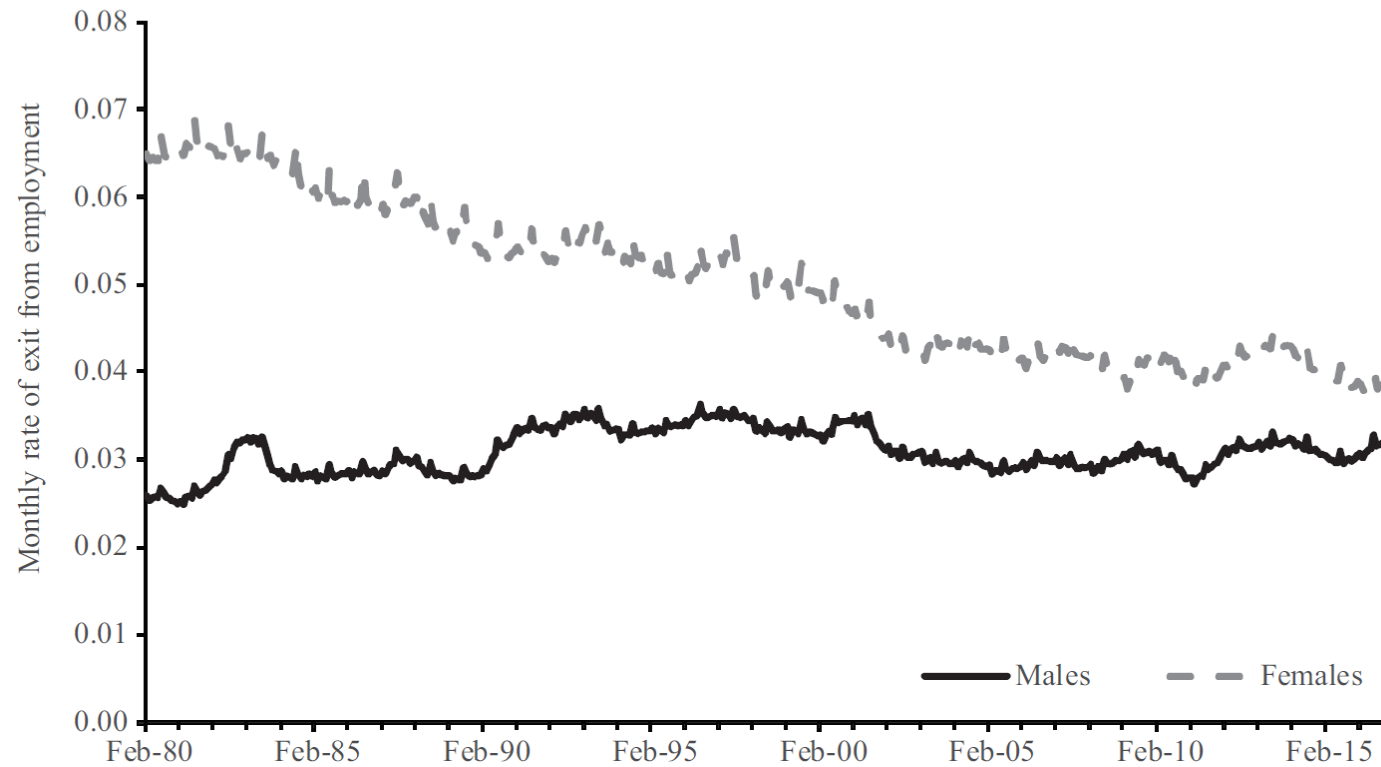


* Non-seasonally adjusted

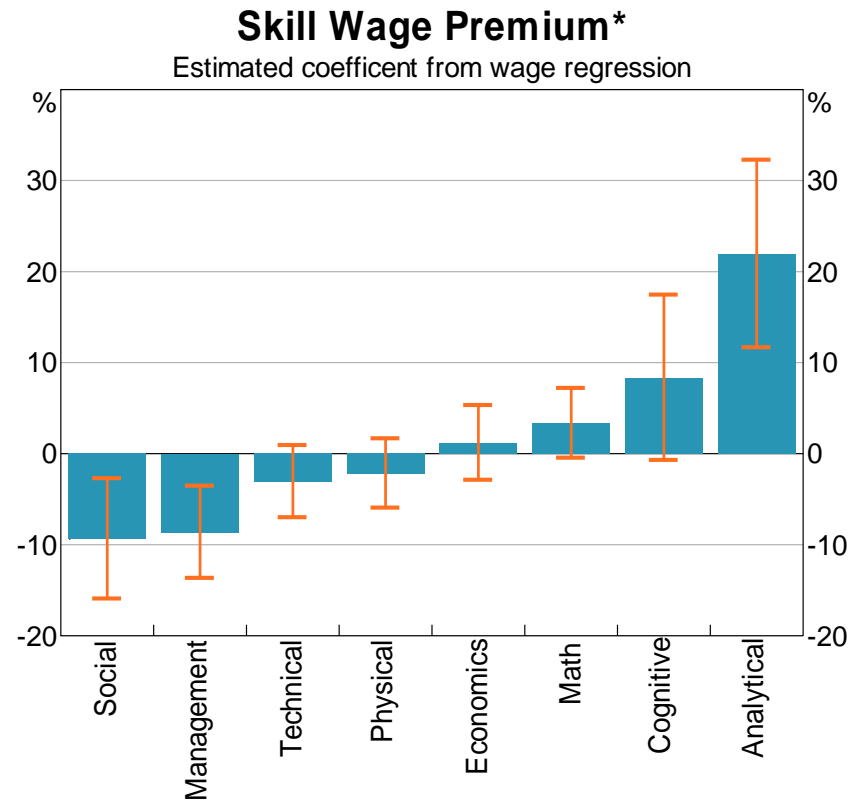
Sources: ABS; RBA

Has the rate of structural change increased?

Figure 10 Rate of Outflow from Employment, 13-Month Average, Australia, February 1980–November 2016



Which skills are being rewarded?



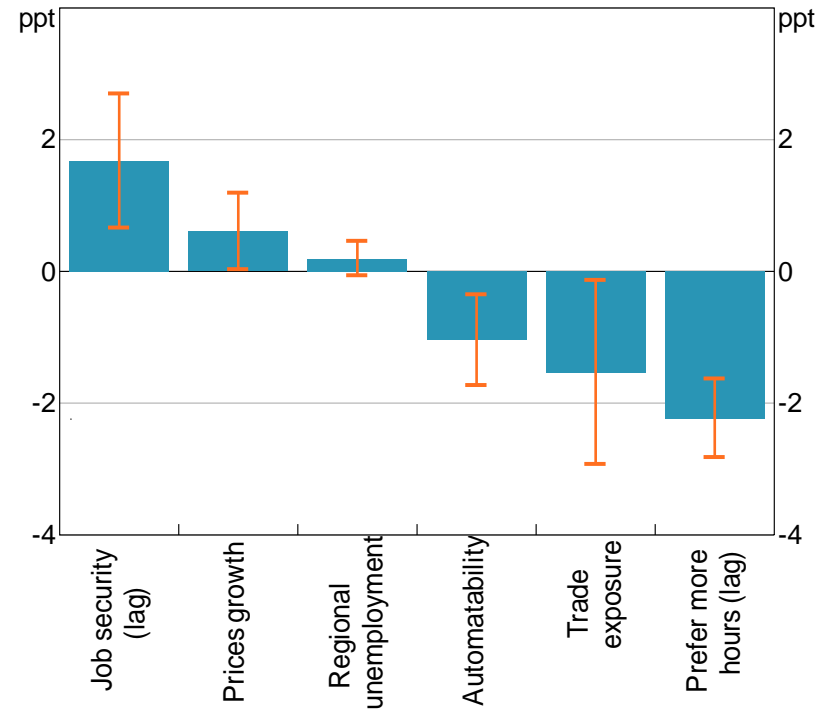
* 95 per cent confidence intervals are shown in orange.

Sources: ATO; O*Net; RBA

Wage growth and potential for automation

Key Variables Effect on Wage Growth*

Coefficient estimates from random effects model



* 95 per cent confidence intervals are shown in orange

Sources: ABS; Frey and Osborne (2017); HILDA Release 16.0; RBA